Universidad Rey Juan Carlos

TESIS DOCTORAL

Sustainability, Economic Value and Socio-cultural Impacts of Museums. Analysis of the Thyssen-Bornemisza National Museum (Madrid)

Sostenibilidad, valor económico e impactos socioculturales de los museos. Análisis del Museo Nacional Thyssen-Bornemisza (Madrid)

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Escuela Internacional de Doctorado

École Doctoral de Géographie de Paris

Equipe Interdisciplinaire de Recherches sur le Tourisme

Université Paris 1 Panthéon-Sorbonne

2020

ACKNOLEDGEMENTS

Firstly, I would like to express my sincere gratitude to my supervisors, Dr Carmen de Pablos Heredero, Dr Trinidad Vacas Guerrero and Dr Maria Gravari-Barbas for their continuous support of my PhD study and related research, for his patience, motivation, and immense knowledge.

I would also like to thank the staff of the National Thyssen-Bornemisza Museum for their collaboration. Thanks also to all my colleagues at Rey Juan Carlos University, CETUR, and the Equipe Interdisciplinaire de Recherches sur le Tourisme of Paris 1 Panthéon-Sorbonne University, especially Dr Catalina Vacas Guerero, Dr Pilar Talón Ballesteros, Dr Laura Fuentes Moraleda, Dr Teresa Villacé Molinero, and Dr Ana Muñoz Mazón. Thanks to all the anonymous reviewers who have read each of the articles. It was fundamental and has allowed me to learn in the process and facilitated the improvement of the papers.

I would also like to thank each of the teachers who have marked my career and thanks to whom I have become the person I am. Thanks to Ana, Ángel, Jaime and Vicente, because thanks to each hour of class you awakened in me an interest in knowledge, in reading books, in visiting museums and sites. Thank you for opening your heart and showing us your vocation in every word.

Thanks also to all the teachers who accompanied and guided me during my university studies, especially Dr Ana G. Barrios, Dr Alberto Polo, Dr Pablo Ozcáriz, Dr González Reverté, Dr Silvia Grünig Iribarren and Dr María Cristina Ortega Nuere. To all the teachers of the Institut de Recherche et D'études Supérieures du Tourisme for welcoming me during my Erasmus stay, with special mention to Dr Aurélie Condevaux, for awakening a new passion in me for Cultural Anthropology. Thanks to Dr Urbano Espinosa and my colleagues in Parpalinas. When I thought that finishing my thesis was a complicated process, I always remembered how painful it was to cover an archaeological site.

Finally, I would also like to extend thanks to all the people who have supported me. I always knew that what was important was not the goal, but the process and the hard work. I would like to thank my friends and my entire family, especially my mother, for teaching me to be strong and to move forward. Thank you for helping to build the person I am now. Thanks to my brother Nicolas, for teaching me what unconditional love is and for always being by my side even though we are so far away. Thank you for still waiting for my visit with enthusiasm. Thanks to Alvaro, for accompanying me in this process and especially for listening to me and helping me in the worst moments.

RESUMEN

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Los museos están vinculados a la actividad turística ya que se consideran recursos que forman parte de la oferta turística y promueven las visitas a los destinos turísticos. El concepto de sostenibilidad, que incluye los impactos económicos, socioculturales y ambientales, se aplica en los museos con el fin de promover el uso responsable de estos recursos, así como para proponer estrategias de gestión y supervisión de los resultados con el fin de mejorar la toma de decisiones en la gestión de los museos.

El turismo sostenible ha sido objeto de diversos enfoques desde 1960, así como de definiciones (Bramwell y otros, 1966; Butler, 1991; 1993; 1999; Liu, 2003; Choi & Sirakaya, 2006; Tsaur y otros, 2006; Ruhanen, 2008; Buckley, 2012; Coccossis, 2016; Higgins-Desbiolles, 2018). El concepto de "sostenibilidad" es muy controvertido, ya que se aplica en diversos ámbitos y suele ser fuente de confusión debido a su vínculo con la sostenibilidad económica únicamente. Los cimientos del turismo sostenible se establecieron en la Cumbre de la Tierra de Río de Janeiro (1992) y en el programa de la Agenda 21.

La museología actual debe afrontar los cambios que se han producido en las últimas décadas, promoviendo la sostenibilidad, creando una estrategia social que le permita lograr un impacto turístico positivo y promover el desarrollo económico y social de las ciudades en las que se encuentra (Hernández, 2018). Los museos no sólo producen beneficios económicos, sino que también tienen un impacto en la comunidad local, sea a nivel regional o nacional (Throsby, 2001).

Ayala Aizpuru et al. (2019) identifican los retos a los que se enfrentan los museos hoy en día, subrayando la necesidad de crear un enfoque desde dos perspectivas diferentes: la social y la económica. Los museos, por lo tanto, se enfrentan a cuatro desafíos. En primer lugar, fortalecer sus vínculos con la comunidad local mediante la aplicación de estrategias de desarrollo de la audiencia. En segundo lugar, la comunicación y el marketing son dos factores fundamentales derivados de la nueva

definición propuesta por el ICOM para un museo (2019), uno de cuyos puntos clave es el diálogo. En tercer lugar, el uso de la tecnología, un concepto relacionado con el punto anterior. En cuarto lugar, la búsqueda de fuentes alternativas de financiación y la formación de los profesionales de los museos. Además, también consideran que la sostenibilidad y la accesibilidad son aspectos clave a desarrollar.

En relación con la tecnología y la innovación, el análisis de Big Data aplicado a la investigación turística es vital debido a que es posible obtener información fundamental como son las opiniones de los visitantes de los museos. La opinión y la percepción de los turistas es un factor crucial derivado del boca-oreja electrónico (eWOM). El análisis del contenido facilita la detección de los atributos percibidos por los turistas para mejorar su experiencia. Por tanto, el uso de las herramientas de la Industria 4.0 facilita la comprensión del rendimiento de los museos y el análisis de información crítica.

Esta tesis doctoral tiene por objeto determinar un modelo metodológico para analizar el valor económico y sociocultural de los museos. Los métodos propuestos son el método Choice Experiment, la voluntad de pago (WTP) y los indicadores subjetivos de calidad. Estos métodos permiten evaluar el funcionamiento de los museos. Por consiguiente, el modelo metodológico propuesto adopta un enfoque mixto al considerar ambos métodos. La aplicación del método propuesto permite conocer con precisión el impacto de las iniciativas y propuestas desarrolladas por los museos. Estos métodos pueden ser extrapolados y utilizados por la comunidad científica para llevar a cabo investigaciones sobre el funcionamiento de los museos y el proceso de toma de decisiones.

El estudio de caso a través del cual se prueba el método propuesto es el Museo Nacional Thyssen-Bornemisza (Madrid, España). Los resultados obtenidos son esenciales para crear estrategias de co-creación. Proporcionan información valiosa para llevar a cabo procesos de innovación, con el fin de mejorar los procesos de toma de decisiones desde el punto de vista de la gestión de los museos. Estos resultados muestran que hay diferencias sustanciales entre la percepción y la

apreciación de los atributos por parte de la comunidad local y los turistas. Los resultados proporcionan información valiosa que puede aplicarse en la práctica para diseñar estrategias de sostenibilidad económica y sociocultural para mejorar la toma de decisiones en la gestión de los museos.

El germen de esta tesis doctoral fue la VII Escuela de Arte y Patrimonio "Marcelino Sanz de Sautuola" (UIMP, Santander, España), que se centró en la economía de la cultura. Fue dirigida por la Dra. Pilar Fatás, Directora del Museo Nacional y Centro de Investigación de Altamira (Santillana del Mar, España). Durante dicho evento, se presentaron investigaciones centradas en el valor económico de los museos y relacionadas con diferentes métodos. Por tanto, se detecta un tema de interés para futuras investigaciones.

Tras una fase preliminar de investigación documental y lectura de artículos de investigación, libros, informes de museos y otras fuentes secundarias, se aborda el tema de esta tesis doctoral. Se trata, en efecto, de un tema de investigación sobre el que se puede aportar un nuevo enfoque y una combinación de diferentes métodos de investigación y análisis, ya que hasta ahora la perspectiva era sólo cuantitativa.

El primer capítulo incluye una versión anterior de un artículo aceptado para su publicación en el libro "Arqueología, Historia y medio ambiente II: la sostenibilidad" coordinado por Koldo Trápaga Monchet y Luis Alberto Polo Romero que será publicado por Dykinson. En este artículo se analizan los conceptos de sostenibilidad y su aplicación en los museos. Los museos, como instituciones culturales, introducen en su gestión conceptos como la sostenibilidad y la calidad. Debido a la conexión de los museos con el sector turístico, nuestro enfoque facilita el análisis de la relación entre el concepto de sostenibilidad en los museos y el turismo sostenible. El concepto de sostenibilidad incluye la sostenibilidad económica, sociocultural y ambiental, siendo los museos instituciones clave para la aplicación y el desarrollo de estrategias sostenibles. A través del primer capítulo tiene se identifica a través de la literatura la influencia de la sostenibilidad en los museos. El análisis de los informes publicados por las entidades internacionales sobre sostenibilidad y museos se lleva

a cabo con el fin de aclarar las medidas de sostenibilidad propuestas en los museos, así como su estado de desarrollo y evolución. En el caso de España, se analiza la norma UNE 302002 de la Asociación Española de Normalización y Certificación, ya que es la primera norma de este tipo que se centra en la innovación y el reconocimiento de la calidad de los museos como recursos turísticos. El análisis de estas diferentes fuentes muestra el interés y la necesidad de aplicar medidas de sostenibilidad en los museos, así como su necesidad de participar en el sistema turístico centrándose en medidas sostenibles y en la aplicación de estrategias de sostenibilidad.

El segundo capítulo incluye el manuscrito original del autor correspondiente al artículo publicado en "Museum Management and Curatorship" en 2019 (Orea-Giner et al., 2019). En este capítulo se propone un método para estudiar los impactos económicos y socioculturales de los museos. Los museos deben aplicar criterios sostenibles para evaluar su rendimiento y mejorar sus resultados. En este capítulo, se determina un modelo metodológico para analizar el valor económico y sociocultural de los museos. El enfoque propuesto está vinculado a la percepción de la comunidad local y del turista. La investigación sostiene que tanto el método de las experiencias de elección como los indicadores de calidad subjetiva son métodos interesantes para evaluar el funcionamiento de los museos. Por consiguiente, el modelo metodológico propuesto adopta un enfoque mixto al considerar ambos métodos. La aplicación del método propuesto permite conocer con precisión el impacto de las iniciativas y propuestas desarrolladas por los museos.

El capítulo tres incluye el manuscrito original del autor correspondiente al artículo que ha sido aceptado en "ESIC Market". En este capítulo identificamos los atributos del Museo Nacional Thyssen-Bornemisza a través del análisis de eWom. La identificación de los atributos del museo es esencial para analizar los diferentes factores que atraen a los visitantes y estudiar su situación a fin de mejorar la eficacia de los museos, al igual que la utilización de los fondos para desarrollar una campaña de comercialización para atraer a los visitantes. En este capítulo se presenta una revisión de la literatura sobre los atributos de los y su influencia en la

experiencia de los visitantes. El método de identificación de los atributos consiste en utilizar Text Mining para analizar el contenido textual de reseñas de TripAdvisor escritas en inglés y español. La información se recopila usando WebHarvy y luego se analiza con Nvivo12.

El capítulo 4 incluye el manuscrito original del autor correspondiente al artículo que está siendo revisado por pares en "Tourism Planning & Development". El objetivo de este artículo es examinar cómo las herramientas de la Industria 4.0 (eWOM) facilitan el desarrollo de estrategias basadas en el concepto de co-creación. Este método, se prueba en el caso del Museo Nacional Thyssen-Bornemisza con el fin de analizar la experiencia del cliente del museo mediante la identificación de atributos y el valor percibido por los visitantes. La opinión y la percepción de los turistas es un factor crucial derivado del boca-oreja electrónico (eWOM). El análisis del contenido facilita la detección de los atributos percibidos por los turistas para mejorar su experiencia. Estos atributos detectados de antemano se evalúan en una mesa redonda con expertos y actores clave. El uso de las herramientas de la Industria 4.0 facilita la comprensión del rendimiento de los museos y el análisis de información crítica. En este capítulo se realiza un análisis exploratorio sobre la introducción de las herramientas de la Industria 4.0 como una eWOM para estudiar la percepción y el valor percibido por los visitantes de los museos. Los resultados obtenidos son esenciales para crear estrategias de co-creación, ya que proporcionan información valiosa para llevar a cabo procesos de innovación con el fin de mejorar los procesos de adopción de decisiones desde la perspectiva de la gestión de los museos.

El capítulo 5 incluye el manuscrito original del autor correspondiente al artículo que se reseña en el "Tourist Studies". El presente artículo se centra en el análisis de la información de las encuestas realizadas a residentes y turistas. La evaluación de atributos permite comprender la calidad percibida y el valor subjetivo de la experiencia del visitante del museo. De este modo, es esencial considerar también el comportamiento y la satisfacción de los visitantes para poder fomentar la innovación y la sostenibilidad en los museos. La principal contribución de este

capítulo es analizar los atributos percibidos por los turistas y la comunidad local (residentes en Madrid) del Museo Nacional Thyssen-Bornemisza (Madrid, España), mediante el análisis de los resultados de un cuestionario sobre Choice Experiment y la disposición a pagar (WTP). Para analizar en profundidad la evaluación de los atributos y su percepción, se aplica el modelo de determinación de la relevancia. La recopilación de datos se llevó a cabo mediante una encuesta con cuestionario en la que se utilizó una muestra de conveniencia de turistas internacionales y de la comunidad local, con un total de 775 encuestas válidas. Los resultados de la aplicación del análisis de determinación de la pertinencia (RDA) muestran que hay dos tipos de atributos: los atributos básicos de alto impacto y los atributos de menor importancia.

En investigaciones previas, se ha utilizado el método Choice Experiment para estimar el valor de los museos. Se propone por ello como metodología la aplicación de Choice Experiment como metodología para evaluar los atributos y obtener información sobre las preferencias de los visitantes (Orea-Giner et al., 2019). Este método se ha aplicado al Museo de la Galería Borghese (Roma, Italia), identificando tres atributos diferentes (precio de la entrada, actividad de conservación y política de acceso, y servicios adicionales) (Maddison y Foster, 2003). También se analizó el Discovery Museum (en el noreste de Inglaterra) utilizando este método (Kinghorn y Willis, 2008). Los resultados presentados en este capítulo amplían la información sobre los atributos del museo y también introducen la aplicación de WTP. La aplicación de los resultados del cuestionario centrado en WTP para promover la sostenibilidad en el turismo ya ha sido probada anteriormente (Oppewal et al., 2015), al igual que el método Choice Experiment (Pereira et al., 2016). El análisis de la literatura nos permite derivar en la siguiente propuesta un modelo analítico que sería la base de la experiencia del turismo sostenible. Se deriva de la interrelación entre el modelo de determinación de la relevancia (Mikulić et al., 2017) y el modelo de calidad de servicio, valor, satisfacción e intenciones de comportamiento (Oriade y Schofield, 2019).

Los atributos de mayor valor subjetivo percibidos por los turistas y residentes encuestados son la ubicación, la colección permanente, las exposiciones temporales y el precio del precio de entrada. Estos resultados muestran que hay algunas diferencias entre la percepción y la apreciación de los atributos por parte de los residentes y turistas encuestados. Los resultados proporcionan información valiosa que puede aplicarse para diseñar estrategias de sostenibilidad económica y sociocultural para mejorar la toma de decisiones en la gestión de los museos.

A modo de resumen, esta investigación propone el desarrollo de una metodología aplicable a los museos e instituciones culturales y su aplicación a un estudio de caso, el Museo Nacional Thyssen-Bornemisza.

La primera contribución de este trabajo es el análisis y la comparación de los métodos propuestos en el campo de la economía cultural para analizar los museos. El método que se propone para estudiar el valor económico subjetivo y los impactos socioculturales de los museos es mixto. Este método consiste en aplicar Choice Experiment y WTP.

La segunda aportación de este trabajo es la propuesta de métodos previos para poder elaborar el cuestionario de forma objetiva, ya que la selección de los obtenidos para su elaboración es una limitación del método de Choice Experiment y WTP. Por lo tanto, se completa con las fases anteriores. En primer lugar, se aplica la metodología de Text Mining para la identificación de los atributos del museo de la eWOM. Luego, los atributos detectados se analizan en una mesa redonda con la participación de expertos. En tercer lugar, el cuestionario está diseñado sobre la base de los resultados obtenidos en las fases anteriores.

La siguiente contribución es la propuesta de indicadores subjetivos para analizar el alcance sociocultural. Los indicadores propuestos tienen en cuenta tanto los impactos generados en los turistas como en la población local. De esta manera, se propone evaluar los efectos que el turismo crea en la comunidad local, tanto desde un punto de vista negativo como positivo. Se han tomado en consideración aspectos

como el papel de los museos en el desarrollo y la promoción de estrategias turísticas relacionadas con la cultura local del destino turístico. Además, también se tiene en cuenta la calidad de los museos y sus esfuerzos en el desarrollo de actividades educativas.

Otra contribución es la aplicación de los métodos de la Industria 4.0, que facilitan una mejor comprensión de los resultados obtenidos por los museos. Esto se traduce en la aplicación de Text mining para detectar los atributos de los museos a través de las reviews de TripAdvisor, teniendo en cuenta el estudio anterior de Zanibellato y et al. (2018), completando la lista de atributos presentada por estos autores y realizando un análisis en profundidad sobre un único estudio de caso. Por lo tanto, puede decirse que la identificación de los atributos mediante este método facilita la comprensión de la percepción del museo por parte de los turistas. Los resultados obtenidos mejoran la comprensión del valor subjetivo percibido por los turistas y mejoran la toma de decisiones de los profesionales de los museos.

Los atributos detectados en este análisis preliminar también suponen una contribución académica, ya que facilitan un análisis más profundo y permiten la identificación de atributos para aplicarlos a otros estudios de caso. Además, esta identificación de atributos facilita el desarrollo de estrategias de co-creación en los museos.

La aplicación del método propuesto en un estudio de caso es otra contribución de esta investigación. Esto permite verificar la validez del método y sus limitaciones, poniendo a disposición de la comunidad científica un método.

El método propuesto está relacionado con la sostenibilidad, ya que la identificación de los atributos permite aplicar estrategias innovadoras como la co-creación, así como comprender la percepción de la población local y los turistas. Los métodos Choice Experiment y WTP permiten analizar la evaluación de los clientes y el comportamiento de consumo sostenible.

Otra contribución es el análisis del valor subjetivo que perciben los turistas y la comunidad local sobre los atributos de los museos. Esto permite comparar y detectar si hay diferencias entre los atributos reconocidos por los dos segmentos.

Por último, la última contribución consiste en aplicar el modelo de análisis de determinación de la relevancia (RDA) combinado con el modelo de calidad del servicio, valor, satisfacción e intenciones de comportamiento. De esta manera, es posible identificar los atributos e interpretar su valor sobre la base de los resultados de los cuestionarios realizados.

Se detectan diferentes aplicaciones prácticas después de la finalización de esta investigación. El concepto de sostenibilidad tiene cuatro dimensiones: social, cultural, ambiental y económica. Como están relacionadas con el desarrollo de diferentes actividades en los museos y la tendencia de elaborar políticas de sostenibilidad debe tenerse en cuenta en las actividades del sistema turístico, especialmente en el turismo cultural y las visitas a museos, ya que están vinculadas al concepto de sostenibilidad cultural (Pop et al., 2014, 2016).

Diversas asociaciones nacionales, así como organismos internacionales como el ICOM y la OCDE, fomentan la preparación de informes y guías para promover acciones relacionadas con el desarrollo sostenible en los museos. Sin embargo, estos documentos no son obligatorios, por lo que en muchas instituciones museísticas estos conceptos no se aplican en su totalidad o no se consideran parte esencial del desarrollo de su actividad.

La propuesta de aplicar sistemas y normas de gestión sostenible es un reto para instituciones como los museos, ya que también deben comprometerse con la calidad del servicio y la experiencia de los visitantes. La mayoría de los museos cuentan con recursos económicos obtenidos mediante financiación pública y privada, incluidas las entradas de los visitantes, que en muchos casos constituyen una parte importante de su financiación. Es necesario que los turistas y la comunidad local participen en las actividades de los museos (Gravari-Barbas &

Fagnoni, 2015; Falk & Dierking, 2013). Por lo tanto, su sostenibilidad social es fundamental para el desarrollo, la apreciación y el reconocimiento de la imagen del museo.

Por lo tanto, los museos deben tener objetivos mensurables, pertinentes, específicos, alcanzables y definidos en el tiempo (Doran, 1981) para el desarrollo sostenible. Como instituciones abiertas al público, tienen la oportunidad de difundir y promover el conocimiento sobre la sostenibilidad, por lo que tienen una gran responsabilidad que deben considerar y medir continuamente para mejorar la toma de decisiones en los museos.

La aplicación de la metodología propuesta en diferentes museos puede proporcionar datos fundamentales para la elaboración de estrategias en los museos. En cuanto a las aportaciones relativas al análisis de los resultados, es esencial subrayar que a través del estudio de las revisiones realizadas en TripAdvisor se detecta un punto clave, a saber, la percepción del museo como museo privado por parte de los turistas. La evaluación subjetiva de estos atributos muestra que los más apreciados por los turistas en el análisis de la eWOM forman parte de la oferta básica: la colección permanente y las exposiciones temporales. Sin embargo, los menos apreciados son los servicios periféricos, incluyendo el precio de la entrada. Estos resultados iniciales sobre las evaluaciones de los atributos son esenciales para elaborar estrategias que permitan incrementar la calidad mediante procesos de innovación de los atributos con una valoración más negativa. El análisis de los datos de eWOM y la mesa redonda facilitaron el análisis de los puntos débiles del estudio de caso del museo. De esta manera se detecta el potencial de estrategias de co-creación, teniendo en cuenta los resultados obtenidos.

A continuación figuran varias recomendaciones sobre los resultados del análisis del estudio de caso. Sobre la base de los resultados finales obtenidos y la aplicación del modelo RDA, se identifican los siguientes atributos como de mayor impacto en la oferta del museo: la ubicación, el edificio, la colección permanente, las exposiciones temporales, el personal y la identidad. Por lo tanto, para que estos atributos sigan

siendo evaluados positivamente, se recomienda introducir las siguientes estrategias relacionadas con la sostenibilidad:

En primer lugar, se recomienda que la colección permanente siga siendo promovida sin ser ensombrecida por las exposiciones temporales. Para ello, se deben ofrecer visitas guiadas temáticas basadas en obras específicas del museo.

En segundo lugar, se propone desarrollar actividades de capacitación del personal. El objetivo de estas actividades de formación sería analizar los diferentes atributos del museo y comprender mejor los menos valorados para mejorarlos a través de la colaboración y la participación del personal en el proceso de creación conjunta.

Por último, otra medida de aplicación práctica es la creación de una estrategia centrada en la identidad del museo por la que se involucra a la población local y se da a conocer la propiedad pública del museo. Esto ayuda a mejorar la percepción del museo en la comunidad local. También asegura que el museo sea valorado positivamente desde un punto de vista sociocultural.

Para la clasificación de los atributos de baja importancia o menos valorados, localizamos: las actividades, la saturación por visitantes, el museo como un organismo público, los servicios de restauración, la tienda de regalos, la cola para acceder al museo, la App y el precio de la entrada. Tras el análisis de los resultados, se recomienda mejorar la imagen del museo público y del espacio abierto mediante la inclusión de la población local en la programación de actividades y la promoción de la co-creación. En cuanto al servicio de restauración, se prevé ofrecer servicios combinados para reforzar este atributo. En cuanto al precio de la entrada, es deseable establecer una mayor reducción del precio para aquellos que cumplan las condiciones, como los estudiantes. Establecer más horas de apertura libre.

Por último, tras el estudio de los resultados de la aplicación de Choice Experiment y el WTP, los museos pueden ofrecer un paquete que incluya una visita a las exposiciones temporales con un recorrido personalizado de una hora. Esta opción

sería de interés para los turistas. El precio recomendado, según los resultados, es de 17 euros por persona. Por otra parte, la población local estaría interesada en una opción que incluya una visita a la colección permanente, exposiciones temporales con la inclusión de servicios de restauración. La disposición a pagar es de 17 euros.

Durante el desarrollo de esta tesis, se identificaron diversas limitaciones. La primera limitación fue la determinación del método. El uso de Choice Experiment y WTP se ha abordado en estudios anteriores. Era necesario mejorar la selección de atributos antes de diseñar el cuestionario para que fuera objetivo. Sin embargo, el uso del análisis de la eWOM es también una nueva limitación debido a la recopilación de datos no reveladores y a la falta de oportunidad de detectar comentarios falsos.

La segunda limitación es el uso de una sola mesa redonda. Sería más práctico celebrar tres mesas redondas con diferentes expertos y actores clave para evaluar los resultados del análisis de Text Mining. Además, los expertos seleccionados proceden del ámbito nacional (España), lo que también constituye una limitación importante.

La tercera limitación está relacionada con la difusión del cuestionario; cabe señalar que se llevó a cabo durante un período en el cual los visitantes de Madrid no fueron muy numerosos. Además, coincide con la celebración del bicentenario del Museo Nacional del Prado, lo que cambia el perfil de los visitantes del museo. Por esta razón, el número de respuestas de los turistas nacionales es mayora la de los turistas internacionales.

Finalmente, el método propuesto permite su aplicación en otros museos e instituciones culturales. Por consiguiente, puede utilizarse para evaluar otros y recomendar mejoras y cambios en el método durante su desarrollo, además de análisis compatarivos entre ellos.

RÉSUMÉ

RÉSUMÉ

Les musées sont liés à l'activité touristique puisqu'ils sont considérés comme des ressources faisant partie de l'offre touristique et favorisant la visite des destinations touristiques. Le concept de durabilité, qui inclut les impacts économiques, socioculturels et environnementaux, est appliqué dans les musées afin de promouvoir l'utilisation responsable des ressources, ainsi que de proposer des stratégies de gestion et de contrôle des résultats afin d'améliorer la prise de décision en matière de gestion des musées.

Le tourisme durable a connu diverses approches depuis les années 1960, ainsi que des définitions (Bramwell et al., 1966; Butler, 1991; 1993 ; 1999 ; Liu, 2003 ; Choi & Sirakaya, 2006 ; Tsaur et al., 2006 ; Ruhanen, 2008 ; Buckley, 2012 ; Coccossis, 2016 ; Higgins-Desbiolles, 2018). Le concept de "durabilité" est très controversé car il est appliqué dans divers domaines et est souvent source de confusion en raison de son lien avec la seule durabilité économique. Les bases du tourisme durable ont été jetées lors du Sommet de la Terre à Rio de Janeiro (1992) et dans le programme de l'Agenda 21.

Premièrement, Butler (1993, p.29) définit le Tourisme Durable comme "un développement dans lequel le tourisme est promu et maintenu dans une zone (communauté et environnement) de telle manière et à telle échelle qu'il puisse rester viable pour une période indéfinie, tout en n'altérant pas l'environnement (humain et physique) dans lequel il opère de manière à ne pas entraver le développement et le bien-être d'autres activités et processus".

En outre, Butler (1999) insiste sur l'importance du tourisme durable, non pas en assurant la continuité de ces formes respectables de tourisme avec la communauté locale, la petite échelle et l'environnement, mais plutôt sur la manière de rendre le tourisme de masse aussi durable que possible.

Deuxièmement, Liu (2003) adopte une approche critique du concept de tourisme durable et de développement durable. Il considère que la durabilité, le tourisme durable et le développement durable sont des termes qui prêtent souvent à confusion. En outre, il souligne que Farrell (1999) définit la "trinité de la durabilité" comme l'intégration transparente de l'économie, de la société et de l'environnement.

Troisièmement, l'OMT (2017) définit le tourisme durable comme "un tourisme qui tient pleinement compte des impacts économiques, sociaux et environnementaux actuels et futurs pour répondre aux besoins des visiteurs, de l'industrie, de l'environnement et des communautés d'accueil". Par conséquent, l'OMT (2017) précise que le tourisme durable consiste en:

1. "Utiliser de manière optimale les ressources environnementales, qui sont un élément fondamental du développement du tourisme, en maintenant les processus écologiques essentiels et en contribuant à la conservation des ressources naturelles et de la diversité biologique".
2. Respecter l'authenticité socioculturelle des communautés d'accueil, conserver leurs atouts culturels et architecturaux et leurs valeurs traditionnelles, et contribuer à la compréhension et à la tolérance interculturelles".
3. Assurer des activités économiques viables à long terme, en fournissant des avantages socio-économiques bien répartis à tous les acteurs, notamment des emplois stables et des possibilités de revenus ainsi que des services sociaux pour les communautés d'accueil, et en contribuant à la réduction de la pauvreté".

Par conséquent, la définition montre l'intention d'appliquer une série de connaissances à la planification du tourisme afin que les objectifs proposés dans la définition puissent être atteints. Les définitions convergent pour mettre l'accent sur l'importance d'atteindre la durabilité environnementale, socioculturelle et économique par le biais du tourisme. Grâce à ces définitions, il est possible d'affirmer que les musées ont le potentiel de contribuer à la durabilité des communautés locales ainsi que de la planète (Falk & Dierking, 2013). De cette

façon, ils favorisent la promotion des entreprises liées au domaine culturel, ainsi que l'intégration des groupes sociaux (Hierro & Martín, 2013). De plus, les musées ont un effet positif dans la lutte contre la saisonnalité du tourisme, puisqu'ils encouragent la visite de destinations touristiques à tout moment (Zaraté & García, 2017).

McIntosh et Goeldner (1999) définissent la planification du tourisme comme le processus rationnel d'anticipation et de prise de décision concernant les actions futures, qui permet de gérer et d'optimiser les effets bénéfiques et de minimiser les effets négatifs. Par conséquent, la planification du tourisme serait également liée à la planification du tourisme durable. En ce qui concerne la planification du tourisme durable, Hall (2008) souligne que la planification du tourisme est intrinsèquement liée au tourisme durable. Velasco (2010, p.36) la définit comme "un processus de commande qui tente de définir des lignes d'action permettant d'atteindre des objectifs préalablement établis". En outre, Blas et Fabeiro (2004, p.109) soulignent que "la planification du tourisme implique un niveau élevé de contrôle social des activités et de leurs effets sur les ressources et aussi, d'autre part, l'objectif que la plupart des bénéfices économiques soient transférés à la communauté dans son ensemble sous ses différentes formes : augmentation des revenus et des recettes, création d'emplois, d'équipements, d'infrastructures, etc. Dans ce sens, la planification de l'activité touristique deberá doit être comprise comme faisant partie de la stratégie de développement local, intégrée dans le système productif et ne constituant en aucune façon un élément isolé et autonome du territoire.

Par conséquent, la planification du tourisme durable peut être définie à partir des propositions ci-dessus comme le processus qui permet rationnellement la création d'une stratégie de mise en œuvre du tourisme qui considère la durabilité environnementale, socioculturelle et économique comme base, de sorte que cette stratégie permette d'optimiser les effets favorables et de minimiser les effets défavorables. En relation avec cette planification, des indicateurs pour le tourisme durable sont proposés, en soulignant la proposition de Lozano-Oyola et al. (2012). En divisant les indicateurs en trois dimensions, la première est axée sur les aspects sociaux, avec l'analyse des aspects fondamentaux tels que les effets socioculturels

du tourisme sur la communauté d'accueil, la sécurité publique locale, la conservation du patrimoine culturel, l'effet sur la structure de la population locale, la capacité de charge sociale de la destination, les effets sur le bien-être de la population locale et, enfin, le développement et l'amélioration du paysage urbain. En ce qui concerne les indicateurs de la dimension économique, ils proposent des indicateurs liés aux bénéfices économiques tirés du tourisme par la communauté locale et la destination touristique, à la satisfaction durable des touristes, au développement du contrôle, à la fourniture d'expériences variées par l'offre d'équipements touristiques, à la saisonnalité, à l'emploi lié au tourisme, au transport, à la compétitivité de la destination, aux itinéraires touristiques, à l'investissement culturel et à l'agglomération (Oyola et al., 2012, p. 662-664).

Conséquemment, la muséologie d'aujourd'hui doit faire face aux changements qui ont eu lieu au cours des dernières décennies, en favorisant la durabilité, en créant une stratégie sociale qui lui permettra d'obtenir un impact touristique positif et de promouvoir le développement économique et social des villes où c'est implantée (Hernández, 2018). Les musées ne produisent pas seulement des bénéfices économiques, mais ont également un impact sur la communauté locale, au niveau régional et national (Throsby, 2001).

Ayala Aizpuru et autres (2019) identifient les défis auxquels les musées sont confrontés aujourd'hui, en soulignant qu'il est nécessaire de créer une approche selon deux perspectives différentes : sociale et économique. Les musées sont donc confrontés à quatre défis. Tout d'abord, renforcer leurs liens avec la communauté locale en mettant en œuvre des stratégies axées sur le développement des publics. Deuxièmement, la communication et le marketing sont deux facteurs fondamentaux dérivés de la nouvelle définition proposée par l'ICOM pour un musée (2019), dont l'un des points clés est le dialogue. Troisièmement, l'utilisation de la technologie, un concept lié au point précédent. Quatrièmement, la recherche de sources alternatives de financement et la formation des professionnels des musées. Enfin, ils considèrent également la durabilité et l'accessibilité comme un défi. Les initiatives axées sur la durabilité environnementale, telles que la réglementation de la consommation

d'énergie, se distinguent de ce défi. Cependant, le concept de durabilité inclut d'autres mesures compatibles avec les musées.

Les musées appliquent des critères durables afin d'évaluer les performances et d'améliorer les résultats. L'identification des caractéristiques des musées est essentielle pour analyser les différents facteurs qui attirent les visiteurs et étudier leur situation afin d'améliorer l'efficacité des musées, tout comme l'utilisation de fonds pour développer une campagne de marketing afin d'attirer les visiteurs. L'évaluation des attributs permet de comprendre la qualité perçue et la valeur subjective de l'expérience du visiteur dans un musée. De cette manière, il est essentiel de prendre également en compte le comportement et la satisfaction des visiteurs afin de pouvoir encourager l'innovation et la durabilité dans les musées. L'utilisation de grandes données appliquées à la recherche sur le tourisme est vitale en raison de la prise en compte de l'opinion des visiteurs des musées. L'opinion et la perception des touristes est un facteur crucial dérivé du bouche-à-oreille électronique (eWOM). L'analyse du contenu facilite la détection des attributs perçus par les touristes afin d'améliorer leur expérience. Ces attributs détectés au préalable sont évalués lors d'une table ronde avec des experts et des acteurs clés. L'utilisation des outils de l'Industrie 4.0 facilite la compréhension des performances des musées et l'analyse d'informations cruciales.

Cette thèse de doctorat vise à déterminer un modèle méthodologique qui permet d'analyser la valeur économique et socioculturelle des musées. Les méthodes proposées sont la méthode des expériences de choix, la volonté de payer et les indicateurs subjectifs de qualité. Elle permet d'évaluer le fonctionnement des musées. Par conséquent, le modèle méthodologique proposé adopte une approche mixte en considérant les deux méthodes. L'application de la méthode proposée permet de connaître précisément l'impact des initiatives et des propositions développées par les musées. Ces méthodes peuvent être extrapolées et utilisées par la communauté scientifique pour effectuer des recherches sur le fonctionnement des musées et le processus de prise de décision.

Le cas d'étude est celui du musée Thyssen-Bornemisza (Madrid, Espagne). Les résultats obtenus sont essentiels pour créer des stratégies de co-création. Ils fournissent des informations précieuses pour mener à bien des processus d'innovation tels que la co-création afin d'améliorer les processus décisionnels du point de vue de la gestion des musées. Ces résultats montrent qu'il existe des différences substantielles entre la perception et l'appréciation des attributs par la communauté locale et les touristes. Les résultats fournissent des informations précieuses qui peuvent être appliquées dans la pratique pour concevoir des stratégies de durabilité économique et socioculturelle visant à améliorer la prise de décision en matière de gestion des musées.

Le germe de cette thèse de doctorat a été la VIIe école d'art et de patrimoine "Marcelino Sanz de Sautuola" (UIMP, Santander, Espagne), qui s'est concentrée sur l'économie de la culture. Elle a été dirigée par le Dr Pilar Fatás, directrice du Musée national et du Centre de recherche d'Altamira (Santillana del Mar, Espagne). Des recherches sur la valeur économique des musées liées à différentes méthodes ont été présentées et basées sur les interventions des chercheurs ; un sujet d'intérêt est détecté pour des recherches ultérieures.

Après une phase préliminaire de recherche documentaire et de lecture d'articles de recherche, de livres, de rapports de musées et d'autres sources secondaires, le sujet de cette thèse de doctorat est abordé. Il s'agit en effet d'un sujet de recherche sur lequel une nouvelle approche et une combinaison de différentes méthodes de recherche et d'analyse peuvent être fournies, car jusqu'alors, la perspective n'était que quantitative.

Le premier chapitre comprend une version antérieure d'un article accepté pour une publication dans le livre intitulé "Arqueología, Historia y medio ambiente II: la sostenibilidad" coordonné par Koldo Trápaga Monchet et Luis Alberto Polo Romero qui sera publié par Dykinson. Cet article analyse les concepts de durabilité et leur application dans les musées. Les musées, en tant qu'institutions culturelles, introduisent des concepts tels que la durabilité et la qualité dans leur gestion. En

raison de la connexion des musées avec le secteur du tourisme, notre approche facilite l'analyse de la relation entre le concept de durabilité dans les musées, et le tourisme durable est en cours de réalisation. Le concept de durabilité comprend la durabilité économique, socioculturelle et environnementale, les musées étant des institutions clés pour la mise en œuvre et le développement de stratégies durables. Cet article vise à identifier l'influence de la durabilité dans les musées. Pour atteindre cet objectif, nous effectuons une revue de la littérature axée sur ce domaine. L'analyse des rapports publiés par des entités internationales est effectuée afin de clarifier les mesures de durabilité proposées dans les musées ainsi que leur état de développement et d'évolution. Dans le cas de l'Espagne, la norme UNE 302002 de l'Association espagnole de normalisation et de certification est analysée, car il s'agit de la première norme de ce type à se concentrer sur l'innovation et la reconnaissance de la qualité des musées en tant que ressources touristiques. L'analyse de ces différentes sources montre l'intérêt et la nécessité d'appliquer des mesures de durabilité dans les musées, ainsi que leur besoin de participer au système touristique en misant sur des mesures durables et la mise en œuvre de stratégies de durabilité.

Le deuxième chapitre comprend le manuscrit original de l'auteur correspondant à l'article publié dans "Museum Management and Curatorship" en 2019 (Orea-Giner et al., 2019). Ce chapitre propose une méthode pour étudier les impacts économiques et socioculturels des musées. Les musées doivent appliquer des critères durables afin d'évaluer leurs performances et d'améliorer leurs résultats. Cet article vise à déterminer un modèle méthodologique qui permet d'analyser la valeur économique et socioculturelle des musées. L'approche proposée est liée à la perception de la communauté locale et du touriste. La recherche soutient que tant la méthode des Expériences de choix que les Indicateurs de qualité subjectifs sont des méthodes intéressantes pour évaluer le fonctionnement des musées. Par conséquent, le modèle méthodologique proposé adopte une approche mixte en considérant les deux méthodes. L'application de la méthode proposée permet de connaître précisément l'impact des initiatives et des propositions développées par les musées. Cette méthode peut être extrapolée et utilisée par la communauté scientifique pour

effectuer des recherches sur le fonctionnement des musées et le processus de prise de décision.

Le chapitre trois comprend le manuscrit original de l'auteur correspondant à l'article qui a été acepté pour être publié dans "ESIC Market". Dans ce chapitre, nous identifions les attributs du Musée national Thyssen-Bornemisza grâce à eWom analysis. L'identification des attributs des musées est essentielle pour analyser les différents facteurs qui attirent les visiteurs et étudier leur situation afin d'améliorer l'efficacité des musées, tout comme l'utilisation de fonds pour développer une campagne de marketing afin d'attirer les visiteurs. Ce document propose une analyse documentaire qui prend en compte les visites de musées et les attributs des musées avant de proposer une méthode. L'utilisation de grandes données appliquées à la recherche sur le tourisme est essentielle en raison de la prise en compte de l'opinion des visiteurs des musées. Le cas d'étude est celui du musée Thyssen-Bornemisza (Madrid, Espagne). La méthode d'identification des attributs consiste à utiliser le text mining et à analyser le contenu textuel des critiques de TripAdvisor rédigées en anglais et en espagnol. Les informations sont saisies à l'aide de WebHarvy, puis analysées avec Nvivo12.

Le chapitre 4 comprend le manuscrit original de l'auteur correspondant à l'article qui est examiné dans "Planification et développement du tourisme". L'objectif de cet article est d'examiner comment les outils Industry 4.0 (eWOM) facilitent l'élaboration de stratégies axées sur le concept de co-création. Il est testé dans un cas d'étude afin d'explorer l'expérience client du musée à travers l'identification des attributs et sa valeur perçue par le client. L'opinion et la perception des touristes est un facteur crucial dérivé du bouche-à-oreille électronique (eWOM). L'analyse du contenu facilite la détection des attributs perçus par les touristes afin d'améliorer leur expérience. Ces attributs détectés au préalable sont évalués lors d'une table ronde avec des experts et des acteurs clés. L'utilisation des outils de Industry 4.0 facilite la compréhension des performances des musées et l'analyse d'informations cruciales.

Le document propose une approche exploratoire en analysant l'introduction des outils de l'Industry 4.0 en tant que eWOM pour étudier la perception et la valeur perçue par les visiteurs du musée. Les résultats obtenus sont essentiels pour créer des stratégies de co-création. Les résultats obtenus fournissent des informations précieuses pour mener à bien des processus d'innovation tels que la co-création afin d'améliorer les processus décisionnels du point de vue de la gestion des musées.

Le chapitre 5 comprend le manuscrit original de l'auteur correspondant à l'article qui est examiné dans le "Tourist Studies". Cet article se concentre sur l'analyse des informations tirées des enquêtes menées auprès des résidents et des touristes. L'évaluation des attributs permet de comprendre la qualité perçue et la valeur subjective de l'expérience du visiteur de musée. De cette façon, il est essentiel de tenir compte également du comportement et de la satisfaction des visiteurs afin de pouvoir encourager l'innovation et la durabilité dans les musées. La principale contribution de ce document est d'analyser les attributs perçus par les touristes et la communauté locale (résidents de Madrid) du Musée national Thyssen-Bornemisza (Madrid, Espagne), en analysant les résultats d'un questionnaire sur les expériences de choix et la volonté de payer. Afin d'analyser en profondeur, l'évaluation des attributs et leur perception, le modèle de détermination de la pertinence est appliqué. La collecte de données a été réalisée au moyen d'une enquête par questionnaire utilisant un échantillon de commodité de touristes internationaux et de la communauté locale, avec un total de 775 enquêtes valables. Les résultats de l'application de l'analyse de détermination de la pertinence (RDA) montrent qu'il existe deux types d'attributs : les attributs de base à impact élevé et les attributs de moindre importance.

Des chercheurs ont déjà appliqué des expériences de choix pour estimer la valeur des musées. L'application des expériences de choix est proposée comme une méthodologie pour évaluer les attributs et obtenir des informations sur les préférences des visiteurs (Orea-Giner et al., 2019). Cette méthode a été appliquée au musée de la Galleria Borghese (Rome, Italie), en identifiant trois attributs différents (frais d'entrée, activité de conservation et politique d'accès, et services

supplémentaires) (Maddison et Foster, 2003). Le Discovery Museum (dans le nord-est de l'Angleterre) a également été analysé selon cette méthode (Kinghorn et Willis, 2008). Les résultats présentés dans ce document développent les informations concernant les attributs des musées et introduisent également l'application de la VDP. L'application des résultats de la VDP pour promouvoir la durabilité dans le tourisme a déjà été testée auparavant (Oppewal et al., 2015), tout comme la méthode des expériences de choix (Pereira et al., 2016). L'analyse de la littérature nous permet de dériver dans la proposition suivante un modèle d'analyse qui serait la base de l'expérience de tourisme durable. Il découle de l'interrelation entre le modèle de détermination de la pertinence (Mikulić et al., 2017) et le modèle de qualité de service, de valeur, de satisfaction et d'intentions comportementales (Oriade et Schofield, 2019).

Les attributs ayant la valeur subjective la plus élevée perçue par les touristes et les résidents interrogés sont le lieu, la collection permanente, les expositions temporaires et le prix du billet. Ces résultats montrent qu'il existe certaines différences entre la perception et l'appréciation des attributs par les résidents et les touristes interrogés. Les résultats fournissent des informations précieuses qui peuvent être appliquées dans la pratique pour concevoir des stratégies de durabilité économique et socioculturelle visant à améliorer la prise de décision dans la gestion des musées.

Cette recherche propose le développement d'une méthode applicable aux musées et aux institutions culturelles et son application à une étude de cas, le Musée national Thyssen-Bornemisza.

La première contribution de ce travail est l'analyse et la comparaison des méthodes proposées dans le domaine de l'économie de la culture pour analyser les musées. On constate que la méthode qui permet d'étudier la valeur économique subjective et les impacts socioculturels des musées est mixte. Cette méthode consiste à appliquer les expériences de choix et la volonté de payer.

La deuxième contribution de ce travail est la proposition de méthodes précédentes pour pouvoir élaborer le questionnaire de manière objective puisque la sélection de celles obtenues pour son élaboration est une limitation de la méthode des Expériences de choix et de la volonté de payer. Elle est donc complétée par les phases précédentes. Tout d'abord, la méthodologie de Text Mining pour l'identification des attributs des musées à partir de l'eWOM est appliquée. Ensuite, les attributs détectés sont analysés par une table ronde à laquelle participent des experts et des acteurs clés. Troisièmement, le questionnaire est conçu sur la base des résultats obtenus lors des phases précédentes.

La contribution suivante est la proposition d'indicateurs subjectifs pour analyser le champ d'application socioculturel. Les indicateurs proposés tiennent compte à la fois des impacts générés sur les touristes et sur la population locale. De cette façon, il est proposé d'évaluer les effets que le tourisme crée sur la communauté locale, tant du point de vue négatif que positif. Des aspects tels que le rôle des musées dans le développement et la promotion des stratégies touristiques liées à la culture locale de la destination touristique sont également pris en compte. En outre, la qualité des musées et leurs efforts dans le développement d'activités éducatives sont également pris en compte.

Une autre contribution est l'application des méthodes d'Industry 4.0, qui facilitent une meilleure compréhension des résultats obtenus par les musées. Cela se traduit par la mise en œuvre du Text Mining pour détecter les attributs des musées par le biais des revues TripAdvisor en tenant compte de l'étude précédente de Zanibellato et al. (2018), en complétant la liste des attributs présentée par ces auteurs et en effectuant une analyse approfondie sur une seule étude de cas. On peut donc affirmer que l'identification des attributs à l'aide de cette méthode facilite la compréhension de la perception des touristes sur le musée. Les résultats obtenus permettent d'améliorer la compréhension de la valeur subjective perçue par les touristes et d'améliorer la prise de décision des professionnels des musées.

Les attributs détectés dans cette analyse préliminaire apportent également une contribution académique puisqu'ils facilitent une analyse plus approfondie et permettent d'appliquer cette identification des attributs à d'autres études de cas. En outre, cette identification des attributs facilite le développement de stratégies de co-création dans les musées.

L'application de la méthode proposée dans une étude de cas est une autre contribution de cette recherche. Cela permet de vérifier la validité de la méthode et ses limites. Il est possible de fournir un exemple d'application à la communauté scientifique.

La méthode proposée est liée à la durabilité puisque l'identification des attributs permet l'application de stratégies innovantes telles que la co-création ainsi que la compréhension de la perception des populations locales et des touristes. L'expérience de choix et la méthode WTP permettent d'analyser l'évaluation des clients et le comportement de consommation durables.

Une autre contribution consiste à analyser la valeur subjective perçue par les touristes et la communauté locale sur les attributs des musées. Cela permet de comparer et de détecter s'il existe des différences entre les attributs reconnus par les deux segments.

Enfin, la dernière contribution consiste à appliquer le modèle d'analyse de détermination de la pertinence (RDA) combiné au modèle de qualité de service, de valeur, de satisfaction et d'intentions comportementales. De cette manière, il est possible d'identifier les attributs et d'interpréter leur valeur sur la base des résultats des questionnaires réalisés.

Différentes applications pratiques sont détectées après la réalisation de cette recherche. Le concept de durabilité comprend quatre dimensions : la durabilité sociale, culturelle, environnementale et économique. Comme elles sont liées au développement de différentes activités muséales et à la tendance à élaborer des

politiques de développement durable, la durabilité doit être prise en compte dans les activités du système touristique, en particulier dans le tourisme culturel et les visites de musées, car elles sont liées au concept de durabilité culturelle (Pop et al., 2014, 2016).

Différentes associations nationales, ainsi que des organismes internationaux tels que l'ICOM et l'OCDE, encouragent la préparation de rapports et de guides pour favoriser les actions liées au développement durable dans les musées. Toutefois, ces documents ne sont pas obligatoires, de sorte que dans de nombreuses institutions muséales, ces concepts ne sont pas appliqués dans leur intégralité ou ne sont pas considérés comme une partie essentielle du développement de leur activité.

La proposition d'appliquer des systèmes et des normes de gestion durable est un défi pour des institutions telles que les musées, car elles doivent également s'engager sur la qualité du service et l'expérience du visiteur. La plupart des musées disposent de ressources économiques obtenues grâce à des fonds publics et privés, notamment les droits d'entrée des visiteurs qui, dans de nombreux cas, représentent une part importante de leur financement. Les touristes et la communauté locale doivent être impliqués dans les activités des musées (Gravari-Barbas & Fagnoni, 2015 ; Falk & Dierking, 2013). Par conséquent, leur durabilité sociale est fondamentale pour le développement, l'appréciation et la prise en compte de l'image de marque du musée.

Par conséquent, les musées doivent avoir des objectifs mesurables, pertinents, spécifiques, réalisables et définis dans le temps (Doran, 1981) en matière de développement durable. En tant qu'institutions ouvertes au public, elles ont la possibilité de diffuser et de promouvoir des connaissances axées sur la durabilité, elles ont donc une grande responsabilité qu'elles doivent considérer et mesurer en permanence afin d'améliorer la prise de décision des musées.

L'application de la méthode proposée dans différents musées peut fournir des données fondamentales pour l'élaboration de stratégies dans les musées. En ce qui concerne les contributions relatives à l'analyse des résultats, il est essentiel de souligner qu'à travers l'étude des examens réalisés dans TripAdvisor, un point clé est détecté, à savoir la perception du musée comme un musée privé par les touristes. L'évaluation subjective de ces attributs montre que les attributs les plus appréciés par les touristes dans l'analyse eWOM font partie de l'offre de base : la collection permanente et les expositions temporaires. Cependant, les moins appréciés correspondent aux services périphériques, y compris le prix du billet. Ces premiers résultats sur l'évaluation des attributs sont essentiels pour élaborer des stratégies visant à attirer l'attention sur les attributs les moins bien notés. L'analyse des données de l'eWOM et la table ronde facilitent l'analyse des faiblesses de l'étude de cas sur les musées. Ainsi, la possibilité de mener des stratégies de co-création est détectée, en tenant compte des résultats obtenus.

Vous trouverez ci-dessous plusieurs recommandations concernant les résultats de l'analyse des études de cas. Sur la base des résultats finaux obtenus et de l'application du modèle RDA, les attributs suivants sont identifiés comme fondamentaux dans l'offre du musée. Les attributs considérés comme des attributs fondamentaux à impact plus élevé sont l'emplacement, le bâtiment, la collection permanente, les expositions temporaires, le personnel et l'identité. Par conséquent, pour que ces attributs continuent à être évalués positivement, il est recommandé d'introduire les stratégies suivantes liées à la durabilité.

Premièrement, il est recommandé de continuer à promouvoir la collection permanente sans qu'elle soit éclipsée par les expositions temporaires. Pour cela, nous proposons des visites guidées thématiques basées sur des œuvres spécifiques du musée.

Deuxièmement, il est proposé de développer les activités de formation du personnel. Ces activités de formation auraient pour but d'analyser les différents attributs du musée et de mieux comprendre les moins valorisés pour les mettre en valeur grâce

à la collaboration et à la participation active du personnel dans le processus de co-création.

Finalement, une autre mesure d'application pratique consiste à créer une stratégie centrée sur l'identité du musée par laquelle la population locale est impliquée et la propriété publique du musée est transférée. Cela favorise l'amélioration de la perception du musée dans la communauté locale. Elle garantit également sa valorisation positive du point de vue socioculturel.

En ce qui concerne la classification des attributs de faible importance ou moins bien évalués, nous localisons les activités, l'encombrement, le musée public, les services de restauration, la boutique de cadeaux, la file d'attente, l'application mobile et le prix du billet. Après analyse des résultats, il est recommandé d'améliorer l'image du musée public et de l'espace ouvert en incluant la population locale dans la programmation des activités et promouvoir la co-création. Sur le service de restauration, il est prévu d'offrir des services combinés pour renforcer cet attribut. En ce qui concerne le prix du billet, il est souhaitable d'établir une réduction de prix plus importante pour les personnes qui remplissent les conditions, comme les étudiants. Établir davantage d'heures d'ouverture gratuites.

Enfin, suite à l'étude des résultats de l'Expérience de choix et de la VDP, les musées peuvent proposer un forfait comprenant la visite d'expositions temporaires avec un parcours personnalisé d'une heure. Cette option intéresserait les touristes. Le prix recommandé sur la base des résultats est de 17 euros par personne. Par ailleurs, la population locale serait intéressée par une option qui comprend la visite de la collection permanente, des expositions temporaires avec l'inclusion de services de restauration. Le consentement à payer est de 17 euros.

Au cours du développement de cette thèse, différentes limites ont été identifiées. La première limitation de cette thèse de doctorat a été la détermination de la méthode. L'utilisation des expériences de choix et de la VDP a été abordée dans des études précédentes. Il était nécessaire d'apporter une amélioration dans la sélection des

attributs avant la conception des questionnaires pour la rendre objective. Cependant, l'utilisation de l'analyse eWOM est également une nouvelle limitation due à la collecte de données non révélatrices et à l'absence de possibilité de détecter les faux commentaires.

La deuxième limitation est l'utilisation d'une seule table ronde. Il serait plus pratique d'avoir trois tables rondes avec différents experts et acteurs pour évaluer les résultats de l'analyse par Text Mining. En outre, les experts sélectionnés sont issus du niveau national (Espagne), ce qui constitue également une contrainte importante.

La troisième limitation est liée à la diffusion du questionnaire ; il faut noter qu'elle a été réalisée sur une période de quelques mois où les visiteurs de Madrid n'étaient pas très nombreux. En outre, elle coïncide avec la célébration du bicentenaire du Musée national du Prado, ce qui modifie le profil des visiteurs du musée. C'est pourquoi le nombre de réponses des touristes nationaux est plus important.

Enfin, la principale limite de cette thèse de doctorat est l'utilisation d'un recueil d'articles. La soumission des articles est très compliquée en raison du manque de temps pendant la durée du programme de doctorat.

La méthode proposée permet de l'appliquer dans d'autres musées et institutions culturelles. Par conséquent, elle peut être utilisée pour évaluer d'autres études de cas et recommander des améliorations et des changements dans la méthode au cours de son développement.

ABSTRACT

ABSTRACT

Museums need to apply sustainable criteria in order to evaluate performance and improve results. The identification of museum attributes is essential to analyse the different factors that attract visitors and study its situation to improve efficiency in museums, as could be the use of funds for developing a marketing campaign in order to attract visitors. Attribute evaluation provides an understanding of the perceived quality and subjective value of the museum visitor experience. To this respect, it is essential to consider also visitor behaviour and satisfaction in order to be able to encourage innovation and sustainability in museums. The use of big data applied to tourism research is vital due to the consideration of the opinion of museum visitors. The opinion and perception of tourists is a crucial factor derived from Electronic Word-of-Mouth (eWOM). Content analysis facilitates detecting attributes perceived by tourists in order to improve their experience. These attributes detected previously are evaluated in a round-table discussion with experts and key stakeholders. The use of Industry 4.0 tools facilitates the understanding of museum performance and the analysis of crucial information.

This doctoral dissertation aims to determine a methodological model that allows the analysis of the economic and socio-cultural value of museums and to proof it by appling this methodological model to a case study. The methods proposed are Choice Experiments method, Willingness to Pay and Subjective Quality Indicators. It allows us to evaluate the functioning of museums. Therefore, the proposed methodological model takes a mix-method approach by considering both. The application of the proposed method makes it possible to know precisely the impact of the initiatives and proposals developed by museums. These methods can be extrapolated and used by the scientific community to do research in the performance of museums and the process of decision-making.

The case of study is Thyssen-Bornemisza Museum (Madrid, Spain). The results obtained are key to create co-creation strategies. The results obtained offer precious information to carry out innovation processes such as co-creation in order to improve

the decision-making processes from museum management perspective. These results show that there are substantial differences between the perception and appreciation of the attributes by the local community and the tourists. The results provide valuable information that can be applied in practice to devise strategies for economic and socio-cultural sustainability aimed to improve decision-making in museum management.

SUMMARY

SUMMARY

FIGURES

TABLES

1 INTRODUCTION

CHAPTER 1: INTRODUCTION

1.1. RESEARCH MOTIVATION

The germ of this doctoral thesis was the VII School of Art and Heritage 'Marcelino Sanz de Sautuola' (UIMP, Santander, Spain) focused on the Economics of Culture. It was directed by Dr Pilar Fatás, director of the National Museum and Research Centre of Altamira (Santillana del Mar, Spain). Research on the economic value of museums related to different methods was presented and based on the interventions made by researchers; a topic of interest is detected for further research.

After a preliminary phase of literature search and reading of research articles, books, museum reports and other secondary sources, the subject of this doctoral thesis is raised. This is because a research topic is located on which a new approach and a combination of different research and analysis methods can be provided since until then, the perspective was only quantitative.

1.2. FIRST ARTICLE. TOURISM AND SUSTAINABILITY: ANALYSIS OF ITS CONNECTION AND APPLICATION IN MUSEUMS

The first chapter includes a previous version of an article accepted for a publication in the book entitled "Arqueología, Historia y medio ambiente II: la sostenibilidad" coordinated by Koldo Trápaga Monchet and Luis Alberto Polo Romero that will be published by Dykinson.

ABSTRACT

Museums, as cultural institutions are introducing concepts such as sustainability and quality in their management. As a result of the connection of museums with the tourism sector, our approach facilitates to make an analysis of the interrelationship between the concept of sustainability in museums, and sustainable tourism is being carried out. The concept of sustainability includes economic, socio-cultural and

environmental sustainability, with museums being key institutions for implementing and developing sustainable strategies. This article aims to identify the influence of sustainability in museums' management. For reaching this objective, we carry out a review of the literature focused on this area. The analysis of reports published by international entities is carried out in order to clarify the sustainability measures proposed in museums as well as their state of development and evolution. In the case of Spain, Standard UNE 302002 of the Spanish Association for Standardisation and Certification is analysed, as it is the first standard of its kind to focus on innovation and the recognition of the quality of museums as tourist resources. The analysis of these different sources shows the interest and need to apply sustainability measures in museums, as well as their need to participate in the tourism system betting on sustainable measures and the implementation of sustainability strategies.

Keywords: museums, sustainabiity, sustinaible tourism, quality.

1.1.1. INTRODUCTION

Museums are linked to tourist activity since they are considered to be resources that form part of the tourist offer and promote visits to tourist destinations. The concept of sustainability, which includes economic, socio-cultural and environmental impacts, is applied in museums in order to promote the responsible use of resources, as well as to propose management strategies and control of results in order to improve decision-making with respect to museum management.

Sustainable Tourism has had a variety of approaches since the 1960s, as well as definitions (Bramwell et al., 1966; Butler, 1991; 1993; 1999; Liu, 2003; Choi & Sirakaya, 2006; Tsaur et al., 2006; Ruhanen, 2008; Buckley, 2012; Coccossis, 2016; Higgins-Desbiolles, 2018). The concept of "sustainability" is highly controversial because it is applied in a variety of areas and often causes confusion because of its

link to solely economic sustainability. The foundations of Sustainable Tourism were laid in the Earth Summit in Rio de Janeiro (1992) and in the Agenda 21 program.
Firstly, Butler (1993, p.29) defines Sustainable Tourism as "a development in which tourism is promoted and maintained in an area (community and environment) in such a way and at such a scale that it can remain viable for an indefinite period, while not altering the environment (human and physical) in which it operates in a way that does not impede the development and well-being of other activities and processes".

Furthermore, Butler (1999) insists on the importance of sustainable tourism but not by ensuring the continuity of these respectable forms of tourism with the local community, the small scale and the environment, but rather on how to make mass tourism as sustainable as possible.

Secondly, Liu (2003) takes a critical approach to the concept of Sustainable Tourism and sustainable development. He considers that sustainability, Sustainable Tourism and sustainable development are terms that often lead to confusion. Furthermore, he highlights that Farrell (1999) defines the 'trinity of sustainability' as the transparent integration of economy, society and environment.

Thirdly, the UNWTO (2017) defines sustainable tourism as 'tourism that takes full account of current and future economic, social and environmental impacts to meet the needs of visitors, industry, the environment and host communities'. Therefore, the UNWTO (2017) specifies that Sustainable Tourism consists of:

1. 'To make optimal use of environmental resources, which are a fundamental element of tourism development, by maintaining essential ecological processes and helping to conserve natural resources and biological diversity".
2. Respecting the socio-cultural authenticity of host communities, conserving their cultural and architectural assets and traditional values, and contributing to intercultural understanding and tolerance'.
3. 'To ensure long-term viable economic activities, providing well-distributed socio-economic benefits to all actors, including stable employment and

> income-earning opportunities and social services for host communities, and contributing to poverty reduction'.

Therefore, the definition shows the intention to apply a series of knowledge to tourism planning so that those objectives proposed in the definition can be achieved. The definitions converge to focus on the importance of achieving environmental, socio-cultural and economic sustainability through tourism.

McIntosh and Goeldner (1999) define tourism planning as the rational process of anticipation and decision making about future actions that allows for the management and optimisation of beneficial effects and the minimisation of adverse ones. Therefore, sustainable tourism planning would also be related to sustainable tourism planning.

With regard to sustainable tourism planning, Hall (2008) highlights that tourism planning is intrinsically related to Sustainable Tourism.

Velasco (2010, p. 36) defines it as 'an ordering process that attempts to define lines of action that allow previously established objectives to be achieved'. Furthermore, Blas and Fabeiro (2004, p.109) highlight that 'tourism planning implies a high level of social control of activities and their effects on resources and also, on the other hand, the objective that most of the economic benefits are transferred to the community as a whole in its various forms: increase in income and revenue, creation of employment, equipment, infrastructure, etc. In this sense, the planning of tourist activity deberá should be understood as part of the local development strategy, integrated into the productive system and in no way constituting an isolated and autonomous element in the territory'.

Therefore, sustainable tourism planning can be defined from the above proposals as the process that rationally allows the creation of a tourism implementation strategy that considers environmental, socio-cultural and economic sustainability as a basis, so that this strategy allows for the optimisation of favourable effects and the minimisation of unfavourable ones. In relation to this planning, indicators for sustainable tourism are proposed, highlighting the proposal of Lozano-Oyola et al.

(2012). By dividing the indicators into three dimensions; the first of these is focused on social aspects, with the analysis of basic aspects such as the socio-cultural effects of tourism on the host community, local public safety, the conservation of cultural heritage, the effect on the local population structure, the destination's social load capacity, effects on the well-being of the local population and, finally, the development and improvement of the urban landscape. Regarding the indicators of the economic dimension, they propose indicators related to the economic benefits derived from tourism from the local community and tourist destination, sustainable tourist satisfaction, control development, the provision of a variety of experiences through the supply of tourist facilities, seasonality, tourism-related employment, transport, competitiveness of the destination, tourist routes, cultural investment and agglomeration (Oyola et al., 2012, p. 662-664).

1.1.2. MUSEUMS AS A TOURIST RESOURCE: FROM A TRADITIONAL VISIT TO A SUSTAINABLE EXPERIENCE

According to the International Council of Museums of UNESCO (ICOM), the last definition of a museum was set in 2007 and it is ‘a non-profit, permanent institution, at the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and recreation’. However, the need to broaden this definition and to adapt it to the current situation is detected, and ICOM (2019) proposes the following definition for voting: 'museums are democratizing, inclusive and polyphonic spaces for critical dialogue about the past and the future. Recognizing and addressing the conflicts and challenges of the present, they preserve artefacts and specimens for society, safeguard diverse memories for future generations, and ensure equal rights and equal access to heritage for all peoples. Museums are non-profitmaking. They are participatory and transparent, and work in active collaboration with and for diverse communities to collect, preserve, research, interpret, exhibit, and expand world understandings, with the purpose of contributing to human dignity and social justice,

global equality, and planetary well-being. Therefore, one of the bases of this concept is its openness to the public, as well as its link to the concept of sustainability.

Tourism promotes museum visits but, in turn, museums also promote and produce tourism (Gravari-Barbas & Fagnoni, 2015). Tourism, as one of the most important elements of leisure and recreation activities, is connected to society's behaviour of discovering, getting to know and visiting museums within tourist activity, going from being an element of distraction for minority elite to mass consumption. In this context, museums occupy a key position in the process of commodification of culture, where content and exhibition capacities take precedence over the permanent collection (Herrero Prieto et al., 2013). A large part of the cultural offer of museums is oriented towards temporary exhibitions which have an increasing influence on the visitor experience and have become tourist resources with a high rate of demand (Vacas Guerrero, 2011).

In this visitor experience, the influence of the museum's brand image can be highlighted, which is part of an attraction that encourages travel to visit museums (Gravari-Barbas et al. 2018). The museum visitor experience has an influence on the sustainability concept of the museum. Therefore, market orientation, prestige, reputation, quality and its economic performance and profitability are all factors related to the sustainability of the museum (Recuero et al., 2017).

In relation to the consumption of these activities, there has been a change of paradigm, with the museum no longer being an institution that focuses on research but rather on attracting visitors. However, the visit is no longer contemplated with the same characteristics, but rather as an experience. Falk & Dierking (2013) analyse the experience of visiting museums, identifying three basic contexts. The first is the personal context, the second is the socio-cultural context and the third is the physical context. The personal context influences the way in which the visit is experienced due to the knowledge the visitor has, his individual interests, his attitudes and also his motivation for the visit. Regarding the socio-cultural context, it is linked to aspects such as ethnicity, socio-economic status, country of origin, among other factors.

Thus, according to the visitor's socio-cultural profile, their experience will vary. Finally, the physical context refers to the relationship between the building and the exhibits.

Today's museology must face up to the changes that have taken place in recent decades, promoting sustainability, creating a social strategy that will enable them to obtain a positive tourist impact and promote the economic and social development of the cities where they are located (Hernández, 2018). Museums not only produce economic benefits, but also have an impact on the local community, at a regional and national level (Throsby, 2001).

Ayala Aizpuru et al. (2019) identify the challenges facing museums today, stressing that there is a need to create an approach from two different perspectives: social and economic. Therefore, museums have four challenges. Firstly, to foster their links with the local community by implementing strategies focused on audience development. Secondly, communication and marketing are two basic factors derived from ICOM's new proposed definition of a museum (2019), as one of its key points is dialogue. Thirdly, the use of technology, a concept related to the previous point. Fourthly, the search for alternative sources of financing and the training of museum professionals. Finally, they also consider sustainability and accessibility as a challenge. Initiatives focused on environmental sustainability such as the regulation of energy consumption stand out from this challenge. However, the concept of sustainability includes other measures that are compatible with museums.

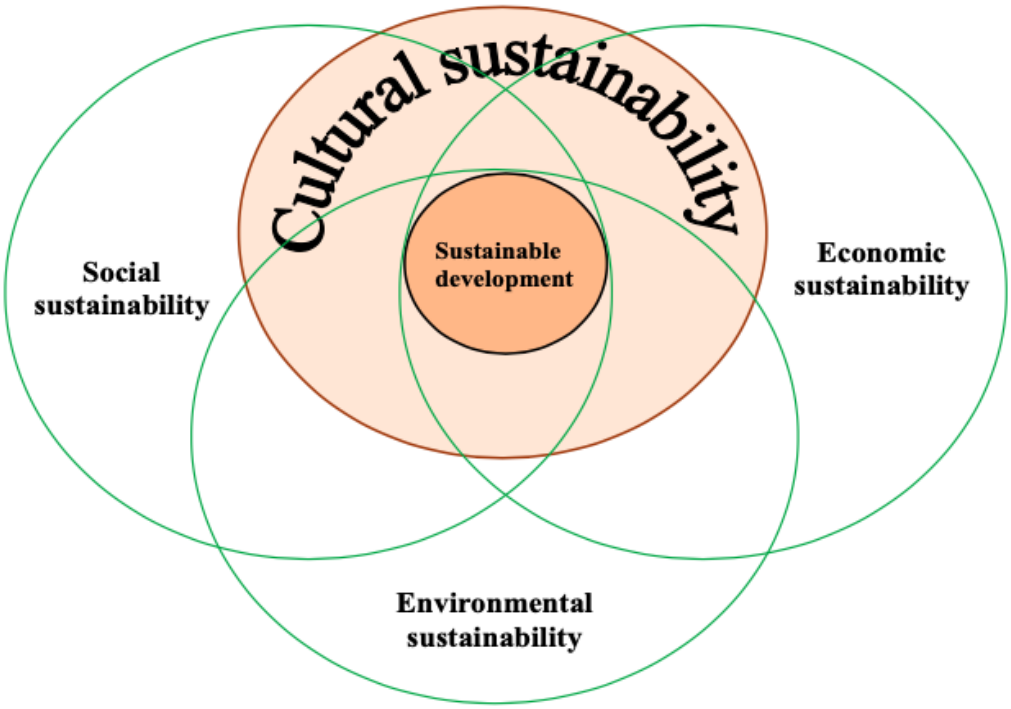
1.1.3. CONCEPT OF SUSTAINABILITY AND ITS APPLICATION IN MUSEUMS

The concept of sustainability in museums is defined as the interaction between economic, social and environmental sustainability in order to achieve cultural sustainability and sustainable development (Pop et al., 2019). Museums have the potential to contribute to the sustainability of local communities as well as the planet (Falk & Dierking, 2013). In this way, they favour the promotion of companies related

to the cultural field, as well as the integration of social groups (Hierro & Martín, 2013). In addition, museums have a positive effect in the fight against the seasonality of tourism, since they encourage the visit of tourist destinations at any time (Zaraté & García, 2017).

The sustainable development of museums allows the institution to achieve its mission and management objectives, i.e., even if it is a non-profit institution in the case of a public museum, it must consider the principles of sustainable development and adapt the use of its resources towards sustainability (Pop & Borza, 2014).

Figure 1. The pillars of sustainable development in museums



Source: Pop et al., 2019, p. 15.

Museum professionals must focus on the long term. As publicly funded public cultural institutions, they must consider the four pillars of sustainability linked to museums (see Figure 1): cultural sustainability, economic sustainability, environmental sustainability and social sustainability (Pop et al., 2019; Stylianou-Lambert et al., 2014).

Museums have an ecosystem formed by culture, economy and society, so that through these structures and resources it is possible to achieve sustainable development (Pop et al., 2019). Sustainability in museum management is connected to the long term with respect to different multidimensional areas and the participation of multiple actors, so that the creation of value for users generates value for the museum, for the cultural heritage and for related actors (Pencarelli et al., 2016). The economic resources of the museums are affected based on their size and collections, that is, small museums tend to be less attractive than large ones, so they receive less economic investment from the different actors involved, such as governments and sponsors, in addition to lower ticket sales (Pop & Borza, 2016). Therefore, the cultural policies implemented by the museums should consider their design based on the concept of sustainability, which increases the quality of the visitor's experience.

1.1.4. APPLYING THE CONCEPT OF SUSTAINABILITY IN MUSEUMS

The implementation of the concept of sustainability in museums is related to the publication, in the first place, of guidance and descriptive reports on strategies to promote such implementation. Therefore, different organisations have published reports and guides aimed at promoting sustainability in museums (see table 1). These reports coincide in the definition of sustainability based on the pillars of economic, socio-cultural and environmental sustainability.

Table 1. Main reports published by sustainability-focused organisations and museums

REPORT	KEY FACTORS
Museum Australia National Office (2002)	Analysis of the concept of sustainable development and its application in museums. Efficient use of human

	resources, management, proposals for the use of sustainable exhibition materials, application of ICT in museums and other aspects such as the selection of suppliers for the museum shop.
Museums Association (2008)	They present the main sustainability factors applicable in museums, taking into account aspects such as the local and global community, collections management, museum staff and management.
American Alliance of Museums (2013)	It focuses its proposal on raising a series of options aimed at making museums "more sustainable".
Canadian Museums Association (2015)	The guide focuses on first developing a definition of sustainable development applicable to museums, based on real examples of the implementation of sustainable development policies in museums (British Museum, American Museum of Natural History, among others).
Julie's Bicycle (2017)	They analyze 12 key themes focused on environmental sustainability for application in museums by proposing guides, tools and networks available to apply the different proposals for sustainable practices.
ICOM & OECD (2018)	Key concepts such as economic development and innovation, urban regeneration and local community

	development, cultural, educational and creative development, inclusion and the management of local government/museum relations to foster local development are analysed.

Source: Own elaboration, 2019.

Museum Australia National Office propose in 2002 a guide to applied it, with the main objective to propose best practices oriented to improve the decision-making process. They consider that museums should integrate the economic, social, environmental factors towards the decision-making process to reach a more effective and efficient museum by properly combining human, natural and financial resources (Museum Australia National Office, 2002).

Museums Association (2008) highlights that museums present a wide variety of resources on which they depend to carry out their activities. Thus, financial resources, local community participation, staff, building and natural resources, among others, stand out. Therefore, museums are at risk and can be unsustainable if they use different resources inappropriately. They must therefore take a long-term view of all these resources and their efficient use.

The American Alliance of Museums report (2013) presents the main actions that a museum should develop in order to make it "more sustainable". One of the proposals is to implement an existing system of standards or criteria from different systems that are applicable to the museum, so that it generates little risk to the museum as it is already implemented in other organisations. They also propose the creation of a specific system for the museum, taking into account its characteristics.

The guide proposed by the Canadian Museums Association (2015) highlights the bases of sustainable development policies applicable to museums, highlighting the following points (p.20):

- They must be adapted to the values and mission of the museum.
- They have to be developed in conjunction with the actors involved.
- The staff must be informed.
- They must be made available to the general public.
- They must incorporate continuous improvement measures.
- They must promote pollution prevention, health and safety both at work and during the visit.
- Develop and incorporate realistic, clear and measurable objectives for each dimension of sustainable development.

Like the Canadian Museums Association's guide, the report developed by Julie's Bicycle (2017), highlights the importance of developing sustainable actions in museums for different actors, such as administrators, board, management, staff, visitors and audiences, local communities, partners, investors, sponsors, artists and collaborators, suppliers, academics, scientists, researchers, students, legislators and administrators and, in general, the cultural sector.

ICOM & OECD (2018) present a guide through which they propose different actions that museums can develop in order to promote economic development and innovation, urban regeneration and community development, cultural development, education and creativity, inclusion, health and welfare and, finally, key policies for local government and museums (see table 2).

Table 2. Summary of the guide "Culture and local development: maximising impact

TYPE OF MEASUREMENT	**MUSEUM ACTIVITIES**
Economic development and innovation	• Relevant offer of cultural services outside and inside the museums in order to attract tourists and local visitors • Facilitate knowledge and creativity by creating

	opportunities for artists, entrepreneurs, designers and craftsmen.
Urban regeneration and community development	• Consider the geographical position of the museum and its surroundings as part of the urban cultural fabric. • Develop activities that contribute to social capital. • Become the centre of a creative district. • Support ecological initiatives.
Cultural development, education and creativity	• Contribute to local and educational development. • To promote the dissemination of creative skills through the presentation and interpretation of the collections.
Inclusion, Health and Wellness	• Consider the role of museums in welfare and facilitate it. • Create long-term partnerships with social actors in areas such as education, health, inclusion and reintegration.
Key policies for local government and museums	• Long-term development of sustainable actions to strengthen cooperation with local governments and social actors. • Sustainable and preventive conservation.

	• Participate in relevant partnerships with other museums, cultural and non-cultural institutions to increase the positive impact of the museum's activities or reduce their costs. • Define and design initiatives for the local community.

Source: Adaptation based on ICOM & OECD (2018).

Based on the different proposals made by organizations at a national or international level, the ICOM & OECD guide (2018) presents a vision that connects with the quality of the visitor's experience by proposing actions focused on sustainability but linked to the offer of the museum itself and encouraging the development of connections with the different social actors involved.

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1.3. RESEARCH QUESTIONS AND STRUCTURE

This doctoral thesis presents six different chapters, the first being an introductory chapter, where the research questions are also posed. Each chapter consists of an article, containing the basic structure of a paper: introduction, literature review, methodology, results, conclusion, discussion and references.

The chapter two aims to determine a methodological model that allows analysing the economic and sociocultural value of museums perceived by residents and tourists to maintain and improve the decision-making process in order to achieve sustainability made by professionals of museums. The research questions are:

RQ1. How does economic of culture methods could contribute to museum performance analysis?
RQ2. Which method is relevant to applied to museums?
RQ3. Could these types of methods help to improve sustainability in museums?
RQ4. What is the connection between sustainability in museums and cultural tourism? Is it important to include it in our method?
RQ5. How the method selected could be improved for facilitating its application?

The chapter 3 aims to determine a method to identify the museum attributes and its value perceived by tourist by using Text Mining methodology (Zanibellato et al., 2018), Kim and Lee (2019) and Orea-Giner et al. (2019). This method is proved with a case of study (Thyssen-Bornemisza National Museum, Madrid, Spain), offering an exploratory analysis of results. The research questions arising from this objective are:

RQ1. Could the identification of museum attributes help to measure perceived value and improve museum decision-making?
RQ2. How does text mining method help to identify museum attributes?
RQ3. What are the attributes of Thyssen-Bornemisza National Museum perceived by tourists?

The chapter 4 aims to apply Industry 4.0 tools and the co-creation concept to gain in-depth insight into the museum customer experience through the attributes and its value perceived by the customer. The tool is used to validate the proposed model related to co-creation experiences in museums.

The first objective is to test an evolving method for identifying museum attributes and its relationship with co-creation experiences. The second objective is to use this evolved method for analysing a case of study (Thyssen-Bornemisza National Museum, Madrid, Spain) in order to test it. Therefore, this research tries to answer to the following research questions:

RQ1: How do the Industry 4.0 methods help to understand museum attributes?

RQ2: How does attributes analysis help to promote co-creation in museums?

RQ3: How do eWOM and the roundtable make it easier to identify museum attributes?

The chapter 5 offers an exploratory approach about an attribute analysis model adapted to museums in order to understand customer valuation and its connection with sustainable management strategies. This model adapted is tested on a case of study, Thyssen-Bornemisza National Museum (Madrid, Spain). It is located at the Paseo del Prado, an area where other museums are located such as the Museo Nacional del Prado, Museo Nacional Centro de Arte Reina Sofía and National Museum of Anthropoloy. This museum had 927.907 visitors in 2018 (Thyssen Bornemisza-National Museum, 2018) and the majority of visitors are international (64%) with respect to national (36%) (Thyssen Bornemisza-National Museum, 2018). The main characteristic of this museum is that it is a public museum that holds a competition for the hiring of communication, marketing and public relations services, with a budget of 30,000 euros in 2016 (Thyssen Bornemisza-National Museum, 2016).

The research questions of our work arising from this objective are:

RQ1. How does a model based on attributes help to improve sustainable museums management?

RQ2. How does the choice experiment method allow to analyse sustainable customer valuation and consumption behaviour?

RQ3. What is the subjective value of museum attributes perceived by tourist and the local community (Madrid residents)?

RQ4. Are there differences between the subjective value perceived by tourists and the local community?

The last chapter includes conclusions, recommendations and future lines of research. Finally, the references related to this chapter are included and the annexes corresponding to the different articles present in this thesis.

2 SUSTAINABILITY, ECONOMIC VALUE AND SOCIO-CULTURAL IMPACTS OF MUSEUMS

CHAPTER 2: SUSTAINABILITY, ECONOMIC VALUE AND SOCIO-CULTURAL IMPACTS OF MUSEUMS: A THEORETICAL PROPOSITION OF A RESEARCH METHOD

Next chapter includes the Authors Original Manuscript corresponding to the published article in 'Museum Management and Curatorship' in 2019. The reference is: Orea-Giner, A., De-Pablos-Heredero, C., & Vacas Guerrero, T. (2019). Sustainability, economic value and socio-cultural impacts of museums: a theoretical proposition of a research method. *Museum Management and Curatorship*, 1-14.

This journal is indexed in Council for British Archaeology, Clarivate, EBSCOhost, Gale, OCLC, ProQuest and Scopus. Impact factor CiteScore (2019): 0.76 and SJR (2018): 0.378. Rank in 'Visual Arts and performing Arts' 25/433 (Q1), 'Business and International Management' 216/351 (Q2) and 'Tourism, Leisure and Hospitality Management' 80/102 (Q3).

ABSTRACT

Museums need to apply sustainable criteria in order to evaluate performance and improve results. This paper aims to determine a methodological model that allows the analysis of the economic and socio-cultural value of museums. The approach proposed is related to the local community and tourist's perception. The research supports that both the Choice Experiments method and the Subjective Quality Indicators are methods of interest for evaluating the functioning of museums. Therefore, the proposed methodological model takes a mix-method approach by considering both. The application of the proposed method makes it possible to know

precisely the impact of the initiatives and proposals developed by museums. This method can be extrapolated and used by the scientific community to do research in the performance of museums and the process of decision-making.

Keywords: Sustainability, cultural economy, museums, choice experiments, management indicators.

2.1. INTRODUCTION

The relationship between Economy and Culture is the result of a field of study in the 1980s called Cultural Economy (Greffe, 2010; Benhamou, 2011; Aguado et al., 2017). The concept of cultural economy is defined as "applying economic analysis to all the creative and performing arts, heritage and cultural industries, that are provided either publicly or privately; it also examines the economic organization of the cultural sector and the behaviour of producers, consumers and governments in this field" (Herrero Prieto, 2009, p. 37). Besides, the management of public resources allocated to cultural institutions like museums involves continuous measurement and review in order to reach conclusions regarding performance. In this way, the presence of museums leads to a series of impacts that are measured and analyzed (Kinghorn & Willis, 2008; Fonseca & Rebelo, 2010; Armbrecht, 2014).

The literature analysis also proves that museums are linked to Cultural Tourism because they are attractions located at tourist destinations that encourage visits (Santa-Cruz & López-Guzmán, 2017; Noonan & Rizzo, 2017; Zaraté & García, 2017).

Taking these considerations into account, the research aim of this paper is to determine a methodological model that allows analysing the economic and sociocultural value of museums perceived by residents and tourists to maintain and improve the decision-making process in order to achieve sustainability made by professionals of museums.

The specific research questions (RQs) arising from this objective are:

RQ1. How does economic of culture methods could contribute to museum performance analysis?

RQ2. Which method is relevant to applied to museums?

RQ3. Could these types of methods help to improve sustainability in museums?

RQ4. What is the connection between sustainability in museums and cultural tourism? Is it important to include it in our method?

RQ5. How the method selected could be improved for facilitating its application?

This article offers a literature review of Cultural Economy and methodologies in this field of study. It focuses on the analysis of museums to determine a model applicable to the study of museums.

In the realization of this research, secondary sources are used, developing a review of the literature and the state of the art of the methods used in the economy of culture. Through this in-depth analysis, a relation can be made to the field of tourism, where the heritage elements and, specifically, the museums, are essential resources. A subjective system of indicators has been designed to analyse the sociocultural impacts of museums perceived by residents and tourists.

The proposed model facilitates to understand the different causes of economic and socio-cultural impacts. Moreover, it helps improving decision-making in museum management and cultural policy.

Our contribution is twofold: first, we carry out an analysis of the different methods proposed from the economics of culture applicable to museum sustainability, and, second, we propose a method to estimate the value of museums in economic terms perceived by residents and tourists, and a subjective system of indicators to analyse the sociocultural impacts of museums perceived by residents and tourists.

2.2. LITERATURE REVIEW

2.2.1. WHAT IS THE ECONOMIC VALUE OF A MUSEUM?

This research is based on the concept of cultural industries and the definition of cultural economy proposed by Herrero Prieto (2009), who highlights the possibility of calling this field of study "Economy of Arts and Culture ", which contributes to specifying the field of study even more. The economic value of Cultural Industries and cultural goods presents several particular characteristics, since they represent an "intellectual or creative effort and are a synthesis of beauty with a symbolic, particular or collective burden" (Herrero Prieto, 2009, p.37).

Museums produce economic, social and environmental impacts, besides attracting cultural tourism, as it is discussed by different authors (Kinghorn & Willis, 2008; Fonseca & Rebelo, 2010; Plaza, 2010; Köster, Serrano & Marqués, 2011; Armbrecht, 2014). They contribute positively in the case of being well-managed, considering the different impacts and by using sustainability criteria (Zaraté &

García, 2017). Museums obtain private financing, which is connected to what visitors consume and contributes in a certain way to their economic performance. Therefore, revenue obtained from the sale of tickets is an important fact. The average price per ticket is calculated and multiplied by the number of visitors to the museum at a certain period. However, there is another series of visits, such as those carried out by educational institutions. Besides, museums provide tangible and intangible benefits (Greffe, 2010); the positive externalities generated by museums provide improvements in social welfare (Gómez-Zapata, Espinal-Monsalve & Herrero-Prieto, 2017).

Nevertheless, there are specific metrics, among which the following stand out. The economic impact studies (Plaza, 2010, Köster, Serrano & Marqués, 2011, Armbrecht, 2014) are composed by discounting of cash-flow or DCF (Plaza, 2007) and the methods of contingent valuation that comprise different sub-methods. First, the travel cost method (Fonseca & Rebelo, 2010). Second, the hedonic method of price. Third, the willingness to pay or WTP method (He et al., 2018; Gómez-Zapata et al., 2018). Forth, the willingness to accept (WTA), which can be combined with WTP. Finally, the Choice Experiment or CE method (Kinghorn & Willis, 2008; Choi, Ritchie, Papandreay Bennett, 2014; Gómez-Zapata, Espinal-Monsalve & Herrero-Prieto, 2017).

First, the economic impact studies are focused on measuring the monetary income produced by cultural goods. It is possible to highlight the concept of "blockbuster" related to the temporary exhibitions held by these star museums that are visited by masses and allows the museum to obtain large profits. The results of this

methodology mean that decisions can be made regarding which areas the price could be increased in order to obtain higher profits. However, this methodology has received various critics, among which its sensitivity to the area of study and the problem of opportunity cost is outlined. It can also become a significant barrier for museums that rely on public funding since it can be compared with other institutions in sectors that generate more significant economic impacts with the same public investment (Snowball, 2007).

Second, the discounting of cash flow (DCF) method focuses on the long term and consists of analysing the recovery of the investment during the life of the museum. It is therefore useful for museums that attempt to reactivate the economy, as it is the case of the Guggenheim Museum in Bilbao (Plaza, 2007).

Third, the contingent valuation method (MVC) is used to estimate the value, considering that there is a hypothetical market to conserve or expand a public good. There are several applicable methods (Snowball, 2007). First, the travel cost method consists of collecting information about the expenses incurred by visitors during their stay to visit the museum, since it is considered that the purpose of the trip is to visit the museum and the reason for travelling is not related to a leisure activity that can contribute value. Second, the hedonic price method analyses what consumers would be willing to pay for accommodation located in the museum area compared to doing it elsewhere. Third, the willingness to pay method that applies for analysing the public good in a hypothetical market. Fourth, the willingness to accept method, which

consists of how much it would be willing to accept in the same situation. Finally, the Choice Experiment method (CE), described with detail in the next pages.

To this respect, it is essential to highlight that the willingness-to-pay method is unusual because it focuses on the case of museums. This method presents a series of drawbacks regarding its application and subsequent analysis as there are consumers of public goods or services that benefit from them without providing consideration and using these goods excessively (Snowball, 2007).

Regarding the Choice Experiments (CE) method, it is a type of contingent valuation derived from Lancaster theory (1966). It consists in carrying out, through an inquiry, an analysis of the characteristics of the goods according to consumers' preferences, presenting a cost associated to each proposed alternative (Palma & Aguado, 2010). Regarding the application of this method to estimate the value of museums, Mazzanti's research (2003) is highlighted to evaluate the attributes of the Galleria Borghese Museum, located in Rome. This author analyses three levels of attributes: (1) admission charges; (2) conservation activity; (3) access policy and additional services (Snowball, 2007).

Scott (2009) proposes a model to estimate the value of museums, which is based on the application of a system of indicators. The values are divided into the following dimensions: (1) use value; (2) institutional value; (3) instrumental value. Therefore, the main advantage provided by the Choice Experiment method is that it means difficulties with the WTP and WTA methods can overcome, and, besides, it can evaluate each of the attributes of the museum independently. All of this allows obtaining concrete results that can be analysed afterwards through a system of

indicators for the management of museums (see table 3). This system of indicators influences the socio-cultural impacts perceived by the local population and tourists. Lozano-Oyola et al. (2012, p. 660) consider that an indicator system could improve "the sustainability of tourism activities in established destinations".

Table 3. Metrics, advantages, disadvantages and research focusing on museums using the methodologies of Cultural Economy

Metrics	Advantages	Disadvantages	Authors	Case studies
Economic Impact Studies	The analysis of numerical data provides results for museums to make decisions and it is possible to perform an analysis of the different areas to adjust prices and obtain more benefits (Snowball, 2007).	Problems arise because the concept of opportunity cost is not taken into account and may lead to comparisons with other sectors thatmore significante greater economic income, using this as an excuse to reduce public investment in museums (Snowball,	Plaza (2010)	Guggenheim Bilbao
			Köster, Serrano and Marqués (2011)	National Museum of Ceramics and Sumptuary Arts "González Martí"
			Armbrecht (2014)	The Nordic Watercolour Museum

		2007).		
Discounting of cash-flow	It enables us to know if the initial investment has been recovered.	It is difficult to access the necessary economic data. This data is long-term difficult to locate when there are several museums in the area that are generating income (Plaza, 2007).	Plaza (2007)	Guggenheim Bilbao

Travel cost method	It involves collecting information about the expenses incurred by visitors during their stay to visit the museum (Snowball, 200	Challenging to apply this metric in the case of museums since it is considered that the only reason for travelling is to visit the museum. However, this is not usually the general case (Snowball, 2007).	Fonseca and Rebelo (2010)	Museum of Lamego
WTP	Consider other types of values that go beyond economic value (Snowball, 2007)	The results may be affected by the opinions of visitors to museums that benefit from them without providing consideration, the so-called "free riders" (Bohm, 1972).	Gómez-Zapata et al. (2018)	Museo de Antioquia (Medellin, Colombia)

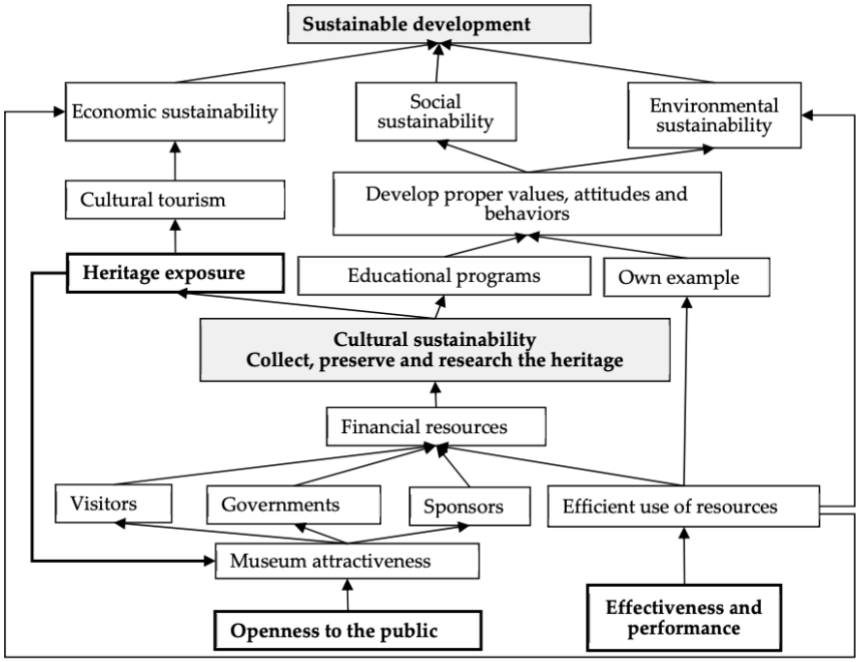
Choice Experiment	It enables multidimensional changes to be considered (Mourato and Mazzanti, 2002), to evaluate the attributes independently and has the same advantages as the WTP method but with improvements (Snowball, 2007).	It is complicated to consider the monetary value of use and non-use generated (Snowball, 2007).	Mazzanti (2003)	Galleria Borghese of Roma
			Kinghorn and Willis (2008)	Discovery Museum (England)
			Gómez-Zapata, Espinal-Monsalve and Herrero-Prieto (2017)	Antioquia Museum (Medellín)

Source: Prepared by the authors based on data resulting from the literature review, 2019

2.2.2. HOW ECONOMY OF CULTURE METHODS COULD PROMOTE SUSTAINABILITY IN MUSEUMS?

The concept of sustainability and its application in museums has been analysed in different publications (Pop & Borza, 2016; Pop et al. 2019). This way, sustainability in museums focuses on three interconnected pillars: economic, socio-cultural and environmental sustainability (Pop et al. 2019).

Figure 2. Sustainability and sustainable development in museums



Source: Pop & Borza, 2016.

Based on the analysis of Pop & Borza (2016), the openness of museums to the public is connected with the arrival of visitors, among whom we locate the local population and tourists. Within the proposed factors (see figure 2), it is possible to locate cultural tourism as one of the highlights regarding its connection with sustainability in museums. The relation was analysed in multiple researches in order to describe this form of tourism (Torre & Scarborough, 2017; Noonan & Rizzo, 2017; Gravari-Barbas, Avila-Gómez & Ruiz, 2018). Cultural tourism allows cultural industries to be developed and expanded by enhancing the latter's visibility, promotion and also by increasing income and sponsorships (Torre & Scarborough, 2017). Cultural resources promote different types of expenses: (1) direct expenses regarding the visit to the place or cultural event; (2) indirect expenses, related to tourism services; (3) induced expenses, which consist of expenses derived from

indirect expenses (OECD, 2005). Cultural tourism promotes economic and social development (Wickham & Lehman, 2015). Richards (2018, p. 5) highlights that “cultural tourism has long had an important economic dimension, particularly because the income derived from tourism is argued to help support the preservation of cultural heritage”. Mousavi, Doratli, Mousavi & Moradiahari (2016) remark that cultural tourism is a way of life.

Within Cultural Tourism-related resources, museums transmit the heritage that they hold from generation to generation by conserving the works and offering a social service that is usually financed with public funds from the State (Benhamou, 2011). In addition to the collections contained at museums, temporary exhibitions "are a basic instrument in the dissemination of the contents of museums" and have positive aspects such as "direct and indirect economic profitability, sociocultural profitability, conservation and disseminating heritage, experimentation and applying museography improvements and disseminating research" (Vacas, 2011, p.41).

2.3. A THEORETICAL PROPOSITION OF METHOD TO ANALYZE ECONOMIC AND SOCIO-CULTURAL IMPACTS OF MUSEUMS

After the literature review and a presentation of different methods that have been applied to measure museums from a perspective based on Cultural Economy, a selection of methods is made (Kinghorn & Willis, 2008; Fonseca & Rebelo, 2010; Greffe, 2010; Plaza, 2010; Benhamou, 2011; Köster, Serrano & Marqués, 2011; Armbrecht, 2014; Aguado et al. 2017). The Choice Experiments method and indicator systems are selected to be explained in this section due to their interest to

be applied in museums (Palma & Aguado, 2010). Both methods lead to a better understanding of the value of museums and will contribute to providing the museum sector with a metric that allows knowing the reality of the economic impacts of these institutions. Professionals of museums provided with this information can provide a more rational decision-making process.

The Choice Experiments (CE) method focuses on estimating the monetary value of use and non-use generated by the museum. Kinghorn and Willis (2008) state that the use of the CE methodology means that the museum can be valued according to its characteristics and attributes. Moreover, specific information about visitors' preferences can be obtained. This methodology implies that the attributes can be evaluated independently, which provides more excellent reliability. Attributes of museums and its convenience for analyzing the visitor perception were studied by different authors (Davis & Swanson, 2009; Taheri, & Thompson, 2011; Gómez-Zapata, Espinal-Monsalve & Herrero-Prieto, 2018). Besides, by implementing such a method, it is possible to measure the willingness to pay (WTP) and the willingness to accept (WTA) (Snowball, 2007).

Following the approaches made by Mazzanti (2002, p. 586), the CE method is based on "the econometric analysis of consumer choices within a multidimensional environment of discrete choice". So, the Random Utility Model (RUM) is followed, as well as McFadden's proposals (1973) concerning the theory of consumer behavior, as shown in the following equation:

$$U_{ij} = V_{ij} + \varepsilon_{ij}$$

U represents the choice that the consumer considers most useful among the proposals, so i represents the individuals surveyed and j the attributes. V represents the attributes of i and j, as well as their parameters. Epsilons are unobserved attributes, variations of non-observed tastes and/or measurement errors.

Therefore, it is necessary to consider the multinomial logit model (McFadden, 1973), as well as Train's formulation (2003). In this case, only the choices of attributes are considered (Mazzanti, 2002, p. 586), as shown in the following equation:

$$P(Y_i = j) = \frac{e^{V_{i,j}}}{\sum_{k=0}^{J} e^{V_{i,k}}}, \; j = 0,\ldots,J .$$

Mourato & Mazzanti (2002) discuss and compare the main advantage of this method. Methods of Contingent Valuation allow considering multidimensional changes. Besides, they outline the key steps to be followed when designing the method (see table 4). This qualitative method is often applied to tourism research (Strielkowski, Riganti & Jing, 2012; Guest et al., 2017; Lamers, van der Duim & Spaargaren, 2017). Hence, experts can provide ideas about these attributes.

Table 4. Implementation phases of Choice Experiments Method

Phases	Description
Selection of museum attributes	Review of existing literature and identifying museum attributes from eWOM. Analize the attributes

	previously detected by conducting focus groups to select and make a list of the most representative attributes of the museum.
Assignment of levels to the attributes of the museum	Attribute levels will be expressed in quantitative terms and, if this is not possible, in qualitative terms. Attributes should cover the ranges of WTP values of the respondents.
Questionnaire design	Different scenarios are raised. The questions must be easy to understand, and their length should favor the answer. If they are complex questions or if many attributes are selected, irrational choices are made.
Scenario grouping	They are grouped in relation with the attributes.
Measurement of preferences	Through the questionnaire, the preferences of the public are evaluated, proposing alternatives or ranking preferences.

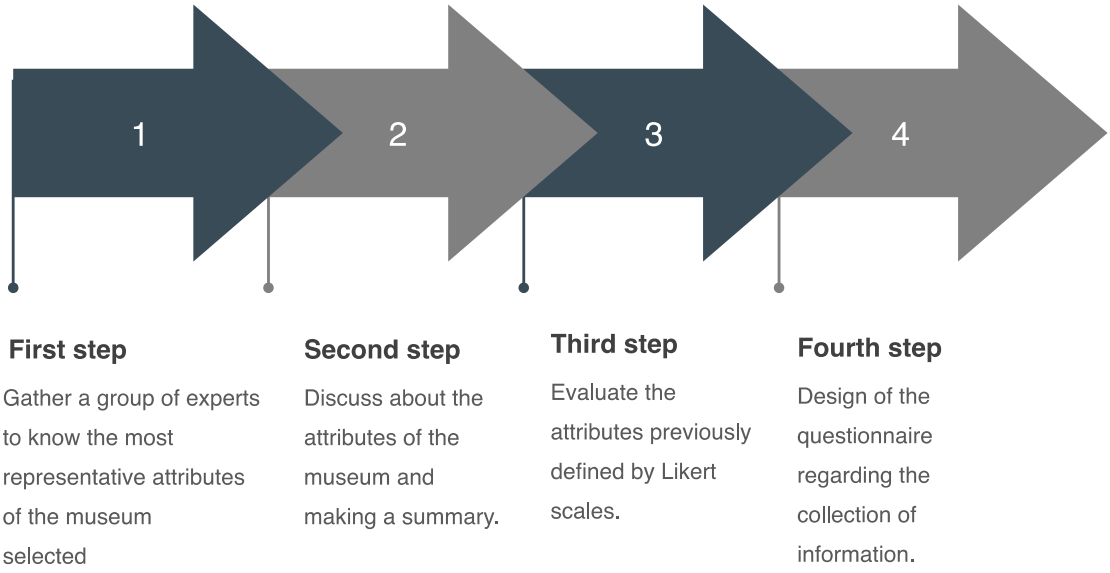
Source: Elaborated by the authors based on the phases proposed by Mourato & Mazzanti (2002) and Kinghorn & Willis (2008)

The method is divided into five phases. Phase 1 consists of making a selection of museum attributes by a review of existing literature and Electronic Word of Mouth (eWOM). After, these attributes are discussed by conducting focus groups to select and make a list of the most representative attributes of the museum perceived previously. The objective is to gather a group of experts (see Figure 3) to know the most representative attributes of the museum selected that make up its brand image, as well as the valuation of these attributes. This way, it will be possible to obtain an assessment of the group opinion of experts, allowing continuing the investigation and assigning levels to the attributes of the identified museum. This type of focus group is carried out in the exploratory phase of the research since it will allow the quantitative approach to be developed later. The focus group will help carry out the assignment of levels to the attributes of the museum and subsequently design two questionnaires that will be carried out to the local population as tourists, respectively.

A homogenous group of people will compose the focus group in the sense that they must have a common characteristic that is their area of expertise related to museums. Regarding the number, a minimum of 4 people and a maximum of 8 are established. The duration of the focus group will be 1 hour and 15 minutes. Both meetings will be recorded in audio and video so that a complete transcript can be done. In order to develop the approach of the focus group appropriately, the design of a semi-structured guide is established. After having selected and defined the attributes of the museum, experts will be asked what the most representative attribute is to establish a quantitative order about the attributes. Next, the different attributes noted and previously discussed will be named in order to assign levels to

the attributes of the museum. Attribute levels will be expressed in quantitative terms. Therefore, the attributes are evaluated previously by using Likert scales. During this process to assign levels to the different attributes, is essential for "the levels of the attributes to be feasible, realistic and encompass the range of values of the WTP values of the respondents" (Mourato & Mazzanti, 2002, p.64).

Figure 3. Focus group: developing steps



Source: Prepared by the authors based on the literature review.

Phase 2 is dedicated to assigning levels to the attributes of the museum, that will be expressed in quantitative terms and, if this is not possible, in qualitative terms. Phase 3 covers the questionnaire design when different scenarios are raised. In order to obtain information about tourists and the local community, it is necessary to design two questionnaires for each segment and conduct interviews with both. The statistics will be used to relate different scenarios rose with the attributes.

Phase 4 includes the scenario grouping concerning the attributes. Finally, phase 5 consists of the measurement of preferences.

After the measurement of preferences, it is possible to apply a system of indicators in order to evaluate the results. By creating a system of indicators, the results being evaluated can be obtained in such a way that it is possible to establish "useful and significant measures for those responsible for decision making" (Sáncho Pérez & García Mesanat, 2006, p.71). Scott (2009) proposes establishing a system of indicators for museums based on the following aspects: (1) use value indicators; (2) institutional value indicators; (3) instrumental value indicators. However, the system of subjective indicators (Sáncho Pérez & García Mesanat, 2006) that is proposed to perform the analysis consists on focusing attention on sociocultural and economic indicators, which may be applied after the development and completion of the Choice Experiments method. Table 5 shows the subjective indicators that are possible to be used for evaluating the results obtained by developing the previous method of museum analysis. These subjective indicators are divided into two types. The first one is related to tourists, and the second one is about the local population.

Table 5. Subjective indicators to analyze the sociocultural scope

SUBJECTIVE INDICATORS SOCIOCULTURAL SCOPE	
TOURISTS	**LOCAL POPULATION**
Assessing tourists as regards the positive impacts of the tourism on local population	Assessment of the local population regarding the positive impacts of tourism on the local population

Assessing tourists regarding the negative impacts of tourism on the local population	Assessment of the local population regarding the negative impacts of tourism on the local population
Assessing tourists as regards the presence of museums in the tourist destination	Assessment of the local population on the relationship between tourism and opening and /or maintenance of museums in the tourist destination
Assessing tourists regarding the economic impacts (and/or and / or positive) caused by the museum under study	Assessment of the local population regarding the economic impacts (and/or and / or positive) the museum under study has
Assessing tourists regarding the influence of the study on the promotion of the local culture of the tourist destination	Assessment of the local population regarding the influence of the museum under study in the promotion of the local culture of the tourist destination
Valuing tourists as regards the quality of the museum under study in the tourist destination	Assessment of the local population on the quality of the museum being studied in the tourist destination
Valuing tourists as regards the educational resources offered to the public by the museum under study	Evaluation of the local population on educational resources made available to the public by the museum under study

Source: Prepared by the authors based on indicators based on

Sancho Pérez & García Mesanat (2006).

2.4. CONCLUSIONS AND DISCUSSION

In this paper, an analysis of concepts is carried out focusing on sustainability, cultural tourism and museums from the perspective of Economy of Culture. Special attention has been paid to the methods of analysis developed, as well as previous research published in this field.

Through the realization of this research, secondary sources are used, developing a review of the literature and the state of the art of the methods used in the economy of culture. Through this in-depth analysis, a relation can be made to the field of tourism, where the heritage elements and, specifically, the museums, are essential resources. The relationship amongst the concepts of cultural economy, cultural tourism, and sustainability is studied. Previous studies have demonstrated a positive relationship between using methods from cultural economy to study different aspects related to cultural institution (Cousin, 2008; Gravari-Barbas & Graburn, 2012; Wickham & Lehman, 2015; Brida, Dalle Nogare & Scuderi, 2016; Condevaux, Djament-Tran & Gravari-Barbas, 2016; Mousavi, Doratli, Mousavi & Moradiahari, 2016; Torre & Scarborough, 2017; Noonan & Rizzo, 2017; Santa-Cruz & López-Guzmán, 2017; Gravari-Barbas, 2018; Gravari-Barbas, Avila-Gómez & Ruiz, 2018; Richards, 2018). Franklin (2018) opened a discussion related to the use of the term Art tourism against cultural tourism to denominate the new form of travelling related to culture. Museums, as an essential part of cultural tourism offer, need to be analyzed to improve the knowledge in order to promote its sustainability (Ruhanen, 2008; Lu & Nepal, 2009; Buckley, 2012; Higgins-Desbiolles, 2018).

Therefore, taking these considerations into account, this article offers a literature review of Cultural Economy and methodologies in this field of study. It focuses on the analysis of museums to determine a model applicable to the study of museums that consists on a method to estimate the value of museums in economic terms and a subjective system of indicators to analyze the sociocultural impacts of museums, both perceived by residents and tourists. This model facilitates to understand the different causes of economic and socio-cultural impacts. The knowledge of methods enables to detect which of the best fits the study of museums in order to obtain a series of results that can be collected, analyzed and used afterwards to improve decision-making in museum institutions. Through this research focused on analyzing and comparing different methods, the use of a specific method to analyze the economic value and sociocultural impacts of museums is proposed. This method is therefore available to the scientific community to develop research via its application.

The chosen method is a mixed method that is composed of a qualitative method (focus group) and quantitative methods (Choice Experiments and WTP). This method enables museums to be evaluated according to characteristics and attributes, obtaining precise information on visitors' preferences. Regarding the collection of information, first of all, the opinion of experts should be taken into account to assess the different attributes of museums through a focus group. After that, two questionnaires will be designed: the first one focused on tourists, and the second one on the local community. Secondly, Choice Experiments is also combined with the WTP application since it complements the data obtained with the information

that allows museums to be evaluated in economic terms. The analysis of the results will be complemented by creating a system of subjective management indicators, which means that the sociocultural aspects and other results obtained can also be analyzed. Finally, the data obtained will be processed, and the subjective system of indicators is applied. This method makes it possible to obtain conclusions applicable to the management of these museums oriented to improve decision making and to develop the sustainability and resilience of museums (table 6).

Table 6. Research questions and responses

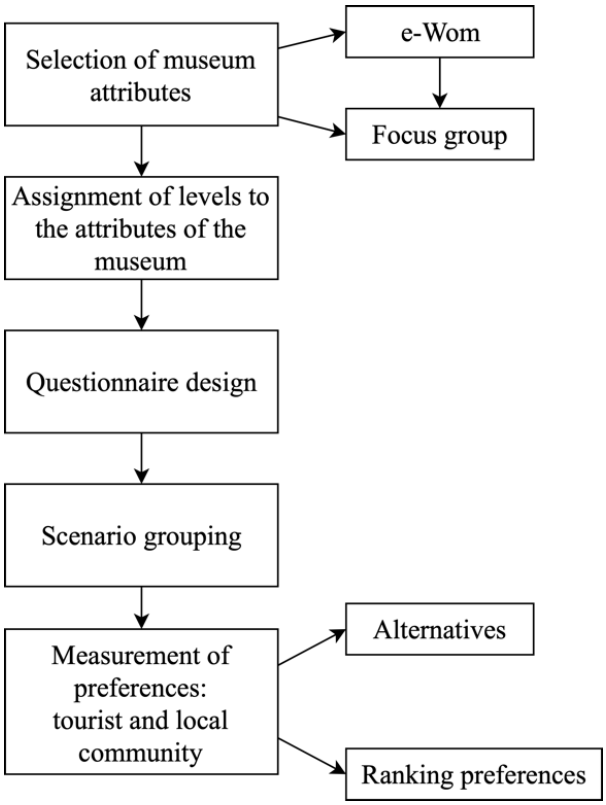
RQ1. How does economic of culture methods could contribute to museum performance analysis?	These methods propose different forms of analyzing cultural organizations as museums. The results obtaining by their application improve the making-decision process of managers of museums.
RQ2. Which method is relevant to applied to museums?	Choice Experiments method combined with the WTP method allow to analyze and to evaluate museum attributes, obtaining precise information of visitors' preferences.
RQ3. Could these types of methods help to improve sustainability in museums?	The method proposed is linked with museum sustainability because it allows to obtain information related to museum performance.
RQ4. What is the connection between sustainability in museums and cultural tourism? Is it important to include it in our method?	Museums are considered as a key part of cultural tourism. Tourists are attracted to visit museums and its role must be analyzed in order to obtain to have a broader view of their perception.
RQ5. How the method selected could be improved for facilitating its application?	The method selected is improved by adding the previous selection of

	attributes detected by Text Mining analysis of eWOM. The application of a Subjective Indicator System helps to analyze the results obtained by the method proposed.

Source: Elaborated by the authors, 2019

As a result, the research aim of this paper was achieved, determining a methodological model (see figure 4) that allows analyzing the economic and sociocultural value of museums perceived by residents and tourist to maintain sustainability and improve the decision-making process in order to achieve sustainability made by professionals of museums. This method is based on Mourato & Mazzanti (2002) and Kinghorn & Willis (2008). Our proposal is to identify museum attributes by using Text Mining methodology for identifying museum attribute from eWOM.

Figure 4. Method proposed to analyze economic and sociocultural value of museums



Source: Elaborated by the authors based on Mourato & Mazzanti (2002) and Kinghorn & Willis (2008), 2019

The major limitation of this method is the difficulty of determining the museum attributes by an objective perspective. The method should be revised, and it is proposed to include the use of Text Mining Method to improve the determination of museum attributes by applying it in TripAdvisor in order to find the attributes mentioned by visitors. To assure the professional museum's participation in developing a focus group could be another limitation of this method.

As future lines of research, the proposal of this method can be evaluated, and the use of Text Mining method for determining the museum attributes will be included.

This method will be texted through real case studies, and its ability to be extrapolated through its application can also be considered. From a practical perspective, the application of the method can be useful to museums that should make decisions according to the customer's preferences.

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3 TEXT MINING AS A METHOD TO IDENTIFY MUSEUM ATTRIBUTES PERCEIVED BY TOURIST

CHAPTER 3: TEXT MINING AS A METHOD TO IDENTIFY MUSEUM ATTRIBUTES PERCEIVED BY TOURIST: AN EXPLORATORY ANALYSIS OF THYSSEN-BORNEMISZA NATIONAL MUSEUM (SPAIN)

Next chapter includes the Authors Original Manuscript corresponding to the article that is accepted to be published in 'ESIC Market'.

This journal is indexed in RECYT-FECYT, ECONLIT, IN-RECS, LATINDEX, CINDOC, REDIB, Dialnet, DICE-IEDCYT, Directorio Cabell, Directorio Road, Norwegian Register of Scienteific Journals and Publishers.

ABSTRACT

The identification of museum attributes is essential to analyse the different factors that attract visitors and study its situation to improve efficiency in museums, as could be the use of funds for developing a marketing campaign in order to attract visitors. This paper offers a literature review considering the museum visits and museum attributes before proposing a method. The use of big data applied to tourism research is vital due to the consideration of the opinion of museum visitors. The case of study is Thyssen-Bornemisza Museum (Madrid, Spain). The method for identifying the attributes consists of using text mining and analysing the textual content of TripAdvisor reviews written in English and Spanish. The information is captured by using WebHarvy and, then, is analysed with Nvivo12.

Keywords: Cultural tourism; netnography; text mining; visitor's experience; attributes; Thyssen-Bornemisza National Museum.

3.1. INTRODUCTION

Museums are linked to Cultural Tourism due to this condition as attractions located at tourist destinations (Brida et al., 2016; Condevaux et al., 2016; Gravari-Barbas and Graburn, 2012; Santa-Cruz and López-Guzmán, 2017; Vacas, 2011). These facilities attract the visit of tourists and generate impacts on the destination (Avila-Gómez and Ruiz, 2018; Gravari-Barbas, 2018; Noonan and Rizzo, 2017; Zaraté and García, 2017). Numerous studies have investigated the concept of museum visitors experience in order to clarify the process of selecting a museum for visiting and, also, the satisfaction of visitors (Brida et al., 2012; Falk and Dierking, 2013; Gómez-Zapata et al., 2018; Han and Hyun, 2017; Loureiro and Ferreira. 2018; Sheng and Chen, 2012; Taheri et al., 2013; Taheri et al., 2014). In this way, the need was detected to study the attributes of the museums as well as their link with the perception of tourists when it comes to evaluating the museums.

This article aims to determine a method to identify the museum attributes and its value perceived by tourist by using Text Mining methodology (Zanibellato et al., 2018), Kim and Lee (2019) and Orea-Giner et al. (2019). This method is proved with a case of study (Thyssen-Bornemisza National Museum, Madrid, Spain), offering an exploratory analysis of results. The research questions of our work arising from this objective are:

RQ1. Could the identification of museum attributes help to measure perceived value and improve museum decision-making?
RQ2. How does text mining method help to identify museum attributes?
RQ3. What are the attributes of Thyssen-Bornemisza National Museum perceived by tourists?

This study presents a twofold contribution. Firstly, we propose a method for analysing museum attributes. Secondly, this method is tested on a case of study. The method is updated and modified in order to be able to carry out analyses using text mining to identify museum attributes following the method applied in Kim and Lee (2019), Orea-Giner et al. (2019) and Zanibellato et al. (2018). This way, a method is proposed through which it is possible to identify the specific attributes of

each museum. These results will then make it possible to evaluate the attributes identified from the case of study and classify them according to the value given by tourists.

3.2. LITERATURE REVIEW: VISITOR'S EXPERIENCE AND MUSEUM ATTRIBUTES

Pine and Gilmore (1998, p.2) define an experience to support the view that the fact that when a person buys an experience, they don't just make an investment of time in order to enjoy it, but they also get involved in the experience and participate actively. Chan and Yeoh (2010, p.21) add that "a museum is an amalgam of a series of experience encounters (tangible and intangible) and museum experiences are derived from both service providers (quality of performance) and visitors themselves (quality of experience)". Therefore, the visitor's experience and its analysis is key in order to develop new management strategies and improve the decision-making of museum managers (Bitgood, 2016; Wells et al., 2016).

The process of visitor's experience is divided into three phases: before, during and after (Falk and Dierking, 2013). Falk and Dierking (2013) describe the museum experience based in three different contexts: the personal context, the sociocultural context, and the physical context. The personal context includes the different degrees of experiences and knowledge, the mode of learning and "differences in individual interest, attitudes, and motivations for visiting" (p. 27). The sociocultural context depends of the cultural background of visitors, highlighting race-ethnicity, socioeconomic status, and country of origin. Finally, the physical context comprises the building and the objects that are contained there. The analysis of museum attributes is related to these three categories. The different attributes of a museum could be a part of the personal context, interfering in the decision of visiting or not a museum. The sociocultural context also influences the museum attributes. Finally, the physical context is connected with museum attributes so that the exhibition, the building and the other physical services are identified on an attribute selection as an important part of the motivation for visiting a museum. Camarero et al. (2015)

reported that some museums identified the necessity of creating an innovative collection to improve the positive impact on the visitor. Instead, other museums develop a different proposition focused on "Disneyfication of culture". Burton, Louviere and Young (2009) consider that museum visits depend on the level of education and standard of living, so it is difficult to explain how at a time when it is possible to study and analyse the visitor experience in order to promote museum visits, visitor numbers can be reduced.

Plaza (2010, p. 155) suggested that the value of cultural heritage is not only measured by the benefits it generates from a commercial point of view but there are also other forms of general value. To suggest a connection between museums and cultural economy, Gómez-Zapata et al. (2018) highlight the analysis of public goods as Clubs. Buchanan (1965) explains that museums can be considered as local gothic clubs, so they have to focus on the groups they want to attract, as well as on the consumption of these cultural goods and services. Gori and Fissi (2013) suggest a connection between museum management and socio-cultural effectiveness and efficiency. This study discusses ways in which measuring results facilitates sustainability and stakeholder relations (Gori and Fissi. 2013). Regarding this matter, Kinghorn and Willis (2008, p. 287) show that "museums represent both a cultural attraction and a consumption experience, often able to raise the wealth of the hosting community". Mudzanani (2015) addressed the issue of creating a collaborative platform by museums. The impact of museums on communities is connected with the economic regeneration strategies.

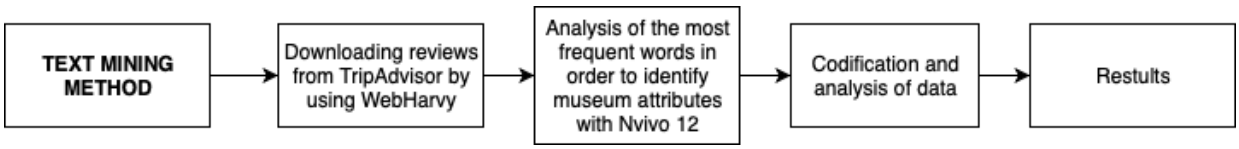
Tsai and Lin (2018) support the view that museums are part of the leisure entertainment industry, so that they can create added value. One way to understand this value is by measuring the attributes, Busacca and Padula (2005) support that there is a relationship between attributes, satisfaction and dissatisfaction. Davis and Swanson (2009) highlight the quality of the service to the interaction with the staff. Edmonds Muller and Connell (2006) identify three types of attributes to engaging the visitors. Some attributes are attractors and are defined as those who attract the visitors. Other attributes are categorized as sustainers because they get visitors

engaged. Finally, the attributes considered as relaters, as they encourage a long-term visitor-museum relationship.

3.3. DATA AND METHODS USED

The method proposed for analysing the value of museum attributes perceived by the tourist (figure 5) is based on Kim and Lee (2019), Orea-Giner et al. (2019) and Zanibellato et al. (2018). Our approach is also based on netnography methods (Heinonen, and Medberg 2018; Kim, and Lee 2019; Kozinets, 2019; Mkono, 2016; Mkono and Markwell, 2014; Mkono and Tribe, 2017; Tavakoli, and Mura 2018; Tavakoli and Wijesinghe, 2019; Rageh and Melewar, 2013).

Figure 5. Method proposed. Attributes detected from TripAdvisor.



Source: Elaborated by the authors based on Kim and Lee (2019), Orea-Giner et al., (2019) and Zanibellato et al. (2018)

The attributes have been selected carrying out a text mining analysis composed by 5000 comments (2500 in Spanish and 2500 in English) received by Thyssen Bornemisza National Museum in TripAdvisor. The first step was downloading the information by using WebHarvy. The second step consists of developing an analysis of the common words that appeared on the opinions from TripAdvisor about Thyssen-Bornemisza National Museum. The software used to analyse the data was Nvivo12. The data obtained will be processed, and this will make it possible to obtain conclusions applicable to the management of these museums oriented to improve decision making and to develop the resilience of museums. Data analysis is carried out in two ways: Through analysis of the results obtained by frequency of mention of the words related to the attributes and through analysis of textual content.

3.4. EMPIRICAL APPLICATION

3.4.1. THE CASE STUDY: THYSSEN-BORNEMISZA NATIONAL MUSEUM

Thyssen-Bornemisza National Museum is situated in Madrid, included on "The Art Walk". This area is called Paseo del Prado and was a project developed by King Carlos III of Spain. During the 19th century, some museums were created and located there: Prado National Museum (1819), National Museum of Anthropology (1875), Museo Nacional Centro de Arte Reina Sofía (1986), Thyssen-Bornemisza National Museum (1992) and, recently, CaixaForum Madrid (2008) (Vacas, 2005). The candidacy Prado-Retiro (2019) to the World Heritage nomination by UNESCO includes the geographical space that contained Thyssen-Bornemisza National Museum. This zone is a touristic, place and Benarroch (2016, p.97) reported that "Thyssen-Bornemisza National Museum offers visitors to the capital a stroll through the history of art, from the 12th century to the end of the 20th century. Dürer, Raphael, Titian, Rubens, Rembrandt, Caravaggio, Manet, Renoir, Cézanne, Van Gogh, Gauguin, Kandinsky, Picasso, Hopper or Rothko are some great masters of painting who shine in its rooms". It is a National Museum, that is, it is publicly managed. The Thyssen Bornemisza Foundation, governed by a Board of Trustees, is involved in its management.

It is generally accepted that Thyssen-Bornemisza National Museum is a star museum (Frey, 2000). To support that view, it is necessary to show statistical data of visitors. Thyssen-Bornemisza National Museum is on the third place of most visited museums, considering the number of visitors during 2018 (Museo Nacional del Prado, 2018; Museo Nacional Centro de Arte Reina Sofía, 2018; Museo Nacional Thyssen-Bornemisza, 2018). The case of Thyssen-Bornemisza Museum (Madrid, Spain) is considered because of its characteristics, statistics and position in third place between the most visited museums in Madrid, and, because of authors convenience.

3.4.2. ATTRIBUTES OF THYSSEN-BORNEMISZA MUSEUM

In order to investigate the attributes of Thyssen-Bornemisza Museum, a variation of Kim and Lee (2019), Orea-Giner et al., (2019) and Zanibellato et al. (2018) methodology has been applied. This research carries out a Text Mining analysis of 5000 comments received by the Thyssen-Bornemisza National Museum in TripAdvisor (2500 in Spanish and 2500 in English).

The study of Zanibellato et al. (2018) presents an essential key aspect of classification of attributes: (1) core offering; (2) external services; (3) ambience. This empirical analysis regards this classification. The core offering evaluates the permanent collection and temporary exhibitions. Peripheral services include attributes as the gift shop, food and beverage services, audio, audio-guide, staff, ticket and activities. The ambience is a vital fact and, this type of attributes comprises queue, crowding and photos, among others. Table 7 presents the different attributes of Thyssen-Bornemisza National Museum.

Table 7. Attributes detected from TripAdvisor.

	Attributes	**References in English (EN)**	**Coverage %**	**References in Spanish (ES)**	**Coverage %**
		Number of reviews [N=2500]		**Number of reviews [N=2500]**	
1. Core offering	Collection	3582	5.2	5830	7.45
	- Permanent collection	170	0.13	585	0.67
	- Temporary	181	0.16	850	0.99

	exhibitions				
2.Peripherical services	Activities	-	0.00	43	0.04
	App	11	0.01	7	0.02
	Audio guide	25	0.02	62	0.04
	Food and beverage services	465	0.24	296	0.23
	Gift shop	222	0.06	133	0.07
	Guide	264	0.12	66	0.03
	Luggage storage	2	0.04	3	0.01
	Resting spaces	-	0.00	10	0.01
	Staff	84	0.04	-	0.00
	Ticket	1278	0.77	869	0.54
	Toilets	10	0.04	14	0.04
	Website	27	0.01	28	0.01
3. Ambience	Accessibility	40	0.06	-	0.00
	Building	349	0.21	164	0.11
	Crowding	134	0.08	-	0.03
	Display	-	0.00	35	0.05
	Garden	-	0.00	44	0.03
	Lighting	-	0.00	33	0.01
	Location	244	0.14	26	0.03
	Photos (the possibility of taking pictures)	152	0.07	34	0.02
	Public museum vs private museum	237	0.22	162	0.37
	Queue	141	0.06	107	0.06

Source: Elaborated by the authors based on the general attributes proposed by Zanibellato et al. (2018)

The most striking result that emerge from the data is that core offering is essential for visiting this museum. Core offering is composed by permanent collection and temporal exhibitions. This result is significant for both attributes. Permanent collection is mentioned 170 times in English (EN) and 585 times in Spanish (ES). This result confirms that the permanent collection is an important attribute considered by tourists visiting this museum. The single most marked observation to emerge from the data comparison was the use of the term temporary exhibition, that appeared with a higher frequency than permanent collection (EN: 181; ES: 850).

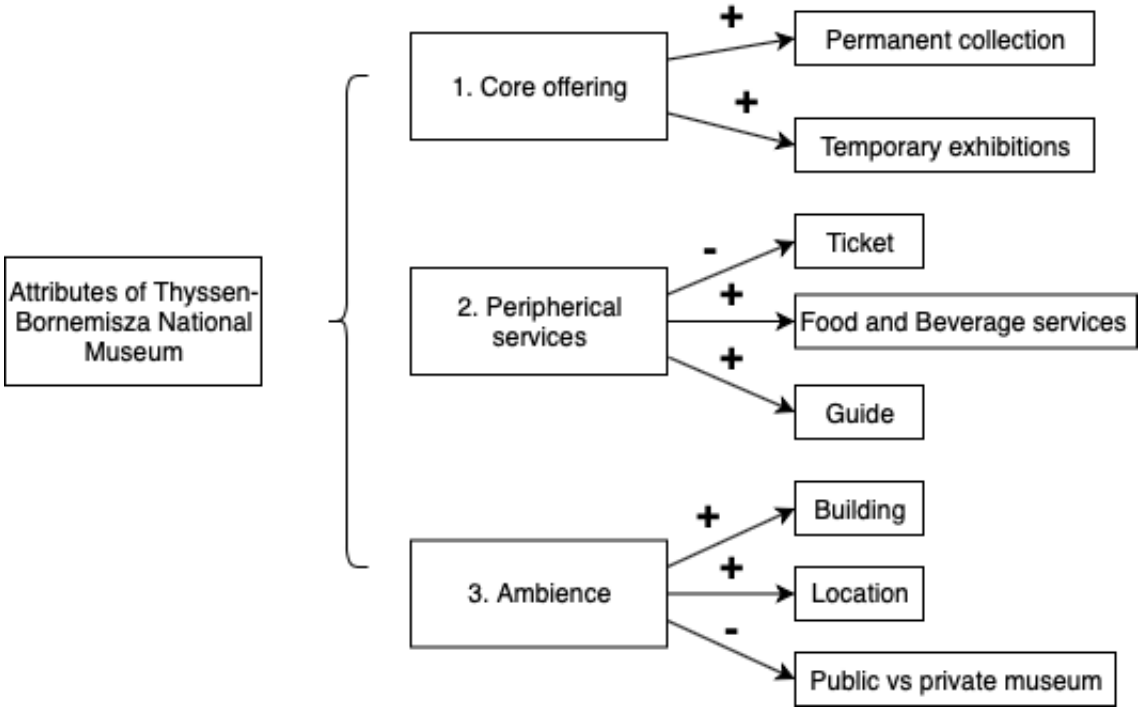
The results derived from the analysis of facility-based services revealed that the ticket is the most mentioned attribute (EN: 1278; ES. 869). Despite this fact, we found also important values for Food&Beverage services (EN: 465; ES: 296), gift shop (EN: 22; ES: 133), guide (EN: 264; ES: 66). These findings highlight the usefulness of these attributes for visitor's experience.

The examination of the results focused on attributes of ambience showed that the building is the most remarkable attribute of this type (EN: 349; ES: 164). Another attribute that appeared during the analysis is the condition of being public or a private museum (EN: 237; ES: 162). Thyssen-Bornemisza National Museum is a public museum, but from the reviews is possible to identify the perception of being a private museum. Broadly speaking, we found interesting values for location (EN: 244; ES: 26), photos (EN: 152; ES: 34), queue (EN: 141; ES: 107) and crowding (EN: 134; ES: 0).

These results show a difference of perception from tourist experience. The data suggest that there are different interests, attitudes and motivations for visiting this museum. There are similarities between opinions made in English and Spanish, but it is also possible to find variations.

Through the analysis of textual content based on the comments that include the keywords linked to the attributes, an analysis is made of the positive or negative perception of the different attributes based on their significance (fig. 2). Therefore, those attributes with a frequency greater than 0.10 are selected. The attributes of the core offering are positively evaluated, since the two main attractions of the museum are included: Permanent collection and temporary exhibitions. With regard to the attributes included in the peripheral services, both food and beverage services are positively evaluated. However, the ticket is valued negatively. Finally, the most representative environmental attributes that have a positive valuation are building and location. On the negative side, there is confusion as to whether it is a public or private museum, since the comments show that visitors consider it to be a private museum and this has a negative effect on the image they perceive of the museum (figure 2).

Figure 6. Summary of the most representative results taking into account the textual content analysis.



Source: Elaborated by the authors, 2019.

3.5. CONCLUSION AND LIMITATIONS

This paper has made a literature review focused on visitor's experiences and museum attributes. It provides pieces of evidences that the attributes of museums are an essential fact of the experience of visitors. Taking into account consumer behaviour, innovative actions are possible (García-Muiña et al., 2019). The analysis and identification of attributes in the case of museums facilitates a better understanding of the value assigned to key elements of their offer, as well as obtaining key information for the development of management strategies that improve decision-making (Torres-Ortega et al., 2018).

This paper proves a method that allows identify museum attributes perceived by tourist by using text mining method and completing it with a round-table discussion in order to accurate results. The findings of this study indicate the importance of identifying museum attributes to improve the knowledge of museum professionals. By answering the research questions (table 8), this paper reaches the main objective consisting on identifying a method aimed to create an objective list of museum attributes based on tourist's perception and applying it to a case of study.

Table 8. Research questions and responses

RQ1. Could the identification of museum attributes help to measure perceived value and improve museum decision-making?	Through the identification of attributes as well as the assessment by tourists, conclusions can be drawn about the preferences of potential consumers as well as visitors in order to guide management strategies.
RQ2. How does text mining method help to identify museum attributes?	This method facilitates the identification of attributes in a massive way. It has advantages over carrying out surveys because the

	time spent, and the cost involved is lower. In addition, the influence of the pollster on the answers given by tourists is avoided, since they are opinions made voluntarily and through which they try to express their opinion and perception of the different attributes and services.
RQ3. What are the attributes of Thyssen-Bornemisza National Museum perceived by tourists?	The attributes perceived by tourists about the Thyssen-Bornemisza National Museum have been identified and divided based on their nature.

Source: Elaborated by the authors, 2019.

This study presents some limitations. The critical limitation is a result of the fact that TripAdvisor is not a completely objective source of information. Despite, we believe this work could be a starting point to propose a method aimed to analysing the value perceived by the tourist and the local community of museums. This part of the study provides an analysis of attributes that will be completed and developed in more phases. This study has gone some way towards enhancing our understanding of museum value. In order to develop a more complete list of attributes, the method proposed includes a round-table discussion with experts that will be analysed determining the list of attributes that will be used for creating a Willingness to Pay questionnaire. We are currently in the process of investigating the results derived from the roundtable to confirm the museum attributes list.

As future lines of work, the different attributes identified show vital information to improve the decision-making process made by museum professionals, and it is a starting point to continue applying this method to different cases. Determining the offer of the museum and the highest unique attributes for tourists could be used for

developing new organizational practices and changing the museum strategy aimed to improve other less valued attributes.

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4 THE ROLE OF INDUSTRY 4.0 TOOLS ON MUSEUM ATTRIBUTES IDENTIFICATION AND CO-CREATION THROUGH INNOVATIVE PROCESSES

CHAPTER 4: THE ROLE OF INDUSTRY 4.0 TOOLS ON MUSEUM ATTRIBUTES IDENTIFICATION AND CO-CREATION THROUGH INNOVATIVE PROCESSES: AN EXPLORATORY STUDY OF THYSSEN-BORNEMISZA NATIONAL MUSEUM (MADRID, SPAIN)

Next chapter includes the Authors Original Manuscript corresponding to the article that is being reviewed in 'Tourism Planning and Development'.

This journal is indexed in CABI, EBSCOhost, Ovid, ProQuest, Emerging Sources Citation Index Hospitality & Tourism Index and Scopus. Impact factor CiteScore (2018): 1.24 and SJR (2018): 0.51 Rank in 'Business and International Management' (Q2) 'Development' (Q2) and 'Tourism, Leisure and Hospitality Management' (Q2).

ABSTRACT

The objective of this paper is to examine how Industry 4.0 tools (eWOM) facilitates to develop strategies focused on the co-creation concept. It is tested in a case of study in order to explore the museum customer experience through the attributes identification and its value perceived by the customer. The opinion and perception of tourists is a crucial factor derived from Electronic Word-of-Mouth (eWOM). Content analysis facilitates detecting attributes perceived by tourists in order to improve their experience. These attributes detected previously are evaluated in a round-table discussion with experts and key stakeholders. The use of Industry 4.0 tools facilitates the understanding of museum performance and the analysis of crucial information. The paper provides an exploratory approach by analysing the introduction of tools from Industry 4.0 as eWOM to study the perception and value perceived by the museum visitors. The results obtained are key to create co-creation strategies. The results obtained provide precious information to carry out innovation processes such as co-creation in order to improve the decision-making processes from museum management perspective.

Keywords: Industry 4.0, Co-creation, eWom, experience, attributes, Round-table discussion, Museums

4.1. INTRODUCTION

The Industry 4.0 represents the so-called Fourth Industrial Revolution, which is connected to the use of technology to automate production processes in the industry (Quin et al., 2016; Xu et al., 2018). Information and Communication Technologies (ICT) play an important role in Industry 4.0 (Lu, 2017) and allow introducing technologies such as, Cloud Computing, Internet of Things and Social Media to facilitate production and decision-making processes based in Data Science results (Nambisan, 2017; Autio et al., 2018; Para et al., 2018). Some research projects on ICT, its development and the application of these technologies in Industry 4.0 are linked to the concept of Open Innovation (Chesbrough, 2006; West & Bogers, 2017). This topic has been connected to the innovative management strategies (Peris-Ortiz, & Hervás-Oliver, 2014) and collaborative participation of consumers in innovation (Leavy, 2012; Kohler & Chesbrough, 2019), through the concept of co-creation (Von Hippel, 1986; Herstatt & Von Hippel, 1992; Prahalad & Ramaswamy, 2000; Sharma et al., 2016). Another important factor is the creation of value by consumers (Kagermann; 2015) and Social Media and Electronic Word-of-Mouth (eWOM) are analyzed in order to obtain conclusions on management processes in Industry 4.0 (Li et al., 2018; Jackson, 2019; Yoon et al., 2019).

The tools of Industry 4.0 bring added value to the tourism industry, leading to the introduction of innovative products as well as technologies such as robots, artificial intelligence and service automation (Ivanović et al., 2016; Ivanov & Webster, 2017). Digital technologies allow studying consumer behavior and value perceived (Wang et al., 2017). Tourism industry has been progressively incorporating industry 4.0 tools to co-create and offer services more adjusted to the preferences of consumers in the society of experience (Marasco et al., 2018; Hanafiah & Zulkifly, 2019; Peceny et al., 2019). Tourism studies refer to multiple possibilities derived from the different techniques of analysis of eWOM (Pihlaja et al., 2017).

This paper aims to apply Industry 4.0 tools and the co-creation concept to gain in-depth insight into the museum customer experience through the attributes and its value perceived by the customer. The tool is used to validate the proposed model related to co-creation experiences in museums.

The first objective is to test an evolving method for identifying museum attributes and its relationship with co-creation experiences. The second objective is to use this evolved method for analysing a case of study (Thyssen-Bornemisza National Museum, Madrid, Spain) in order to test it. Therefore, this research tries to answer to the following research questions:

RQ1: How do the Industry 4.0 methods help to understand museum attributes?

RQ2: How does attributes analysis help to promote co-creation in museums?

RQ3: How do eWOM and the roundtable make it easier to identify museum attributes?

The implications of the research are both, theoretical, a method is offered to scholars and practitioners and, practical, this method can be applied in other contexts and museums and can help to improve the quality of the service.

This paper is divided into four distinct sections. Section one presents the research background, that consists of summarizing theoretical contributions on typical tools of Industry 4.0 and its application on co-creation in Tourism field. Section two deals with the data and methods used. In section three, a qualitative analysis of results is carried out. Section four outlines the conclusions, practical implications and limitations of this research.

4.2. LITERATURE REVIEW

The concept of Industry 4.0 includes the participation of both workers and consumers in decision-making processes (Dalenogare et al., 2018; Pilloni, 2018). The tools from Industry 4.0 make it possible to obtain interesting data via the Internet that can be exploited and analysed in order to use the results obtained in a practical application (Pilloni, 2018). In addition, they provide mechanisms to improve and facilitate the competitiveness of companies (Adamik & Nowicki, 2018).

The concept of co-creation is developed through the inclusion of technologies specific to Industry 4.0 (Adamik & Nowicki, 2018). Co-creation has been introduced in tourism industry in order to develop new services and apply innovation in management (Xu et al., 2018). Innovated Business Models (IMB) are created in order to promote the evaluation of customers and the value of their experience. These models consider the value of the firm itself, the value created connected to the consumer's experience and the value obtained through its flow (Keiningham et al., 2019). Prior studies focused in consumer behaviour proposed theories to explain customer's behaviour and customer's experience (Seddighi & Theocharous, 2002; Huybers, 2003; Sirakaya & Woodside, 2005; Swarbrooke & Horner, 2007; Pearce, 2014; Nuraeni et al., 2015; Guo et al., 2017). In order to develop co-creation as an integral part of service, it is necessary to consider the interrelationship between consumers, workers, the company and technology (Maglio & Spohrer, 2008; Fitzgerald et al., 2014; Sarmah et al., 2018).

The eWom concept is connected to Industry 4.0, as it allows analysing the opinions coming from consumer's experiences through Data Science (Litvin et al., 2018). Liu et al. (2018) pointed out that online reviews are a type of eWOM. As an example, it is generally agreed that TripAdvisor reviews are considered as an eWOM source of information related to consumer perception and experience (Yoon et al., 2019). Much of the debate over the value and representativeness of using eWOM has revolved around the significance and the objectivity of TripAdvisor reviews as a source of information (Qiu et al., 2012; Ayeh et al., 2013; Yan et al., 2018). The analysis of eWOM is connected with the term co-creation (Mikalef et al., 2018; Xie et al., 2019). Previous studies have demonstrated the importance of co-creation in

tourism (Prebensen et al., 2011; Sfandla & Björk, 2013). Sugathan & Ranjan (2019) stressed the critical role of customers' co-creation in tourism experiences. Buhalis & Inversini (2014) found out parallels between co-creation and eWOM. Past studies have yielded some valuable insights into involving experts and local community on co-creation of tourism experiences and sustainability by round-table discussions (Jamal & Getz, 1999; Binkhorst & Den Dekker, 2009; Buhalis et al., 2015; Trunfio & Della Lucia, 2019).

A considerable amount of research has focused on identifying attributes of tourism destinations and resources by Electronic Word-of-Mouth (eWOM) studies (Xiang et al., 2017). The attributes perception derived from museums is analyzed by different methods (Mourato & Mazzanti, 2002; Kinghorn &Willis, 2008; Burton et al., 2009; Kim & Lee, 2019). Zanibellato, Rosin & Casarin (2018) observed that 'understanding the influence of experience attributes on the valence of eWOM will also help museums design and experience what best suits the wants and needs of visitors and will better inform museum strategic development and resource allocation' (p. 77). The review of the literature shows a line of research focused on museum attributes identification and eWOM (Moran & Muzellec, 2017; Anton et al., 2019). The role that museums play in innovation (De-Miguel-Molina et al., 2019) and sustainable development is fundamental due to their connection with the local community, the promotion of cultural enterprises and their positive effect against the touristic seasonalization (Pop & Borza, 2014, 2016; Pop et al., 2019). Therefore, the concept of co-creation makes it possible to design experiences based on sustainability, increasing the value perceived by visitors to the different attributes of the museum.

Existing qualitative research has focused on content analysis as a method for analyzing online reviews of TripAdvisor (Camprubí & Coromina, 2016; Krippendorff, 2018). Qualitative research presents some advantages over quantitative one in some circumstances (Peterson, 1994). The use of qualitative methods is recommended for developing hypotheses about behaviour and attitudes. Another important use is connected with deciding how to develop surveys and improving the

face-to-face knowledge characteristics of tourism (Peterson, 1994; Jackson et al., 1996).

4.3. METHODS

The method proposed for analysing the attributes of the Thyssen-Bornemisza National Museum is derived from Industry 4.0 (Kinghorn & Willis, 2008; Orea-Giner et al., 2019). Their proposition is modified by using eWom for analysing museum attributes of museums and, adding a round-table discussion for having a confirmation of them (RQ1). The first step consists of analysing the most outstanding attributes that are present in TripAdvisor (Zanibellato et al., 2018; Kim & Lee, 2019). The reviews were extracted previously by using WebHarvy from TripAdvisor, the most important online travel community (Egresi et al., 2019). The sample consisted of 5000 reviews (2500 opinions in English and 2500 opinions in Spanish. The data is analysed automatically by using Nvivo12. The attribute identification is based on the keywords (n=500) related to museum attributes (table 9).

Table 9. Text Mining approach

Sample	Total: 5000 Spanish: 2500 English: 2500
Date	Spanish: From February 24, 2016 to March 25, 2019. English: From July 15, 2015 to March 24, 2019.
Analysis	Data extracted with WebHarvy software and analysed by using Nvivo 12.
Keywords	500
Attributes detected	26

Source: Own elaboration, 2019.

The second step for identifying the attributes is organizing a round-table discussion with experts in order to identify the most representative attributes. The objective of

this round-table discussion is to create a group of discussion composed by professionals of museums and tourism industry aimed to create a debate on the most representative attributes of Thyssen-Bornemisza National museum (Madrid, Spain).

The round-table discussion took place at Rey Juan Carlos University, Social Sciences Faculty located at Madrid, Spain, on March 28th, 2019. The duration was 1 hour and 15 minutes. The event was video-recorded, and the recordings were transcribed via verbatim. In addition, the observation of the audiovisual information helped the interpretation of results. A homogeneous group composed the round-table discussion. The professionals that participated shared a common characteristic, being their area of specialization museums and/or cultural tourism. The invitation was sent to 12 professionals, but, finally, only seven could be present. The discussion was developed in Spanish language.

Seven participants took part in our discussion. These participants were connected to museums and the tourism sector (see table 10).

Table 10. Participants of the focus group

Type	**Gender**	**Expertise**
Academic	Feminine	University. Museum studies
Curator 1	Feminine	National Museum
Curator 2	Masculine	Regional Museum
Museologist	Feminine	Spanish Association of Museology
Account Manager	Masculine	TourSpain

Tourism professional Museum educator	Feminine Masculine	Destination Management Organization (DMO) Private enterprise

Source: Elaborated by the authors (2019)

Participants gave written informed consent to participate in the discussion. Names and personal information of participants were anonymized to protect de anonymity of participants.

The session started with a brief introduction to the topic (table 3). The participants had access to an identification of the attributes selected by the text mining analysis. The round-table discussion was arranged around two topic areas, which were divided into three parts (see table 11) description of the identified attributes; 2) selection of attributes in order of importance according to their professional opinion; 3) selection of attributes focused on tourist's perception (RQ2).

Table 11. Key topics of the round-table discussion

Topic 1	Considering your opinion on the previously identified attributes, how do you describe it?
Topic 2	What attributes do you believe are more representative of the Thyssen-Bornemisza National Museum?
Topic 3	What attributes do you think are more interesting from the point of view of tourists?

Source: Own elaboration, 2019.

Verbal data is coded along with the attributes previously identified by a text mining analysis based on the frequency of repetition of attributes. The results obtained are

discussed and analyzed, considering the literature focused on museum attributes (RQ3) using Nvivo 12. The correlations between keywords are analysed (considering those with a result higher than 0.50) for identifying the link between different terms. This is followed by a cluster analysis to generate diagrams based on the selected codes and cases when they have words in common. This analysis is based on Pearson's correlation between keywords.

4.4. RESULTS

The results about the museum attributes detected by eWOM analysis are based on the previous classification by Zanibellato et al., (2018), who divided the attributes into three types: core offering, peripherical services and ambiance. Within each type, the different attributes perceived by tourists have been located through this research (table 12).

Table 12. List of attributes of Thyssen-Bornemisza National Museum identified previously by eWOM analysis.

	Attributes	**Word frequency**	**Description**
1. Core offering	Collection	9412	The different masterpieces that comprise the core offering of the museum, including permanent collection and temporary exhibitions.
	• Permanent collection	755	The objects or pieces of art that are collected and owned by the museum.
	• Temporary exhibitions	1031	Exhibitions scheduled to open and close on specific dates.
2.Peripherical services	Activities	43	Activities created to promote the visit to the museum and to attract, for instance, children and families.
	App	18	A program for a Smartphone related to the museum with information about the collection and services.
	Audio guide	87	A handheld device that provides

			recorded information for visitors touring at the museum.
	F&B services	761	It comprises the cafeteria and the restaurant situated inside the museum area.
	Gift shop	355	A store that sells products suitable fo r giving as presents related to the museum.
	Guide	330	A person whose job is showing the museum or/and the book that gives you the essential information about the museum.
	Luggage storage	5	A large locker at the museum where luggage can be left temporarily.
	Resting spaces	10	Spaces for resting during the visit.
	Staff	84	The group of people who work at the museum.
	Ticket	2147	A small piece of paper or card is given to someone, usually to show that they have paid for visiting the museum.
	Toilets	24	A room or small building in the museum in which there are several toilets.
	Website	55	A set of pages of information on the internet about the museum.
	WiFi	9	WiFi free connection on the museum.
3. Ambiance	Accessibility	40	Possible to approach, enter, or use and to understand.
	Building	513	The structure that contains the museum.
	Crowding	134	A large group of people visiting the museum at the same time.
	Display	35	The form of arranging the collection to allow the possibility of seeing it by a public.
	Garden		The park and the space around the

		44	museum.
	Lighting	10	The arrangement of lights used in the museum.
	Location	306	Position of the museum.
	Photos	186	The possibility of taking pictures and the way of doing it (for instance, without using camera flash).
	Public museum vs. private museum	399	Provided by the government from taxes to be available to everyone or controlled or paid for a person or company and not by the government.
	Queue	248	A line of people waiting for entering the museum.

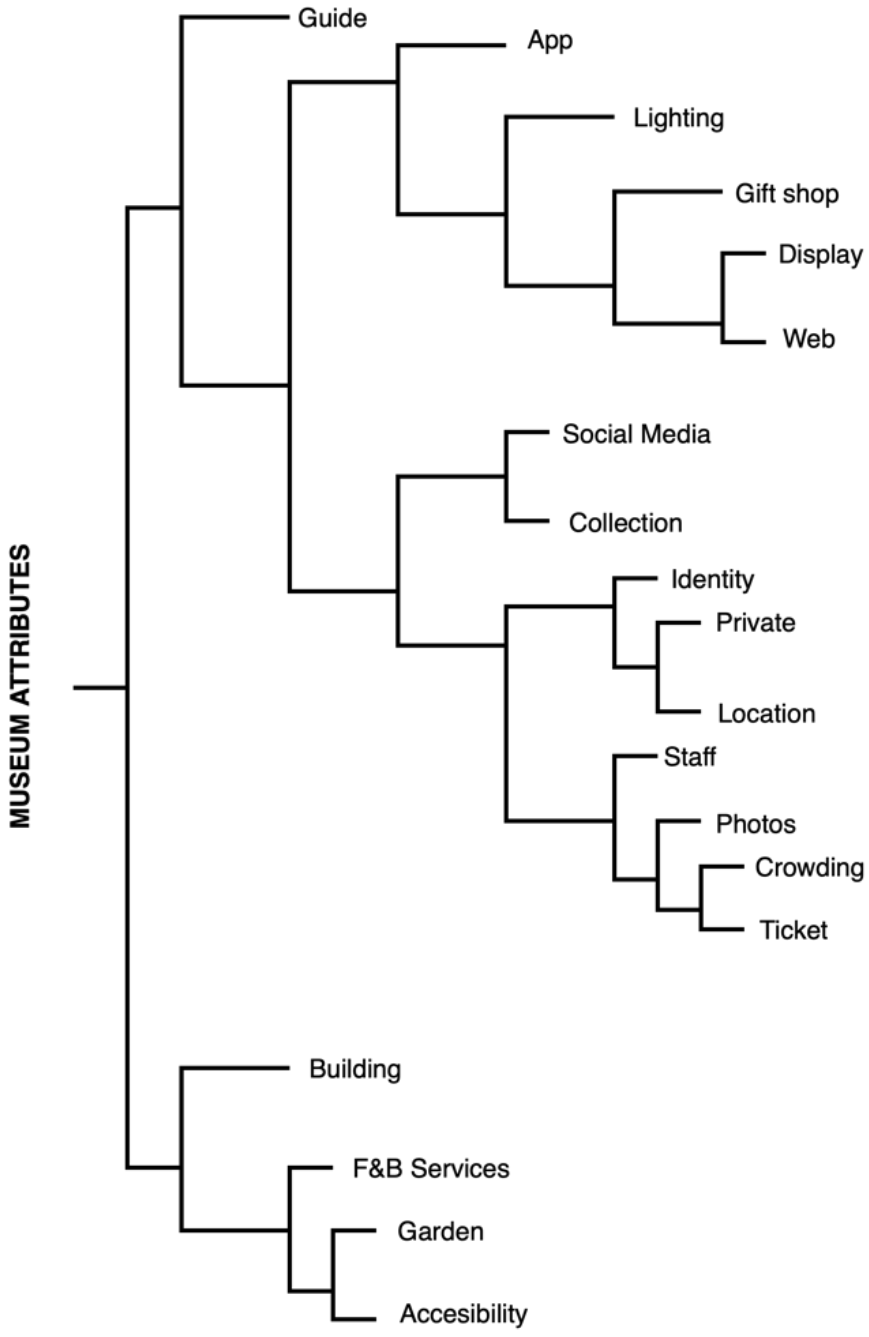
Source: Elaborated by the authors (2019)

Firstly, with regard to the **core offering**, the mention of the word 'collection' (61.58%), as well as 'permanent collection' and 'temporary exhibitions'. Secondly, on the **peripherical services**, 'activities' (0.13%), 'App' (0.11%), 'audio guide' (0.57%), 'F&B services' (4.97%), 'Gift shop' (2.32%) are located, guide' (2.16%), 'luggage storage' (0.03%), 'staff' (0.55%), 'resting spaces' (0.07%), 'ticket' (14.05%), 'toilets' (0.16%) and 'website' (0.36%), 'wifi' (0.06%). Thirdly, the attributes detected referring to the **ambiance** are 'accessibility' (0.26%), 'building' (3.35%), 'crowding' (0.87%), 'display' (0.21%), 'garden' (0.29%). lighting' (0.21%), 'location' (2%), 'photos' (1.21%), 'private' (2.61%) and 'queue' (1.62%). The most important correlations are related to the concept ‘accessibility’. It presents a positive correlation with ‘collection’ ($r=.36$, $p<.05$), ‘luggage storage’ ($r=.28$, $p<.05$). Besides, the word ‘storage’ is connected with ‘collection’ ($r=.16$, $p<.05$).

These results and the previous classification of museum attributes (see table III) were used for developing the round-table discussion around tourist perception and co-creation possibilities. The results of the round-table discussion show two different clusters. The first one refers to experience-related factors that would facilitate co-creation due to their characteristics and the attributes with a higher correlation between each other’s. The second one represents those services linked to the

physical experience in situ that presents greater difficulties to introduce the co-creation based on the results due to their minor correlation (see figure 7).

Figure 7. Dendrogram results analysis: round-table discussion



Source: Elaborated by the authors, 2019

The museum's collection is part of the main offer and has been studied and highlighted regarding its connection with the attraction of visitors (Kirshenblatt-Gimblett, 1998; Richards, 2001; Dean, 2002; Dickenson, 2005; Gravari-Barbas & Fagnoni, 2015; Preziosi & Farago, 2019).

The collection is the most representative attribute obtained from the Text Mining analysis. Participants agreed that the attribute called collection, including permanent collection and temporal exhibitions, is the principal attraction for tourists: '*…I think that part of the collection of the Thyssen [Museum], what it allows is that a tourist is given a very global vision and above all give many names of the first line*'. There is a positive correlation between 'collection' and Social Media (r=.51, p<.05), 'display' (r=.49, p<.05), 'private' (r=.46, p<.05), 'gift shop' (r=.43, p<.05),'identity' (r=.42, p<.05) and 'photos' (r=.40, p<.05).

The concept of the ticket is linked to the price to be paid for access to the museum, as well as free access. This attribute has been discussed and analyzed in different publications (Burton et al., 2009; Skinner et al., 2009; Frey et al., 2012; Ferilli et al., 2017). This point is controversial because, through net analysis, it is possible to determine that it is an element of importance for tourists that determines the visit to the museum. Through the round-table discussion, it is possible to check these data: *'I think that one of the aspects that need to be analyzed is the price of the ticket. Now it has gone down a bit and has also integrated the permanent exhibitions with the temporary ones. It is important. I think it is now at 12 euros and it used to be much more. And furthermore, that free access is minimal. Nothing else has four hours of free access to the museum, which is Mondays from 12 to 16 and sponsored by MasterCard. When really in the Prado, it seems that they are 14 hours a week and in the Reina Sofía, 18. I walk around a lot in that area, the previous Sunday because many people, at five o'clock in the afternoon, were already at the Prado to enter precisely at the time of free access*'. Related with the access, it is a positive correlation between 'ticket' and 'crowded' (r=.68, p<.05). Besides, the concept 'ticket' is connected with 'web' (r=.55, p<.05).

Since it is a public museum, with a few hours of free access and with particular characteristics concerning this attribute, it is stressed that the population could even consider it as an "elitist" museum. In fact, 'ticket' has a positive correlation with 'private' ($r=.60$, $p<.05$) and 'identity' ($r=.60$, $p<.05$). This has repercussions on the dissemination of the museum's image, as well as on the perception of its attributes: '*The theme that I think has been seen many times as elitist museum, that is the local population, but sometimes it has been seen that way. For many, having to pay an amount and not having so many free days*'.

However, this point is also discussed, indicating that the museum has free access through complementary programs beyond the fixed free opening hours: '*… by the statistics I know more, about 50% of the public is free not only those of the four hours, but those that come with accessibility programs that come with subsidized by Iberdrola, those that come from young programs that come by the Community of Madrid for transport come are free for the public.…'.*

The concept of identity and its relationship with tourism has been analyzed and studied through different researches, highlighting that attribute related to identity is connected with the perception of the local population (Pitchford & Jafari, 2008; Gravari-Barbas & Graburn, 2012; Nunkoo & Gursoy, 2012). Gravari-Barbas, Avila-Gómez & Ruiz (2018, p. 108) emphasize that 'the globalization of the economy has favored the emergence of a displaced urban elite that demands networks of cultural, educational and recreational spaces of high symbolic value: the "brand" plays a vital role in this sense since it guarantees the symbolic value of a consumed intangible good'.

In the case of the Thyssen-Bornemisza National Museum, this attribute stands out for its negative link with the local population: '*I wonder if this museum is identical to the Madrilenians. I am almost convinced that the Prado is perceived as a museum that identifies the people of Madrid, but I doubt it about the Thyssen Museum'*.

However, it is considered that activities are carried out from the museum to strengthen its identity and encourage access to it by the local community: '*… the Thyssen Museum is really betting a lot on listening to the community. It is a museum*

that is betting a lot on social action projects with different collectives, Gypsy Secretariat, is working with full inclusion, with many collectives, is working with teachers throughout Spain, and especially focused on Madrid…'.

In relation to identity, we locate the attribute related to the ownership and management of the museum. In fact, there is a positive correlation between 'identity' and 'private' ($r=.52$, $p<.05$). It is a public museum; however, through Text Mining analysis, it is detected that it is perceived as a private museum: *'… [It is] a museum that many people confuse as a private museum, being a public museum'.*

The round table highlighted this point and its connection to the concept of identity: *'…many visitors confuse it with a private collection. Then in 2017, we celebrated the 25th anniversary of the inauguration of the same, which has taken the character of the National Museum. That is important. Why? It should not be associated with a private collection. Not only Spanish national visitors but also foreign visitors. Rather, it should be a state museum that offers a series of excellent works. So, this is important, and in fact, there is a banner in the street, in the Paseo del Prado: the Museo Nacional Thyssen. So that it is not the usual Thyssen Museum and here we have all talked about the National Thyssen Museum'.*

Falk & Dierking (2016) emphasize that the visitor experience is influenced by interactions with staff so that Antón et al. (2019) consider that staff allows the visit to increase its quality and promote visitor interaction and participation. This attribute, discussed during the round table, is considered elementary because the staff is also in charge of spreading the image of the museum: '*Within the museum's brand, there is a commitment to take care of a staff, which is its staff, which is a staff that is attended to, respected, and that the image of the museum is very close. It is a staff that also generates much equipment, and they try to generate a lot about the equipment, with the room guards, with the people who provide information, with the people who provide education... All of them are quite related, there is much closeness, and that is appreciated. I think that is very important.…'.* The concept

'staff' is connected with 'display' (r=.55, p<.05) 'ticket' (r=.53, p<.05) and 'gift shop' (r=.51, p<.05).

Visitors' experience is not reduced to face-to-face visits but includes access to the website, the App, and social networks (Marty, 2007; Falk & Dierking, 2016). In the case of the Thyssen-Bornemisza National Museum, it stands out: '*look at the fact that the Thyssen Museum as an entity the Thyssen-Bornemisza National Museum has three linked websites, which are: the museum part, the Education area part - Educa Thyssen- and the shop part. That says a lot about what strengthens their identity.…'.*

Therefore, the web is not static and presents customization and dedication, depending on the segment to which it is directed. The concept 'web' is linked positively with 'identity' (r=.54, p<.05). Concerning the applications for smartphone, its elaboration and quality are highlighted: *'…mobile applications are also exciting [...] they are a sign of the quality of the institution'.* In fact, there is a positive correlation of 'web' with 'display' (r=.59, p<.05), 'private' (r=.56, p<.05) and 'identity' (r=.54, p<.05).

Communication through social networks is another leading factor, as well as your contact with visitors before, during, and after the visit: '*…I think there is one thing that should be highlighted about this museum in terms of tourism, is that it always responds to everyone who writes on social networks. It has more than a million followers on social networks. So, I think that is the immediate response you get when you make your comment, by the management of the museum. I think it is an added value'.*

The geographical location and the building are attributes that can attract visitors, offering a complete experience. Spaces play a crucial role in tourism, being a significant factor in the case of museums, which emerge in Europe and subsequently spread their image and imagination (Boukhris & Chapuis, 2016: Gravari-Barbas et

al., 2018). Therefore, one of the aspects debated at this point is that: '*…the geographical location of the museums means that they have more or fewer tourists'.*

The Thyssen-Bornemisza National Museum is located on the "Paseo del Arte," next to the Prado Museum and the Museo Nacional Centro de Arte Contemporáneo Reina Sofía. At the round table, it is determined that this geographical location promotes a visit to the museum: '*... [It is] located in a very emblematic space of Madrid, where the great cultural infrastructures are [...]'.*

With regard to the building, it is located in the Palace of Villahermosa, built in the early nineteenth century and neoclassical in character, which has undergone an architectural transformation of the building to house the museum (Correal Avilán, 2016). There is a positive correlation between 'location' and 'private' ($r=.60$, $p<.05$). The round table highlights its expansion, which took place through the acquisition of two buildings adjacent to the museum: *'it would also be necessary to emphasize building, especially with the enlargement'.* In relation to the building and its architectural characteristics, the garden stands out: '*The garden is tiny, but [it's] very nice'.* 'Garden' is linked to 'photos' ($r=.32$, $p<.05$).

The concept of accessibility "includes ease of use of the physical facilities, the proximity of core product for visitors, range of offerings of different markets and availability of museum services" (Gilmore & Rentschler, 2002 p. 749) This attribute presents a crucial concept in order to facilitate the compression and understanding of museums (Haworth & Williams, 2012; Starr, 2016). During the discussion, this attribute does not have a critical prevalence: '*I think it effectively works on accessibility'.* 'Accessibility' presents a positive correlation with 'display' ($r=.47$, $p<.05$), 'collection' ($r=.34$, $p<.05$) and 'Social Media' ($r=.32$, $p<.05$).

Museums have developed a range of activities to attract the public and, in turn, create experiences that encourage museums to be revisited (Falk & Dierking, 2016). In the case of the Thyssen-Bornemisza National Museum, the variety of activities available to the local community is highlighted: '*... [to] the public or a national tourist,*

because I think that perhaps the activity can also attract more attention, can't it? That multiplicity of activity that there is, which is also what national museums seek to bring closer to the public that lives in the city or that is passing through but a little through the activity, in my opinion...'. These activities, which are offered free of charge and financed with public funds, are in turn part of the museum's offer and are a different way of approaching the museum's collection: *'… [it is a] free open museum, with music, with a series of actions with instagramers, of reinterpretation of works, with courses around this, that is, there are many actions aimed at you and young artists, but that is subsidized with public money. …'.* Two parts usually compose the visit guide: "a long period of guided intensive looking, followed by a brief free period of museum cruising/exploration" (Falk & Dierking, 2016, p. 139). The quality of this attribute is detected as an essential factor: '*The guided tours are of high quality and are taken care of...'.*

Theobald (2000, p. 9) highlights that 'a true museum store is a hybrid, a cross between a gift shop and a museum exhibit. It is an integral part of the museum that contributes to the institution's stated purposes, both financially and educationally'. During the discussion it is determined that the gift shop is an outstanding attribute of the Thyssen-Bornemisza National Museum: *'I think it is a museum that has a very attractive store, a store that is within its sustainability management plan. [...] Tell you that [in] many museums the shops are fuller than the exhibition halls themselves.…'.* Besides, its characteristics and concern for the quality of the products stand out: *'The shop has opted for quality. If we think of many of the stores that are in museums, right now are outsourced are carried out in the form of external management by companies that, in the end, is having a very similar product in all. We all sell the same pencils, we sell the same things and yet [...] the Thyssen store is betting on quality, on its own designers, on basing the contemporary on the collections they have. This is attracting a different audience'.* There is a positive correlation between 'gift shop' and 'location' ($r=.52$, $p<.05$).

Food and beverage services include the restaurant and the café placed in the museum (Mihalache, 2016). Wallace (2016, p. 238) detected that 'a museum

restaurant or café operates comfortably, looking at it from a branding perspective will reap many rewards: familiarization, loyalty, repeat visits, membership, community partnerships, employee solidarity, and good standing in the scholarly universe'.
About the food and beverage services of the museum understudy, the cafeteria stands out: '*… also have a more or less very attractive cafeteria…'.* 'Food & Beverage services' are linked with 'location' (r=.18, p<.05).

One of the aspects that arise after the analysis of the comments made in TripAdvisor is the possibility of taking photographs in the museum. In the case of the Thyssen-Bornemisza National Museum, it is not allowed, so it is a controversial point between the conservation of the works and the limits established for the visitors' experience: *'the subject of photographs. Right now, in the 21st century, it is illogical, or it seems that it is illogical to continue to prohibit the subject of photography. It seems that nowadays, the public approaches museums differently. It comes with great interest, you have to know how to drive it, and I think that Thyssen has known how to drive it well so that you can share your experience, you can feel part of the experience and also the museum itself in social networks is very active. Share. Respond. You feel close to him. So, I think that attracts much public attention and I think there is little more we could say".* There is a positive correlation between 'photos' and 'private' (r=.56, p<.05), 'Social Media' (r=.50, p<.05) and 'location' (r=.44, p<.05).

About museum crowding, Kılıçarslan & Caber (2018, p.2) remark that 'crowd perception is another determinant of overall satisfaction and behavioral intention of cultural heritage site visitors'. Because of this situation, a cultural institution as museums decided to restrict the access of visitors: '*…one of the things that also has to do with the number of visitors that the museum has is the control of the capacity and the control of the visits…'.*

This attribute has a positive significance from the point of view of participants because of this limitation of visitors: '*…the Thyssen [Museum] is organized to be able to be calmly the time that you want to be, your hour and a half of visit you can enjoy it without interruptions, without excessive annoyance. If there is more than one*

group nearby, the entrance of the room is not allowed so that they do not bother each other, and I think that is important'. The concept of 'crowded' is connected with 'photos' (r=.59, p<.05), 'private' (r=.58, p<.05), 'location' (r=.53, p<.05) and 'identity' (r=.52, p<.05).

Zanibellato et al. (2018) detect in their analysis of ten museums the disposition and illumination as attributes. In the case of the Thyssen-Bornemisza National Museum, the layout of the collection and its organization are taken into account: 'i*n the way in which the two collections have been organized, that of the Baroness and that of the Baron. It is something that is very symbolic, and that, from my point of view, is very well structured in terms of organization and signage. I think this is something that is also a sign of identity of the museum itself'.* 'Display' is linked with 'lighting' (r=.57, p<.05).

As far as lighting is concerned, recent changes have been made in order to focus on quality: 't*he lighting themes. The lighting has just been changed a few months ago, has completed a lighting project, and has achieved an improvement in the quality of light that also affects the time of the visit. Some comfortable spaces were generated to be able to see the works, with the light that focuses directly on the work and not on the wall, which does not distort the image'.* There is a positive correlation between 'lighting' and 'photos' (r=.35, p<.05).

The general picture emerging from the analysis is that Thyssen-Bornemisza National Museum attributes identified by a previous Text Mining analysis are proved and confirmed after the round-table discussion. An interesting side finding was that the most representative attribute of the case of study is the collection. This result proves that peripherical services and ambiance attributes are no undervalued. A possible interpretation of these findings is that this museum should improve its strategies for marking better the experience of visitors related to peripherical services and ambiance attributes (see figure 8). The stakeholder's perception shows that the collection and the accessibility are high value attributes. Concerning to the services linked to co-creation experiences, it is possible to identify the follow: activities, audio

guide, gift shop and guide, all of them included in the part called ambiance. Moreover, the attributes that increased the value of visitor's experience are connected with the ambience, identifying the App, website, toilets, resting spaces, luggage storage and F&B services. Finally, there are some attributes categorized as controversial due to their characteristics, as the ticket price, the identity and the concept of public museum vs. private museum. The attributes connected with the concept of co-creation allow promoting sustainable experiences.

Figure 8. Attributes and co-creation experiences in Museums: a modest proposal

Source: Elaborated by the authors (2019)

4.5. DISCUSSION AND CONCLUSION

The application of tools from Industry 4.0 allows improving the co-creation and innovation in museums. This paper has investigated how eWOM is a tool for making a research about museum attributes in order to improve the management knowledge (Pihlaja et al., 2017; Anton et al., 2019). The results are connected with the concept

of co-creation because the findings of this study indicate the importance of identifying the museum attributes in order to improve the visitor's experience and co-creation strategies (Buhalis et al., 2015; Trunfio & Della Lucia, 2019; Sugathan & Ranjan, 2019). Zanibellato et al. (2018) carry out the identification of museum attributes by studying the twenty main museums in the world according to the number of visits. However, when a specific case study is carried out using the proposed method, it is detected that the results are not generalizable. There are significant differences between the attributes detected and the general attributes of museums identified by Zanibellato et al. (2018). This is due to the fact that by performing a search focused in a single museum, the results obtained are completer and more precise than identifying attributes in a general way. These findings reinforce the need of applying a general method to each museum because of the individual characteristics and differences amongst them (see table 13).

Table 13. A comparison of attributes detected on this research and attributes identified by Zanibellato et al. (2018)

	Attributes detected on this research	Zanibellato, Rosin & Casarin (2018)
1. Core offering	Collection	✓
2.Peripherical services	Activities	×
	App	×
	Audio guide	✓
	F&B services	×
	Gift shop	✓
	Guide	✓
	Luggage storage	×
	Resting spaces	✓
	Staff	✓
	Ticket	✓
	Toilets	×
	Website	×

3. Ambiance	Accessibility	✗
	Building	✓
	Crowding	✓
	Display	✓
	Garden	✗
	Lighting	✓
	Location	✗
	Photos	✓
	Public museum vs. private museum	✗
	Queue	✓

Source: Elaborated by the authors (2019)

In light of the results, some conclusions can be drawn from the eWOM results and the round-table discussion (see table IV). Analysing and understanding visitor's experience is a crucial fact for creating management strategies in museums (Guo et al., 2017; Keiningham et al., 2019). The participants of the round-table discussion validate the attributes previously detected by the Text Mining analysis of TripAdvisor (RQ1). The data obtained were analysed by a netnography approach for improving the accuracy of results. This qualitative technique is a method that improves knowledge about tourist experiences and behaviour (Kozinets, 2019; Tavakoli & Wijesinghe, 2019) as shown in table 14.

Table 14. Research questions and responses

RQ1: How do the Industry 4.0 methods help to understand museum attributes?	It allows better understanding museum performance and improving the decision-making process.
RQ2: How does attributes analysis help to promote co-creation in museums?	Attributes analysis provides crucial information for identifying co-creation possibilities in museum in order to make better the visitors' experience

	and the value perceived by them.
RQ3: How do eWOM and the roundtable make it easier to identify museum attributes?	The analysis of eWOM facilitates the process of identifying museum attributes, proving the validity of Industry 4.0 tools for analysing museum attributes.

Source: Elaborated by the authors, 2019

Finally, these results suggest that the concept of co-creation could be applied to museums, especially for improving peripherical services and ambiance attributes (RQ2). However, these results need to be improved for being accurate. Through this research, we propose a procedure in which it is possible to confirm these museum attributes identified previously by round-table discussions (RQ3). The findings of this study suggest that museum stakeholders are involved in museum management (García-Muiña et al., 2019).

4.5.1. LIMITATIONS AND FUTURE LINES

The analysis was limited in several ways. First, the number of round-table discussions could be extended. Second, the number of round-table discussion could be expanded. This way, the results could be more accurate.

Our research will be constructive in solving the difficulty of identifying museum attributes and their value for visitors. This research has raised many questions in need of further examination. Future work should concentrate on analyzing local community perceptions of these attributes and its implications in tourists from a sustainable perspective.

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5 SUSTAINABLE CUSTOMER VALUATION AND MUSEUM ATTRIBUTES

CHAPTER 5: SUSTAINABLE CUSTOMER VALUATION AND MUSEUM ATTRIBUTES: AN EXPLORATORY ANALYSIS OF WILLINGNESS TO PAY AND CHOICE EXPERIMENT APPLIED TO THYSSEN-BORNEMISZA NATIONAL MUSEUM (MADRID, SPAIN)

Next chapter includes the Authors Original Manuscript corresponding to the article that is being reviewed in 'Tourist Studies'.

This journal is indexed in IBZ Online; CAB Abstracts; Hospitality & Tourism Complete; Index Islamicus; MLA - Modern Language Association Database; Psycinfo; Sociological abstracts; Scopus, Social Sciences Citation Index; WoS. Impact factor CiteScore (2018): 1.910 and SJR (2018): 1.44. Rank in 'Tourism, Leisure and Hospitality Management' (Q2).

ABSTRACT

Attribute evaluation provides an understanding of the perceived quality and subjective value of the museum visitor experience. In this way, it is essential to also consider visitor behaviour and satisfaction in order to be able to encourage innovation and sustainability in museums. The principal contribution of this paper is to analyse the attributes perceived by tourists and the local community (Madrid residents) of the Thyssen-Bornemisza National Museum (Madrid, Spain), analysing the results of a choice experiments and willingness to pay questionnaire. In order to analyse in-depth, the assessment of the attributes and their perception, the relevance-determination model is applied. Data collection was achieved with a questionnaire survey using a convenience sample of international tourists and the local community, with a total of 775 valid surveys. The results of the application of the relevance-determination analysis (RDA) show that there are two types of attributes: higher impact core and lower importance attributes. The attributes with the

highest subjective value perceived by interviewed tourists and interviewed residents are the location, the permanent collection, temporary exhibitions and the ticket price. These results show that there are some differences between the perception and appreciation of the attributes by interviewed residents and interviewed tourists. The results provide valuable information that can be applied in practice to devise strategies for economic and socio-cultural sustainability aimed to improve decision-making in museum management.

Keywords: Sustainability; customer valuation; attributes; museum; willingness to pay; choice experiment

5.1. INTRODUCTION

The analysis of attributes related to tourism resources and destinations allow to develop a better understanding of the perception and visit of tourists (Ramires et al., 2018). The number of studies focused on analysing the relationship between perceived value concerning consumer behaviour and its link to sustainability is an indication of the importance of these issues (Vinzenz et al., 2019). Sustainable tourism is linked to new marketing strategies focused on product characteristics in order to analyse their attributes (Sharma and Jha, 2017). In the case of tourist destinations, their quality is based on increasing and promoting the tourist value of the destination's brand (Tsaur et al., 2016). Visitor experience and their relationship to museums are connected to both cognitive and affective aspects in ways that influence the sustainable behaviour of visitors (Packer and Ballantyne, 2016; Buonincontri et al., 2017). These attributes are part of a comprehensive offer proposed by museums, through which they produce economic, social and environmental impacts by attracting audiences and their strategies at local, national and international levels (Kinghorn and Willis, 2008). The analysis of museum attributes has been studied in previous research, taking into account the perception of both tourists and visitors. Besides, the introduction of new techniques of analysis and the understanding of eWOM is another key aspect in obtaining results on the evaluation of museum attributes (Orea-Giner et al., 2019). Previous studies have analysed the application of Willingness to Pay and Choice Experiments in museums

(Mourato and Mazzanti, 2002). This method allows museums to obtain information on their preferences and the perception of the attributes they have, facilitating the evaluation of perceived subjective economic value (Orea-Giner et al., 2019).

This paper outlines an exploratory analysis of the results derived from an attribute analysis model adapted to museums. The model is linked to tourist and local community valuation and perception. This approach considers the exploratory results as an essential tool for creating sustainable management strategies. This model adapted is tested on a case study, Thyssen-Bornemisza National Museum (Madrid, Spain). It is located at the Paseo del Prado, an area where other museums are located such as the Museo Nacional del Prado, Museo Nacional Centro de Arte Reina Sofía and National Museum of Anthropology. This museum had 927907 visitors in 2018 (Mourato and Mazzanti, 2002), and the majority of visitors are international (64%) with respect to national (36%) (Museo Thyssen-Bornemiza, 2018). The main characteristic of this museum is that it is a public museum that holds a competition for the hiring of communication, marketing and public relations services, with a budget of 30,000 euros in 2016 (Museo Thyssen-Bornemiza, 2016).

The research questions of our work arising from this objective are:

RQ1. How does a model based on attributes help to improve sustainable museums management?

RQ2. How does the choice experiment method allow to analyse sustainable customer valuation and consumption behaviour?

RQ3. What is the subjective value of museum attributes perceived by interviewed tourist and interviewed local community (Madrid residents)?

RQ4. Are there differences between the subjective value perceived by interviewed tourists and interviewed residents?

RQ5. Are there differences between the answers given by the groups based on socio-demographic characteristics?

This study presents a twofold contribution. Firstly, we propose a case study for developing analysis in order to build a choice experiments questionnaire and,

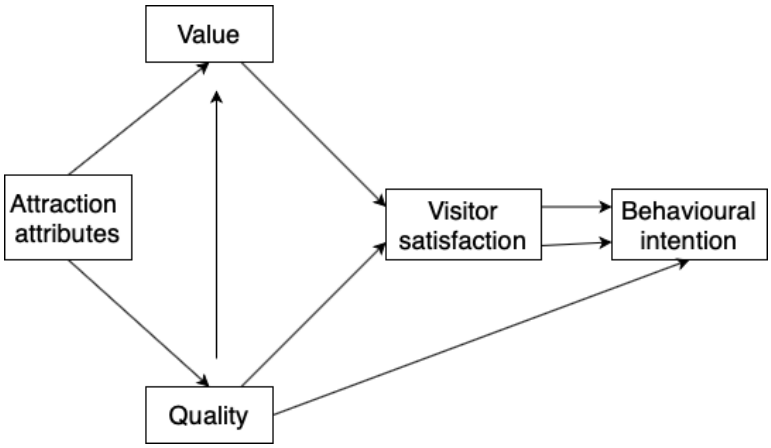
because of this, a model adapted to interpret the results obtained has been built. Such methods have been previously applied in research on the tourism sector (Strielkowski et al., 2012; Guest et al., 2017). Secondly, the results obtained offer valuable information to improve sustainable management strategies in museums.

This paper is divided into seven distinct sections. Section two presents the literature review focused on the attributes of value perception. Section three describes the museum attributes analysis and sustainability. Section four contains the methodology developed for this exploratory analysis. Section five deals with the results obtained from the data analysis. Section six offers a discussion and conclusion. Finally, practical implications and limitations of this research are presented.

5.2. ATTRIBUTES AND VALUE PERCEPTION

Previous studies have identified that attributes have a more considerable influence on perceived value than on perceived quality (Albayrak et al., 2016; Hallak et al., 2018). Attribute analysis allows us to broaden our knowledge of the quality, value, satisfaction and behaviour derived from visitors' experiences (Lee et al., 2016; Zanibellato et al., 2018). In the field of tourism, it is vital to study satisfaction and perceived quality as a value, since in this way it is possible to interpret the intentions of recommendation and repetition (Oriade and Schofield, 2019) as shown in figure 1. Through this study, they identify that the perceived values of the attributes of attraction have a more significant influence on the perceived value than on the perceived quality. Therefore, the attributes are elemental aspects for analysing consumer behaviour as well as their experience (Oriade and Schofield, 2019).

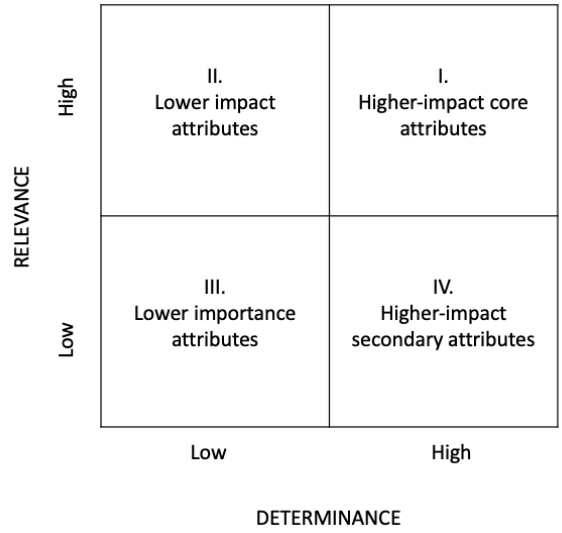
Figure 9. Service quality, value, satisfaction and behavioural intentions model.



Source: Oriade and Schofield, 2019

Previous researches propose the relevance-determinance analysis model (Figure 2) to classify attributes (Mikulić and Prebežac, 2012; Mikulić et al., 2016; Mikulić et al., 2017). Mikulić and Prebežac (2012) propose this model for interpreting the perceived value of attributes, taking into account two dimensions: relevance and determinance. It is a tool designed as an alternative to importance-performance analysis (Mikulić et al., 2017; Boely et al., 2017). It aims to address the shortcomings of other similar tools by offering a multidimensional perspective. It is a quadrant formed by four different levels of relevance and determinance. The first consists of 'higher-impact core attributes', which have a great responsibility in decision-making and the consumer experience and, the second represents 'lower-impact core attributes', which are essential for decision making but not so much for the consumer experience. Thirdly, they highlight 'lower-importance attributes', stressing that it is not that these attributes lack interest, only that compared to the rest, they present a lower value from the consumer's perception. Finally, 'higher-impact secondary attributes' have been located, which have a low relevance but high determinacy, being part of the so-called 'augmented product' and which, therefore, affect the consumer's experience (Mikulić et al., 2017).

Figure 10. Relevance-determinance analysis (RDA) matrix.



Source: Mikulić et al., 2017, p. 229

The application of attribute analysis in museums has been previously studied by Shih (2015). Through his research, the author concludes that marketing strategies related to museum experience should be focused on paying attention to user experiences (Yoon et al., 2019). Besides, they highlight the need to study the return on investment of consumers not only in economic terms but also in emotional ones. Service excellence is another of the critical points, as it adds value to customer's perception during the consumer experience process. The convenient location of the museum is another factor to consider when choosing the museum to visit, as it promotes brand loyalty as well as the intention to visit the museum. Finally, they consider that building a conducive atmosphere and environment for the establishment is essential because of its history, image and experience (Sun and Kim, 2013). This factor has led to the need to carry out studies focused on analysing the perception of the attributes of museums as well as the subjective or emotional economic value perceived by visitors (Orea-Giner et al., 2019).

Museum attributes can be studied by analysing the opinions expressed by visitors on social networks. The eWOM (electronic Word of Mouth) concept allows analysing the user opinion, as well as consumer perception and experience (Yoon et al., 2019). Museum attributes have been identified through different methodologies,

among which the application of eWOM analysis stands out (Zanibellato et al., 2018; Yoon et al., 2019). The eWOM analysis facilitates the understanding of the user experience as well as the better understanding of the assessment of attributes and the possibility of better designing and using resources (Zanibellato et al., 2018).

5.3. THE MUSEUM ATTRIBUTES ANALYSIS AND SUSTAINABILITY

Museums are significant resources for the communities where they are located and have an outstanding influence relative to social and cultural aspects (Perzolla et al., 2018). Sustainability in the case of museums is linked to how they adapt to different political, social, economic and environmental situations, as well as to set long-term objectives concerning society's expectations (Di Pietro et al., 2014). The orientation of museums towards the implementation of sustainable strategies makes it possible to ensure that economic, socio-cultural and environmental benefits are obtained (Pop et al., 2019).

Tourism causes both negative and positive impacts, both on the destination and the local community. As for the positive economic impact, the creation of employment and the businesses related to this activity stand out. As for the socio-cultural impacts, they can also be both positive and negative. The negative ones imply that the tourist activity is not valued as positive by the local population, contrary to the positive effects. Therefore, residents must be placed at the centre of the development of sustainable tourism strategies (Mathew and Sreejesh, 2017). In addition, tourism impacts on the environment since it produces and accelerates its degradation. This is, for instance, due to the impact of international air transport. There is an ecological footprint related to tourism activity (Mihalič, 2016).

The term responsible tourism is linked to the concept of sustainability in tourism. These are strategies that are promoted on the basis of sustainability and the local population developing sustainable actions. In this way, the local population is involved in these strategies (Šegota et al., 2017). Local community is an essential stakeholder in the tourism destination (Mathew and Sreejesh, 2017). Therefore, sustainable tourism development takes into account ecological processes, economic

sustainability by causing positive impacts and developing the region and incorporates the participation of the local community in the development of tourism strategies (Domínguez-Gómez and González-Gómez, 2017). In relation to these points, it is necessary to highlight the concept of overtourism, which consists of massive tourist arrivals that cause negative impacts and affect the quality of life of the local community. Sustainability in museums depends on their size, material characteristics and human resources. The measurement of sustainability concerning museums allows us to know their positive and negative impacts, as well as to compare results amongst different museums (Ren et al., 2019).

Museums practice market-oriented implementation strategies promote value for the customer and introduce innovative elements (Pop and Borza, 2016). Museums make efforts to achieve positive economic and socio-cultural impacts, which are connected to sustainability strategies, visitor's satisfaction, reputation and prestige, as well as their connection to tourism (García-Muiña et al., 2019). Tourists' perceptions of sustainability measures in museums can also change (Recuero et al., 2017).

Non-profit museums have a different goal because it is usually not only to obtain economical profits (Chung et al., 2019). However, marketing and economic analysis strategies allow the performance of these organisations to be measured and decision-making to be improved. The management of museums is related to the economic evaluation of their resources, as well as the achievement of results related to consumer behaviour (Tsai and Lin, 2018). Museums must also concentrate their efforts on understanding visitor behaviour and satisfaction so that long-term sustainability can be guaranteed (Villeneuve, 2012; Torres-Ortega et al., 2018).

The connection between the study of attributes and sustainability has been studied previously. Prior studies have shown the relationship between the study of consumer behaviour and the analysis of consumer preferences, as well as their application in the design of cultural products in museums (Wehrli et al., 2017).

The analysis of the willingness to pay to the application of sustainability measures in cultural heritage has been studied earlier in order to take into account the different segments of the tourism market and the application of differentiated pricing policies (Oppewal et al., 2015). The use of mixed methods such as

willingness to pay and choice experiments have previously been proposed as a suitable method for analysing the attributes of museums due to the possibility it offers of analysing the socio-cultural and economic aspects perceived by visitors (Mourato and Mazzanti, 2002; Orea-Giner et al., 2019). The Choice Experiment method is used to estimate the monetary value of use and non-use derived from the museum (Orea-Giner et al., 2019). Therefore, the museum can be valued based on different characteristics, among which the attributes are. These attributes allow us to know the perception of visitors (Kinghorn and Willins, 2008).

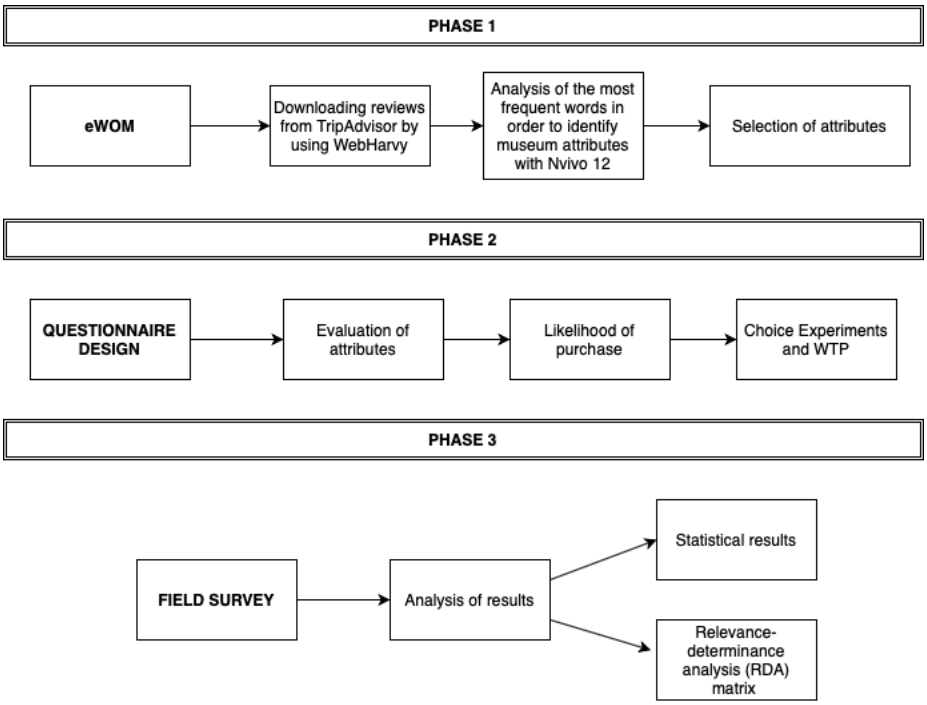
Management strategies focused on sustainability by carrying out sustainable actions concerning the environmental and economic environment in hospitality have a positive impact on customer satisfaction, loyalty and willingness to pay (Xu and Gursoy, 2015). However, strategies focused on the socio-cultural dimension harm the willingness to pay, although they do produce an increase in satisfaction (Jurado-Rivas and Sánchez-Rivero, 2019). Indeed, there is a positive link between customer satisfaction and the profitability and value of tourism enterprises (Xu and Gursoy, 2015). eWOM's analysis is linked to the participation of consumers in the creation of experiences, i.e. with the term co-creation (Kim and Lee, 2019). In this process of co-creation, it is also essential to take into account the assessment and perception of the local community (Buhalis and Foerste, 2015; Xie et al., 2019).

5.4. METHODOLOGY

The proposed methodology (figure 3) consists of detecting attributes of the Thyssen-Bornemisza National Museum through eWOM derived from TripAdvisor. Previous studies have made an analysis of TripAdvisor to know in depth the opinions and perceptions of the users (Stoleriu et al., 2019; Yoon et al., 2019). After this previous identification and selection of attributes, a questionnaire to tourists and residents of Madrid is made in order to evaluate the attributes applying Willingness to Pay and

Choice Experiments. The method selected (figure 3) is a quantitative survey based on a previous identification of eWOM and attributes of the museum (Zanibellato et al., 2018; Orea-Giner et al., 2019). This method is divided into three phases.

Figure 11. Methodological approach



Source: Elaborated by the authors, 2020.

The first phase includes a previous identification of attributes by applying Text Mining methods. The study of Zanibellato et al. (2018) present an essential key aspect of classification of attributes: (1) core offering; (2) external services; (3) ambience. This empirical analysis regards this classification. The core offering evaluates the permanent collection and temporary exhibitions. Peripheral services include attributes as the gift shop, food and beverage services, audio, audio-guide, staff, ticket and activities. The identification of attributes is carried out by downloading 2500 reviews in English and 2500 reviews in Spanish from TripAdvisor using

WebHarvy. From this database, keywords are extracted, and the attributes identified among these keywords are manually coded using Nvivo12. The ambience is a vital fact and, this type of attributes comprises 'queue', 'crowding' and 'photos', among others. Table 1 presents the different attributes of the Thyssen-Bornemisza National Museum. The attributes are identified by analysing the most frequent words. The results of this consultation were refined to locate the most representative attributes based on the attributes previously proposed by Zanibellato et al. (2018). The identified attributes are A1: Activities; A2: App; A3: Building; A4: Crowding; A5: F&B services; A6: Gift shop; A7: Identity; A8: Location; A9: Permanent collection; A10: Public museum; A11: Queue; A12: Staff; A13: Temporary exhibitions; A14: Ticket price. Based on these, the design of the questionnaire is carried out.

The second phase comprises the survey design. It includes a total of 21 questions in four blocks (table 1). The questionnaire is based on previous metrics, as shown in table 1, and it is composed of opened and closed questions (table 1).

Table 15. Questionnaire design references.

Questions	References
Evaluation of attributes	Scott, 2003 Busacca and Padula, 2005 Scott, 2006 Mangham et al., 2009 Carson and Louviere, 2010 Lourenço-Gomes et al., 2013 Jacobsen, 2016 Trunfio and Della Lucia, 2019
Choice experiments	Scott, 2003 Mazzanti, 2003 Le Gall-Ely, 2009 Choi et al., 2010 Fonseca and Rebelo, 2010 Plaza, 2010 Greiner et al., 2014 Gómez-Zapata et al., 2018

Willingness to pay	Bedate et al., 2004 Noonan, 2004 Goldberg and Roosen, 2005 Herrero et al., 2012 Noonan and Rizzo, 2017 Beckman, 2018 Park and Song, 2018

Source: Elaborated by the authors, 2020.

The first part of the questionnaire is focused on analysing the likelihood of purchase related to the price ticket of the museum. In order to evaluate the perception of the ticket price (attribute 14), a question is asked about the current ticket price (from 9 to 13 euros), and two questions are included focused on the willingness to pay. For these two questions, a ticket increase of 3 and 5 Euro over the general ticket price is presented. This factor takes into account the ticket prices of other museums that are ranked worldwide in terms of visitors and have a fixed ticket price: The Louvre Museum with 10.2 million visitors in 2018 (Louvre, 2019) and The Metropolitan Museum of Art with 7.4 million visitors in 2018 (Met Museum, 2019). Prices vary at the Louvre, from $15 to $17; and at the Metropolitan Museum of Art, from $12 to $25. The second part is about attributes evaluation by using a Likert scale. These attributes were previously selected by analysing eWom data (5000 reviews). In this way, it is possible to justify the selection of attributes included in the survey. A Bayesian design of attribute sets and attribute levels (table 2) is done, taking into account the combination of choice sets. The full factorial design was combined with utility balance in order to avoid a dominant alternative. This type of choice experiments design has previously been applied in tourism-focused research (Gómez-Zapata et al., 2018; Park et al., 2019).

Therefore, 120 (i.e. 5 x 4 x 3 x 2 x 1) possible permutations are produced. The options were assigned, and, then, a preference level (from 1 to 5) is chosen. Participants' willingness to pay is also assessed based on the different options proposed, evaluated from 0 to 100€, considering the price of similar services in worldwide museums that are highly ranked. Finally, the questionnaire presents questions related to understanding the socio-demographic profile of participants better.

Table 16. A sample choice set used in this study.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Type of visit	Permanent collection (A9) Temporal exhibitions (A13)	Permanent collection (A9) Temporal exhibitions (A13)	Permanent collection (A9) Temporal exhibitions (A13)	Permanent collection (A9)	Temporal exhibitions (A13)
Type of access	Normal (A4; A11)	Normal (A4; A11)	Premium (A4; A11)	Normal (A4; A11)	Normal (A4; A11)
Guide	-	-	-	Customized tour	Customized tour
Duration	-	-	-	1h	1h
Extra services	App (A2)	Meal included (A5)	-	-	-

A1: Activitites; A2: App; A3: Building; A4: Crowding; A5: F&B services; A6: Gift shop; A7: Identity; A8: Location; A9: Permanent collection; A10: Public museum; A11: Queue; A12: Staff; A13: Temporary exhibitions; A14: Ticket price.

Source: Elaborated by the authors, 2020.

A total of 775 valid surveys were collected. The questionnaire was applied to

international and national tourists (n = 386) and local community (n=389), in English and Spanish language. In the case of the tourist's target, it has been distributed by using Facebook Ads (10,36%) and in situ (89,64%) on Paseo del Prado (Madrid) by a simple random selection. The use of the Facebook Ads platform is an option that allows the combination with the offline distribution. This type of approach facilitates reaching audiences that are difficult to reach through offline survey distribution. Therefore, online distribution is considered for the segment. The target selected through this sampling is people living outside Spain who has marked on their social networks (Facebook and Instagram) that they have visited the museums in Madrid. In this way, it has been possible to cover a more comprehensive target and obtain a response from different nationalities and ages.

The questionnaires about local community have been distributed by using Facebook Ads. This distribution is done online because it allows us to limit our target and collect data from all the different areas of the city of Madrid, based on the city's postal codes. The sampling period was between July 11th and September 30th, 2019. Other studies about museum visitors support our sample, such as (Kosinski et al., 2015) with a study of 425 valid responses.

The profile of the sample is analysed, employing univariate analysis so that it is possible to identify the different socio-demographic characteristics of the people surveyed (Ramires et al., 2018). An exploratory analysis of the main results is carried out through an exploratory analysis and Kruskal Wallis Test application by using SPSS v25. The traditional $p < .05$ and $p < .01$ criterion of statistical significance was employed for all tests. Kruskal-Wallis Test like a non-parametric

test, was applied to analyse the level that being a tourist, or a resident influence their answer and the evaluation of attributes. Also, this non-parametric test allows us to analyse the differences between groups derived from the socio-demographic characteristics. These results are interpreted under the basis of the relevance-determinance analysis (RDA) matrix (Mikulić and Prebežac, 2012; Mikulić et al., 2016; Mikulić et al., 2017).

5.5. DATA ANALYSIS

5.5.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE PROFILES

The analysis of the characteristics of the sample profile makes it possible to understand critical aspects for this research since it is of interest to link the type of response by gender, origin, level of studies and total revenue per month [2].

Table 17 presents the general profile of interviewed tourists who visit the museums located in Paseo del Prado in Madrid. The socio-demographic characteristics of the sample profile of interviewed national and international tourists show, according to the univariate analysis (see table 2), that 52.8% are female compared to 44.0% male. The average age of interviewed tourists visiting museums located in this area is 47 years (M ± SD=47.00 ± 7.28). The most representative age is over 64 (32.1%), with the age of 25 to 34 years, also standing out (21%). Concerning to the level of studies, 51.8% hold a bachelor's degree. As for the total income received per month, 34.5% responded that it is between 0 and 500€.

The socio-demographic profile of the interviewed residents sample shows that the masculine gender (62%) stands out against the feminine gender (35.7%). The mean age of the local population sample is 39 years (M ± SD=38.80 ± 2.95). The age with the highest frequency of response is 18 to 24 years old (29.8%) and 45 to 44 (20.3%). The most representative educational level is also a bachelor's degree

(51.4%). Regarding the total income per month, the most frequent answer is that their salary is from 0 to 500 euros (37.3%).

Table 17. Socio-demographic characteristics

	Tourists		Local community	
Variable	**n**	**%**	**n**	**%**
Gender				
Female	204	52,8	139	35,7
Male	170	44,0	241	62
Other	3	0,8	1	0,3
Prefer not to answer	9	2,3	8	2,1
Country				
Spain	225	58,3	N/A	N/A
Italy	29	7,5	N/A	N/A
United States	18	4,7	N/A	N/A
Portugal	11	2,8	N/A	N/A
Other	103	26,7	N/A	N/A
Age				
18-24	56	14,5	116	29,8
25-34	81	21,0	60	15,4
35-44	61	15,8	55	14,1
45-54	32	8,3	79	20,3
55-64	32	8,3	63	16,2
Above 64	124	32,1	14	4,1
Education				
Comprehensive school	5	1,3	9	2,3
Vocational training	6	1,6	9	2,3
Secondary school	15	3,9	20	5,1
Upper secondary school/ matriculation examination	64	16,6	77	19,8
Bachelor’s degree	200	51,8	200	51,4

Master's degree or above	81	21,0	65	16,7
Other	15	3,9	2,3	2,3
Employment status				
Full-time employment	177	45,9	143	36,8
Part-time employment	52	13,5	41	10,5
Unemployed	25	6,5	67	17,2
Self-employed	21	5,4	25	6,4
Homemaker	4	1,0	8	2,1
Student	82	21,2	75	19,3
Retired	8	2,1	21	5,4
Military	2	0,5	0	0
Other	15	3,9	9	2,3
Total revenue per month				
0-500€	133	34,5	145	37,3
500-1000€	70	18,1	56	14,4
1000-1500€	60	15,5	85	21,9
1500-2000€	62	16,1	49	12,6
2000-2500€	34	8,8	29	7,4
2500-3000€	9	2,3	10	2,6
Over 3000€	18	4,7	15	3,9

Source: Elaborated by the authors, 2020

5.5.2. TICKET PRICE AND LIKELIHOOD OF PURCHASE

The perception according to the ticket price and likelihood of purchase [83] questions (see table 18) detects that the perception of the museum under study based on the ticket price is that of a private museum both on the part of interviewed tourists (63.2%) and the interviewed residents (78.1%). However, it is a public museum. About the questions on the price of admission to the museum, if the price of admission were to rise by €3, more than half of the tourists surveyed would be willing to pay this increase (56.5%). However, in the case of the local population, 65.8%

would not pay. Interviewed tourists (65.8%) and interviewed residents (80.5%) would not be a likelihood of purchase such a price ticket increases in 5€.

Table 18. Perception according to the ticket price and likelihood of purchase: tourists and the local community sample

		Interviewed tourists		Interviewed residents	
		n	%	n	%
Perception according to ticket price	Public museum	142	36.8	85	21.9
	Private museum	244	63.2	304	78.1
Likelihood of purchase if the ticket price is increased by 3€	Yes	218	56.5	133	34.2
	No	168	43.5	256	65.8
Likelihood of purchase if the ticket price is increased by 5€	Yes	132	34.2	76	19.5
	No	254	65.8	313	80.5

Source: Elaborated by the authors, 2020

5.5.3. ATTRIBUTES PERCEPTION

The importance of the evaluated attributes (see table 5) is classified in a five-point Likert scale (1-not important; 5-very important). The attributes with the greatest value for tourists are the location (M = 4.37), the building (M = 4.2) and the permanent collection. The rest of the attributes have an average evaluation (M = < 2.5). In the case of the local community, the attributes perceived as most valuable are location (M = 4.6), building (M = 4.34), permanent collection (M = 4.19) and temporary exhibitions (M = 4). However, it would be important to note that the attribute with the lowest valuation is the ticket price (M = 2.55). Table 6 shows that there are significant differences between the entries given by tourists interviewed and residents interviewed with respect to the gift shop attribute ($H = 5{,}324$, $p < .05$), location ($H = 16{,}589$, $p < .01$) permanent collection ($H = 11{,}177$, $p < .01$) and temporary exhibitions ($H = 10{,}841$, $p < .01$) and ticket price ($H = 22{,}923$, $p < .01$).

Table 19. Level of importance of museum attributes and Kruskal-Wallis Test: interviewed tourists and interviewed residents

	Interviewed Tourists (%)							Interviewed Residents (%)							H	Sig.
Museum attributes (a)	**1**	**2**	**3**	**4**	**5**	**M***	**SD***	**1**	**2**	**3**	**4**	**5**	**M***	**SD***		
Activities	7.3	12.7	32.6	29	18.4	3.39	1.139	6.2	10.8	32.1	29.8	21.1	3.49	1.123	1,555	0,212
App	17.4	16.1	34.2	18.7	13.7	2.95	1.262	19	11.6	37.8	19.5	12.1	2.94	1.247	0,000	0,986
Building	2.6	3.4	15.8	28	50.3	4.2	0.996	1.3	2.6	12.1	29.3	54.8	4.34	0.881	3,003	0,083
Crowding	10.1	13	34.2	24.1	18.7	3.28	1.202	6.7	11.6	40.4	26	15.4	3.32	1.078	0,049	0,825
F&B services	10.1	13.2	38.6	17.9	20.2	3.25	1.21	11.3	11.3	33.7	24.9	18.8	3.29	1.22	0,455	0,500
Gift shop	12.7	16.6	32.4	19.7	18.7	3.15	1.264	11.1	13.9	26.7	25.7	22.6	3.35	1.275	5,324	0,021*
Identity	8.3	5.4	28.2	28.8	29.3	3.65	1.192	5.1	8	24.7	27.2	35	3.79	1.156	2,507	0,113
Location	2.1	3.1	12.2	21.2	61.4	4.37	0.956	1.3	2.8	5.4	15.7	74.8	4.6	0.821	16,589	0,000**
Permanent collection	4.9	5.4	20.7	19.3	39.6	3.93	1.124	1.8	4.6	17.2	25.2	51.2	4.19	0.998	11,177	0,001**
Public museum	13.2	12.7	28	21	25.1	3.32	1.331	13.6	12.6	28.3	22.1	23.4	3.29	1.322	0,109	0,741
Queue	13.7	16.8	36.5	17.1	15.8	3.04	1.234	12.3	23.9	35.2	21.1	17.5	3.17	1.231	2,486	0,115
Staff	4.1	5.4	31.3	28.8	30.3	3.76	1.073	6.2	6.7	19.8	32.9	34.4	3.83	1.157	2,292	0,130
Temporary exhibitions	4.9	9.3	23.6	29.3	32.9	3.76	1.152	5.4	3.9	19.3	28	43.4	4	1.127	10,841	0,001**
Ticket price	18.4	14.8	32.4	16.3	18.1	3.01	1.333	29.6	21.6	24.7	12.3	11.8	2.55	1.341	22,923	0,000**

M: Mean; SD: Standard Deviation.

(a): Items classified in a five-point Likert scale from 1 (not important) to 5 (very important)

**p < .01 * p < .05

Source: Elaborated by the authors, 2020

The results obtained on the average importance of the attributes of the museum and the results of Kruskal Wallis test about the tourists interviewed sample are represented on table 7. On the first group (gender) there are significant differences in the answers given on the gift shop (H = 13,040, p < .01). On the second group (age) the significant differences correspond to the temporary exhibitions (H = 15,006, p < .01). With respect to the third group (education) we located differences between the answers given with reference to the location attribute (H = 0.015, p < .05). In the fourth group (employment status) we found a greater number of significant differences. Significant differences exist with respect to activities (H = 16,162, p < .05), App (H = 27,722, p < .01), gift shop (H = 17,271, p < .05) and ticket (H = 22,461, p < .01). Finally, in the last group (total revenue per month) there are significant differences in the valuation of the ticket attribute (H = 14,167, p < .05).

Table 20. Average importance of the museum attributes and Kruskal-Wallis Test: interviewed tourists.

Museum attributes														
Gender	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14
Male	3.3	2.98	4.14	3.26	3.17	2.95	3.55	4.32	3.83	3.36	3.06	3.71	3.66	3.04
Female	3.46	2.95	4.27	3.29	3.33	3.34	3.72	4.42	4.02	3.28	3.03	3.82	3.85	2.96
Other	4.33	3.67	4	3	3	4	4.33	4.33	4.67	4	2.67	4	4.33	3
Prefer not to answer	3.11	2.44	3.89	3.44	2.89	2.33	3.78	4	3.67	3.33	3.11	3	3.22	3.78
H	3,873	2,109	4,202	0,362	2,946	13,040	3,700	2,404	4,646	1,050	0,378	5,256	4,872	3,192
Sig.	0,276	0,550	0,240	0,948	0,400	0,005**	0,296	0,493	0,200	0,789	0,945	0,154	0,181	0,363
Age														
18-24	3.39	2.97	4.22	3.28	3.27	2.93	3.65	4.31	3.82	3.37	2.98	3.78	3.73	2.99
25-34	3.3	2.89	4.23	3.05	3.39	3.18	3.46	4.3	3.8	3.36	2.89	3.63	3.52	2.86
35-44	3.25	2.89	4.16	3.2	3.07	3.07	3.56	4.49	3.91	3.19	3.17	3.75	3.54	2.96
45-54	3.66	3.15	4.2	3.38	3.44	3.57	3.9	4.23	4.07	3.34	3.13	3.84	3.93	3.15
55-64	3.41	3	4.28	3.5	3.31	3.28	4	4.34	4.25	3.22	3.06	3.66	4.13	3.37
Above 64	3.34	2.75	4.09	3.5	2.91	3.22	3.44	4.69	4.06	3.47	3.03	3.84	4.12	2.84
H	4,187	1,915	0,817	5,012	6,225	11,023	8,271	10,939	6,182	1,716	2,095	2,193	15,006	4,983
Sig.	0,523	0,861	0,976	0,414	0,285	0,051	0,142	0,053	0,289	0,887	0,836	0,822	0,010**	0,418
Education														
Comprehensive school	3.8	4	4.6	4	3.8	3.4	4.4	4.6	4.2	3.6	3	4.4	4.6	3.2
Vocational training	3.33	3.33	4	3.33	3.33	3.33	3.33	3.67	4	2.67	3.17	3.83	3.67	3
Secondary school	3.47	3.53	3.93	3.33	3.6	3.67	3.6	3.73	4.13	3.73	3.33	3.8	3.93	3.47
Upper secondary school/ matriculation examination	3.41	2.97	3.84	3.16	3.33	3.14	3.48	4.22	3.78	3.33	3.06	3.83	3.66	3.2
Bachelor's degree	3.4	2.88	4.36	3.34	3.18	3.06	3.68	4.42	3.91	3.31	3	3.72	3.76	2.91
Master's degree or above	3.42	3.05	4.16	3.26	3.36	3.33	3.8	4.57	4.17	3.37	3.12	3.88	3.9	3.14
Other	2.67	2.33	3.93	2.8	2.6	2.73	3.07	4.07	3.27	3	2.73	3	3.07	2.33
H	5,247	12,057	11,782	4,391	7,476	7,195	8,151	15,829	8,828	4,889	2,896	8,572	8,375	9,196
Sig.	0,513	0,061	0,067	0,624	0,279	0,303	0,227	0,015*	0,183	0,558	0,822	0,199	0,212	0,163
Employment status														
Full-time employment	3.32	3.06	4.14	3.37	3.2	3.17	3.65	4.41	3.9	3.35	3.13	3.81	3.72	3.24
Part-time employment	3.65	3.17	4.31	3.19	3.38	3.44	4.02	4.52	3.96	3.29	3.06	3.71	4.06	2.96
Unemployed	2.88	2.44	3.88	2.96	3	2.88	3.28	3.96	3.68	3.16	3.04	3.6	3.32	2.36
Self-employed	3.71	3.33	4.57	3.57	3.67	3.71	4	4.33	4.29	3.57	3.14	4.14	4.05	3.1
Homemaker	4	2.75	4.5	3.75	3.75	4	4	4.25	4	3.75	4	3.75	3.75	3.75
Student	3.43	2.73	4.26	3.17	3.27	2.8	3.46	4.37	3.88	3.3	2.79	3.68	3.67	2.77
Retired	2.88	1.25	3.75	2.75	2.25	2.88	3.25	4	3.88	3	2.75	2.88	3.5	1.88
Military	5	3.5	4	4	4	3	4	4	5	4.5	3.5	3.5	3.5	4
Other	3.33	3.33	4.4	3.4	3.33	3.4	3.67	4.4	4.27	3	3.07	3.93	4.13	3.07
H	16,162	27,722	10,666	8,535	11,050	17,271	14,138	6,067	7,766	4,767	7,383	7,511	12,261	22,461
Sig.	0,040*	0,001**	0,221	0,383	0,199	0,027*	0,078	0,640	0,457	0,782	0,496	0,483	0,140	0,004**
What is your total revenue per month?														
0-500€	3.35	2.92	4.23	3.28	3.26	3.05	3.62	4.29	3.89	3.41	3.02	3.74	3.71	2.8
500-1000€	3.34	2.84	4.17	3.1	3.41	3.11	3.37	4.41	3.76	3.09	3.03	3.69	3.77	2.91
1000-1500€	3.68	3.2	4.42	3.47	3.27	3.37	3.87	4.25	4.07	3.53	3.07	4.05	3.8	3.2
1500-2000€	3.24	3.03	4.08	3.52	3.23	3.19	3.74	4.48	4.11	3.31	3.16	3.76	3.82	3.1
2000-2500€	3.38	2.88	4.24	3.18	2.94	3.18	3.82	4.53	3.94	3.21	2.88	3.56	3.82	3.15
2500-3000€	3.56	3.11	3.22	3	3.78	3.67	3.78	3.78	3.67	3.11	3.22	3.56	3.56	4.33
Over 3000€	3.28	2.56	4.22	2.94	2.89	2.83	3.61	4.78	4	3.22	3	3.61	3.72	3.06
H	4,928	4,490	7,002	6,814	7,812	5,739	8,538	8,602	4,084	4,575	1,389	6,891	0,612	14,167
Sig.	0,553	0,611	0,321	0,338	0,252	0,453	0,201	0,197	0,665	0,599	0,967	0,331	0,996	0,028*

A1: Activitites; A2: App; A3: Building; A4: Crowding; A5: F&B services; A6: Gift shop; A7: Identity; A8: Location; A9: Permanent collection; A10: Public museum; A11: Queue; A12: Staff; A13: Temporary exhibitions; A14: Ticket price. Items classified in a five-point Likert scale from 1-not important to 5-very important.

* $p < .05$

** $p < .01$

Source: Elaborated by the authors, 2020

As regards the data referring to the sample of the local community (table 8), the assessment by the groups of gender and monthly income does not include differentiation between the responses provided within each group. The answers provided by the second group (age) show significant differences in the App score ($H = 12.165$, $p < .05$), crowding ($H = 12.100$, $p < .05$) and queue ($H = 12.017$, $p < .05$). The third group (education) presents significant differences in the valuation of the

location attribute (H = 13,390, p < .05). The fourth group (employment status) has significant differences in the assessment of location (H = 14,726, p < .05) and queue (H= 16,036, p < .05).

Table 21. Average importance of the museum attributes and Kruskal-Wallis Test: interviewed residents.

	Museum attributes*													
Gender	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14
Male	3.46	2.84	4.2	3.22	3.2	3.25	3.83	4.51	4.07	3.28	3.13	3.79	3.93	2.67
Female	3.51	2.99	4.41	3.39	3.33	3.44	3.78	4.66	4.27	3.27	3.2	3.84	4.05	2.48
Other	4	3	4	3	5	1	5	5	4	2	1	4	2	5
Prefer not to answer	3.38	3.38	4.63	3	3.25	2.75	3.25	4.38	4.13	4	3.63	4.25	3.88	2.38
H	0,505	2,412	6,328	2,067	2,938	6,480	2,928	4,949	2,842	3,559	3,853	1,112	3,717	4,006
Sig.	0,918	0,491	0,097	0,559	0,401	0,090	0,403	0,176	0,417	0,313	0,278	0,774	0,294	0,261
Age														
18-24	3.42	2.77	4.37	3.19	3.37	3.15	3.69	4.52	4.1	3.26	3.11	3.83	3.97	2.4
25-34	3.42	2.87	4.35	3.25	3.32	3.33	3.95	4.63	4.03	3.22	3.25	3.98	3.88	2.7
35-44	3.58	2.78	4.2	3.47	3.33	3.44	3.8	4.6	4.2	3.11	2.96	3.78	3.85	2.6
45-54	3.51	3.14	4.28	3.16	3.11	3.43	3.81	4.59	4.25	3.24	3.05	3.71	4.06	2.58
55-64	3.54	3.06	4.37	3.57	3.14	3.41	3.7	4.68	4.38	3.46	3.35	3.73	4.05	2.44
Above 64	3.75	3.63	4.69	3.75	3.81	3.94	4.25	4.81	4.38	3.88	4.06	4.44	4.62	3.19
H	3,206	12,165	4,225	12,100	5,780	7,721	6,137	5,097	7,807	5,446	12,017	6,232	8,486	5,904
Sig.	0,668	0,033*	0,517	0,033*	0,328	0,172	0,293	0,404	0,167	0,364	0,035*	0,284	0,131	0,316
Education														
Comprehensive school	2.67	2.89	4.11	2.78	2.78	2.56	3.44	3.78	3.56	2.89	2.33	3	3.11	1.78
Vocational training	3.33	2.44	4.44	3.78	3.44	2.78	2.89	4.33	3.67	2.78	2.78	3.67	3.44	3.56
Secondary school	3.65	3.3	4.2	3.2	3.55	3.65	3.8	4.4	4.2	3.1	3.15	3.85	3.9	2.75
Upper secondary school/ matriculation examination	3.39	2.97	4.34	3.56	3.58	3.32	3.82	4.51	4.27	3.27	3.23	3.84	3.96	2.52
Bachelor's degree	3.53	2.95	4.39	3.23	3.19	3.35	3.82	4.69	4.24	3.37	3.2	3.93	4.14	2.56
Master's degree or above	3.65	2.89	4.25	3.35	3.28	3.54	3.95	4.68	4.22	3.26	3.29	3.69	3.91	2.55
Other	3	2.56	4.22	3.44	2.78	2.89	3	4.56	3.56	3.11	2.67	3.44	3.67	2
H	7,976	3,977	2,545	8,903	8,998	8,699	11,905	13,390	8,911	3,269	8,256	6,868	9,998	10,044
Sig.	0,240	0,680	0,863	0,179	0,174	0,191	0,064	0,037*	0,179	0,774	0,220	0,333	0,125	0,123
Employment status														
Full-time employment	3.38	2.88	4.22	3.23	3.1	3.3	3.65	4.57	4.06	3.1	3.06	3.69	3.93	2.59
Part-time employment	3.65	2.98	4.23	3.38	3.4	3.37	3.73	4.6	4.42	3.17	3.13	4.13	4.05	2.55
Unemployed	3.7	3.06	4.51	3.36	3.48	3.54	4.03	4.76	4.31	3.57	3.13	3.96	4.04	2.57
Self-employed	3.32	2.6	4.36	3.32	3.36	3.4	4.2	4.84	4.24	3.28	3.08	3.72	3.84	2.44
Home-maker	3.38	3.38	4.63	4.38	3.5	3.5	4	5	4.37	4	4.38	3.5	3.88	2.25
Student	3.41	2.83	4.35	3.2	3.41	3.16	3.71	4.4	4.13	3.16	3.16	3.85	4.05	2.39
Retired	3.67	3.29	4.52	3.62	3.29	3.62	3.76	4.67	4.29	3.81	3.86	4.05	4.33	2.86
Military	3.89	3.67	4.56	3.56	2.89	3.33	4.11	4.56	4.33	3.78	3.44	3.78	3.89	3.11
Other	3.49	2.94	4.34	3.32	3.29	3.35	3.79	4.6	4.19	3.29	3.18	3.83	4	2.55
H	8,249	9,516	7,756	13,200	7,291	5,089	12,244	14,726	3,995	13,424	16,036	6,315	3,855	5,067
Sig.	0,311	0,218	0,355	0,067	0,399	0,649	0,093	0,040*	0,780	0,062	0,025*	0,503	0,796	0,652
What is your total revenue per month?														
0-500€	3.44	2.92	4.41	3.26	3.43	3.26	3.77	4.59	4.21	3.35	3.21	3.93	4.06	2.4
500-1000€	3.71	3.11	4.27	3.31	3.44	3.6	3.89	4.42	4.09	3.31	3.02	3.8	3.89	2.73
1000-1500€	3.34	2.73	4.27	3.25	3.09	3.32	3.56	4.6	4.05	3.04	3.09	3.56	3.84	2.46
1500-2000€	3.53	2.92	4.2	3.61	3.08	3.31	3.84	4.69	4.27	3.39	3.08	3.86	3.98	2.57
2000-2500€	3.45	3.31	4.45	3.28	3.1	3.38	3.97	4.72	4.52	3.21	3.45	4.07	4.31	2.9
2500-3000€	3.5	3.2	4.1	3.3	3.2	3.3	4.2	4.6	3.7	3.7	3.7	3.7	3.8	2.8
Over 3000€	4	2.93	4.67	3.47	3.47	3.67	4.27	4.93	4.67	3.53	3.33	4	4.33	3
H	7.493	6.316	7.085	5.095	7.062	3.402	9.575	8.981	9.610	6.009	5.039	5.652	5.280	7.409
Sig.	0.278	0.389	0.313	0.532	0.315	0.757	0.144	0.175	0.142	0.422	0.539	0.463	0.508	0.285

*A1: Activitites; A2: App; A3: Building; A4: Crowding; A5: F&B services; A6: Gift shop; A7: Identity; A8: Location; A9: Permanent collection; A10: Public museum; A11: Queue; A12: Staff; A13: Temporary exhibitions; A14: Ticket price.

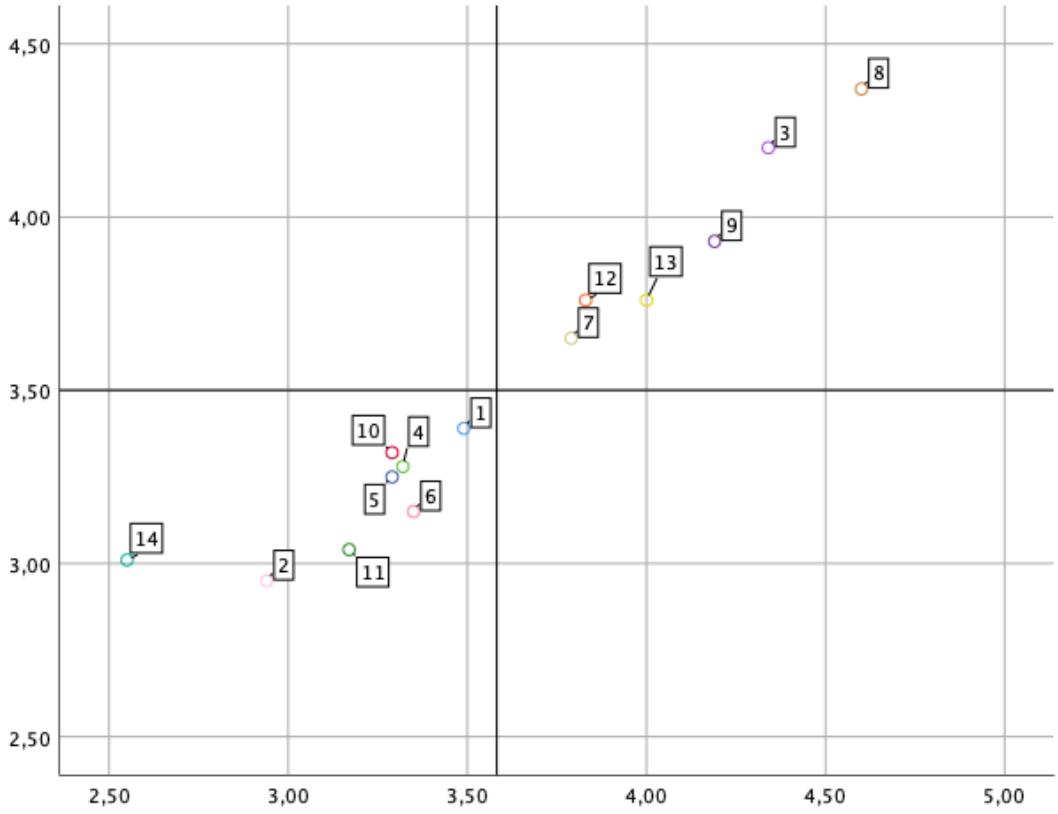
* p < .05

Source: Elaborated by the authors, 2020

5.5.4. RELEVANCE-DETERMINANCE ANALYSIS (RDA)

After a preliminary analysis of the data obtained regarding the assessment of the attributes, it is possible to apply the relevance-determinance analysis (RDA) model to our results [20-22]. This model takes into account the assessments of interviewed tourists and interviewed residents so that it is possible to situate the attributes at different levels of the model. The matrix (figure 12) shows two types of attributes: higher impact core attributes (A3, A7, A8, A9, A12, A13) and lower importance attributes (A1, A2, A4, A5, A6, A10, A11, A14). The attributes located at the point of most significant determination and relevance are the location (A8) and the building (A3). Behind these, the permanent collection (A9) and temporary exhibitions (A13) are. These attributes are perceived as more important when making decisions by museum visitors and also have a significant influence on the visitor experience. Therefore, they are vital attributes to be considered in the performance of the museum and the establishment of improvement strategies. As for the lower importance attributes, the ticket price (A14) is the attribute with the lowest relevance-determination. Next, there is the App (A2) and the so-called queue attribute (A11). These attributes present a minor relationship between relevance and determinance, which means that they are fewer essential attributes for choice and have less influence on the visitor experience [22].

Figure 12. Relevance-determination matrix



Source: Elaborated by the authors, 2020

5.5.5. CHOICE EXPERIMENTS AND WILLINGNESS TO PAY

The results derived from the analysis of choice experiments and willingness to pay (table 23) show that option E, which consists of taking a personalized 1-hour guided tour of the temporary exhibitions (M = 3.46), stands out with greater value for the interviewed tourists. This attribute is also the highest result of direct WTP (M = 20.212). This data is connected to the attributes of the temporary exhibition (A13) and activities (A3). However, the interviewed resident's perception of the value of the different options differs from the results obtained from the sample of tourists. The local population values option B (M = 3.25) and E (M = 3.25) equally. The attributes included in option B are permanent collection (A9), temporary exhibitions (A13), and meal included (A5). For option E, these are temporary exhibitions (A13) and activities (A3). The answer referring to WTP shows a different valuation concerning the sample of the local population, the best-valued option being C (24.14), which

includes the permanent collection (A9), temporary exhibitions (A13), crowding (A4), queue (A11) and F&B services (A5).

Table 22. Choice experiments and direct Willingness to Pay (WTP) related to attribute levels

Attribute level	Average results from choice experiments (1-5)	Std. Deviation	Average WTP (€)	Std. Deviation
Tourists sample				
A9 A13 A2	2.81	1.472	18.230	
A9 A13 A5	2.97	1.463	18.911	16.962
A9 A13 A4 A11	2.80	1.402	19.391	17.093
A9 A1	2.96	1.276	19.625	17.451
A13 A1	3.46	1.356	20.212	17.393
Local community				
A9 A13 A2	3.13	1.564	17.81	16.008
A9 A13 A5	3.25	1.489	26.74	16.962
A9 A13 A4 A11	2.61	1.357	24.14	17.093
A9 A1	2.77	1.259	22.37	17.451
A13 A1	3.25	1.262	21.76	17.393

Source: Elaborated by the authors, 2020

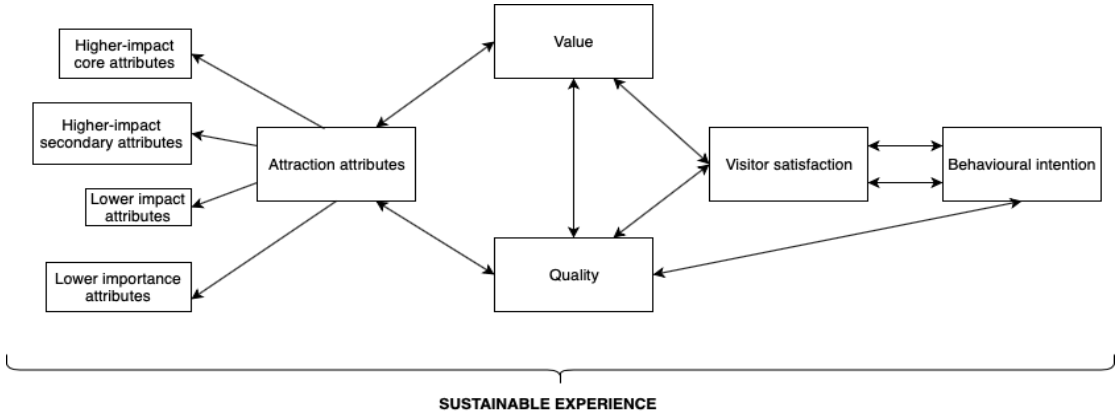
The results obtained show a difference between the responses given by interviewed tourists and interviewed residents. In the case of the value given to each

of the different options in the choice experiments, the alternative A (sig. 0.04, p. < .05), B (sig. 0.010, p. < .05), D (sig. 0.040, p. < .05) and E (sig. 0.027, p. < .05) present disparities in the responses. It means that there is a significant difference between the answers given by tourist and local community for the evaluation of alternative D and E. About WTP-related responses, the significance is positive for alternative D (0.017, p. < .05). There are different answers to the WTP questions between the answers given by interviewed tourist and residents.

5.6. DISCUSSION AND CONCLUSION

Previous researchers have applied choice experiments to estimate the value of museums. The application of Choice Experiments is proposed as a methodology for evaluating attributes and obtaining information on visitor preferences (Orea-Giner et al., 2019). This method was applied in the Galleria Borghese Museum (Rome, Italy), identifying three different attributes (admission charges, conservation activity and access policy, and additional services) (Maddison and Foster, 2003). The Discovery Museum (in the northeast of England) was also analysed considering this method (Kinghorn and Willis, 2008). The results presented in this paper expand on the information regarding the attributes of museums and also introduce the application of WTP. The application of WTP results to promote sustainability in tourism has been tested before (Oppewal et al., 2015) as with the choice experiments method (Pereira et al., 2016). The analysis of the literature allows us to derive in the following proposal an analysis model that would be the basis of the sustainable tourism experience. It arises from the interrelationship of the relevance-determination model (Mikulić et al., 2017) and the service quality, value, satisfaction and behavioural intentions model (Oriade and Schofield, 2019).

Figure 13. Sustainable experience and attributes evaluation: a modest proposal.



Source: Elaborated by the authors (2020) based on Oriade and Schofield (2019) and Mikulić et al. (2017)

The theoretical contribution of this paper is to propose a method to identify museum attributes through eWOM and its corroboration through questionnaires based on Willingness to Pay, and Choice Experiment frameworks applied to the local population and national and international tourists in order to obtain results that allow to improve the users' experience as well as to develop sustainability strategies (figure 5). This paper offers an exploratory analysis of the results obtained through the application of the attribute valuation model adapted to museums. It allows understanding the customer perceived value, as well as its relationship with the creation of sustainability strategies. Attribute analysis is linked to the quality and perceived value by visitors, as well as being a critical factor in visitor behaviour and satisfaction (Zanibellato et al., 2018). Therefore, these concepts are related to the experience and the likelihood of recommending or not recommending the tourist attraction (Oriade and Schofield, 2019). The application of the relevance-determination analysis model (Mikulić et al., 2017) facilitates the analysis of the attributes of the case study, Thyssen-Bornemisza National Museum (Madrid, Spain). By applying willingness to pay and choice experiments, it is possible to consider the different market segments in order to study their behaviour and consumer preferences to develop co-creation in museums. These methods make it possible to analyse the economic and socio-cultural impacts of museums (Mourato and Mazzanti, 2002). The results obtained concerning the application of the relevance-

determination analysis (RDA) model (Mikulić et al., 2017) show that in the case of museums, it is possible to classify attributes by using it. However, the attributes of the case study are not represented in two parts of the quadrant (lower impact and higher-impact secondary attributes). The combination of the relevance-determination model with the service quality, value, satisfaction and behavioural intentions model (Oriade and Schofield, 2019) facilitates the identification of attributes in museums as well as interpreting their value based on the application of a questionnaire based on the development of a willingness to pay and choice experiments analysis. There are significant differences between the responses given by interviewed tourists and interviewed residents. The evaluation of attributes shows significant differences in the evaluation of 'building', 'gift shop', 'location' and 'permanent collection'. However, in the case of the assessment of the attributes, the three main ones that are part of the higher-impact core attributes are identified as being the same: location, building and permanent collection.

Regarding the results focused on choice experiments and willingness to pay answers, tourists show a greater interest in the option composed by a personalized 1-hour guided tour of the temporary exhibitions. The local population shows a higher perception of value concerning the option that includes the visit to the permanent collection and the temporary exhibitions. The attribute that is connected to the willingness to pay of interviewed tourists and interviewed residents is the ticket. This attribute shows a low willingness to pay a higher price than that already established (13€) by the local population. However, interviewed tourists might be willing to pay 3 Euros more than the general ticket price. This result shows a greater subjective appreciation of the museum by interviewed tourists than by interviewed residents. Regarding the results referring to the different groups of each sample, in the case of the groups of residents interviewed, there is a homogeneity of responses, except in the case of the 'queue' and 'location' attributes. In the case of the tourists interviewed, there is a more significant disparity in responses concerning different attributes. On this point, it is essential to highlight the differences obtained to the attribute 'ticket price' in the group employment status and total income per month.

This fact means that depending on the employment status as well as on the revenues per month, tourists value the attribute 'ticket price' differently.

The results obtained allow answering the initial research questions proposed and summarised in Table 10.

Table 23. Research questions and responses.

RQ1. How does a model based on attributes help to improve sustainable museums management?	The results obtained provide information to develop sustainable management strategies in the museum case study. The results allow us to create sustainable and innovative products.
RQ2. How does the choice experiment method allow to analyse sustainable customer valuation and consumption behaviour?	Through the application of WTP and choice experiments, it is possible to analyse consumer behaviour, their assessment of services and improves the experience based on the results obtained.
RQ3. What is the subjective value of museum attributes perceived by tourist and the local community (Madrid residents)?	The application of WTP allows the analysis of the perception of the value of the different attributes of the museum by tourists and local people. Through the analysis of the results, it is possible to position the different attributes based on the relevance-determination model.
RQ4. Are there differences between the value perceived by interviewed tourists and interviewed residents?	The results show that the perception of the value of different attributes is different in some cases. As for the analysis of the results of choice experiments, some differences are also detected between the two segments.
RQ5. Are there differences between the answers given by the groups based on socio-demographic characteristics?	The results show that there are differences in the valuation of certain attributes, being more significant in the case of the interviewed tourists, especially in the groups referred to employment status.

Source: Elaborated by the authors, 2020

5.7. PRACTICAL IMPLICATIONS AND LIMITATIONS

5.7.1. PRACTICAL IMPLICATIONS

The results show that taking into account the price of access to the museum, both interviewed tourists and interviewed residents perceive it to be a private museum. This fact may be a disadvantage for the Thyssen-Bornemisza National Museum, as the brand image is affected by this. Therefore, the perception of being a private museum instead of a public one can affect its socio-cultural sustainability. The application of the relevance-determination model to analyse the perception of the attributes shows that it is necessary to focus on new strategies to promote the sustainability of the attributes located in the lower importance zone. Among these attributes, the ticket price stands out, which would be the weak point affecting the socio-cultural sustainability of the museum and which transmits an erroneous perception of the museum. The most highly valued attributes are the building, the geographical location of the museum, the pre-stock collection and the temporary exhibitions.

These results make it possible to evaluate the different attributes and their perception by interviewed tourists and residents so that in order to manage the museum sustainably, it would be necessary to establish strategies aimed at the local population to enhance the attributes that have a lower subjective valuation. Therefore, it is necessary to integrate these aspects into the museum's strategies for economic and socio-cultural sustainability so that by combining these attributes with those considered to be less valuable, they can be enhanced. The results obtained provide valuable information for the design and support of new sustainable strategies on this museum. The identification of the attributes and their evaluation allows the subsequent application of the sustainable models in museums proposed by Pop et al. (2019).

5.7.2 LIMITATIONS AND FURTHER RESEARCH

The main limitation of this work is the application of the surveys. It was carried out during the bicentenary of the Prado National Museum. It affected the profile of interviewed tourist because, during that time, national tourists were more frequent. Besides, the participants of the different groups (gender, age, education, employment status and revenue per month) are small, so the confidence interval is affected by it.

Another limitation is the application of choice experiments combined with Willingness to Pay. The selection of attributes before the design of the questionnaire through the use of social networks has been previously studied by detecting limitations when choosing the choice experiments model to be applied later (Wichmann et al., 2016).Limitations on the use of choice experiments and WTP should also be taken into account (Lamers et al., 2017), especially the design and the previous selection of attributes that, in some cases, may not be very objective. However, this research is accompanied by a previous selection of attributes through the application of Text Mining.

Future studies could be focused on developing an in-depth investigation of the results by applying the Multinomial Logit (MNL) model.

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6 CONCLUSIONS

CHAPTER 6: CONCLUSIONS

6.1. ACADEMIC CONTRIBUTIONS

This research presents the development of a method applicable to museums and cultural institutions and its application to a case study, Thyssen-Bornemisza National Museum.

The first contribution of this work is the analysis and comparison of methods proposed from the field of Cultural Economics to analyse museums. It is detected that the method which allows the study of the subjective economic value and the socio-cultural impacts of museums is mixed. This method consists of applying Choice Experiments and Willingness to Pay.

The second contribution of this work is the proposal of previous methods to be able to elaborate the questionnaire objectively since the selection of those obtained for its elaboration is a limitation of the Choice Experiments and WTP method. Therefore, it is complemented with previous phases. Firstly, the Text Mining methodology for identifying museum attributes from eWOM is applied. Secondly, the attributes detected are analysed by a round table discussion with participation of experts and key actors. Thirdly, the questionnaire is designed based on the results obtained in the previous phases.

The following contribution is the proposal of subjective indicators to analyse the socio-cultural scope. The proposed indicators consider both the impacts generated on tourists and the local population. In this way, it is proposed to evaluate the effects that tourism creates on the local community from both negative and positive points of view. Aspects such as the role of museums in the development and promotion of tourism strategies related to the local culture of the tourist destination are also considered. In addition, the quality of the museums and their efforts in developing educational activities are also taken into account.

Another contribution is the application of Industry 4.0 methods, which facilitate a better understanding of the results obtained from museum performance. This is reflected in the implementation of Text Mining to detect museum attributes through TripAdvisor reviews considering the previous study by Zanibellato et al. (2018), completing the list of attributes presented by these authors and performing an in-depth analysis on a single case study. Therefore, it can be stated that the identification of the attributes using this method facilitates the understanding of the perception of tourists about the museum. The results obtained to improve the understanding of the subjective value perceived by tourists and allow for improved decision-making by museum professionals.

The attributes detected in this preliminary analysis also make an academic contribution since they facilitate further analysis and allow this attribute identification to be applied in other case studies. Furthermore, this identification of attributes facilitates the development of co-creation strategies in museums.

The application of the proposed method in a case study is another contribution of this research. This allows checking the validity of the method and its limitations. It is possible to provide an example of application to the scientific community.

The proposed method is linked to sustainability since the identification of attributes allows the application of innovative strategies such as co-creation as well as understanding the perception of local people and tourists. The Choice Experiment and WTP method enable to analyse sustainable customer valuation and consumption behaviour.

Another contribution is to analyse subjective value perceived by tourists and the local community about attributes of museums. This allows comparison and detection of whether there are differences between the attributes recognised by the two segments.

Finally, the last contribution is to applicate the relevance-determination analysis (RDA) model combined with the service quality, value, satisfaction and behavioural intentions model. In this way, it is possible to identify the attributes and interpret their value based on the results of the questionnaires carried out.

6.2. PRACTICAL IMPLICATIONS

The concept of sustainability includes four dimensions, social, cultural, environmental and economic sustainability. Because they are linked to the development of different museum activities and the tendency to develop sustainable development policies, sustainability must be considered within the activities of the tourism system, especially in cultural tourism and museum visits, as they are linked to the concept of cultural sustainability (Pop et al., 2014, 2016).

Different national associations, as well as international bodies such as the ICOM and the OECD, promote the preparation of reports and guides to encourage actions linked to sustainable development in museums. However, these documents are not obligatory, so in many museum institutions, these concepts are not applied in their entirety or are not considered an essential part of the development of their activity.

The proposal to apply sustainable management systems and standards is a challenge for institutions such as museums since they must also commit to the quality of service and the visitor experience. Most museums have economic resources obtained through public and private funds, including visitor entrance fees which in many cases represent a significant part of their funding. Tourists and the local community must be involved in the activities of the museums (Gravari-Barbas & Fagnoni, 2015; Falk & Dierking, 2013). Therefore, their social sustainability is fundamental for the development, appreciation and consideration of the museum's brand image.

Therefore, museums must have measurable, relevant, specific, achievable and time-defined objectives (Doran, 1981) related to sustainable development. As institutions

open to the public, they have the possibility of disseminating and promoting knowledge focused on sustainability, so they have a great responsibility that they must consider and measure continuously in order to improve the decision-making of museums.

The application of the proposed method in different museums can provide fundamental data for the development of strategies in museums. About the contributions referred to the analysis of results, it is essential to highlight that through the study of reviews carried out in TripAdvisor a key point is detected, which is the perception of the museum as a private one by tourists. The subjective evaluation of these attributes shows that the attributes most valued by tourists in the eWOM analysis are part of the core offering: permanent collection and temporary exhibitions. However, the worst valued corresponds to peripherical services, including the price of the ticket. These initial findings on attribute assessment are crucial to developing strategies to focus attention on the lowest-rated attributes. The analysis of eWOM data and the round-table discussion facilitates the weaknesses of the museum case study. Therefore, the possibility of carrying out co-creation strategies is detected, taking into account the results obtained.

Below, there are several recommendations regarding the results of the case study analysis. Based on the final results obtained and the application of the RDA model, the following attributes are identified as fundamental in the museum's offer. The attributes considered as higher impact core attributes are location, building, permanent collection, temporary exhibitions, staff, and identity. Therefore, for these attributes to continue to be positively evaluated, it is recommended that the following strategies linked to sustainability be introduced:

- **To continue promoting the permanent collection without it being overshadowed by the temporary exhibitions:** To this end, we propose themed guided tours based on specific works in the museum.
- **To develop training activities related to the staff.** These training activities would be aimed at analysing the different attributes of the museum and

understanding the less valued ones better to enhance them through the collaboration and active participation of the staff in the co-creation process.

- **Create a strategy focused on the museum's identity through which the local population is involved, and public ownership of the museum is transferred.** This promotes improvements in the perception of the museum in the local community. It also guarantees its positive valuation from the socio-cultural point of view.

Regarding the classification of the attributes of low importance or worse evaluated, we locate the activities, crowding, public museum, F&B services, gift shop, queue, App and ticket price. The proposed recommendations are:

- **Enhance the image of public and open space museum** by including the local population in the programming of activities and promote co-creation.
- **F&B service:** To offer combined services to enhance this attribute.
- **Ticket price:** To establish a higher price reduction for people who meet the conditions, such as students. Set more free opening hours.

Finally, following the study of the results of the Choice Experiment and WTP, the following suggestions are proposed:

- Offer a package that includes a visit to temporary exhibitions with a personalised one-hour tour. This option would be of interest to tourists. The recommended price based on the results is 17 Euros per person.
- The local population would be interested in an option that includes the visit to the permanent collection, temporary exhibitions with the inclusion of F&B services. Willingness to pay is 17 Euros.

6.3. LIMITATIONS

The first limitation of this doctoral thesis has been the determination of the method. The use of Choice Experiments and WTP has been discussed in previous studies. It was necessary to provide an improvement in the selection of attributes before the design of questionnaires making it objective. However, the use of eWOM analysis is

also a new limitation due to the collection of unrevealing data and the lack of possibility to detect false comments.

The second limitation is the use of a single round table. It would be more convenient to have three round tables with different experts and actors to evaluate the results of the text mining analysis. In addition, the experts selected are from the national level (Spain), which is also a significant constraint.

The third limitation is related to the dissemination of the questionnaire; it should be noted that it was carried out over a period of a few months in which visitors from Madrid were not very abundant. Furthermore, it coincides with the celebration of the bicentenary of the Prado National Museum, so the profile of museum visitors is changed. This is why there are a more significant number of responses from national tourists.

Finally, the main limitation of this doctoral thesis is the use of a compendium of articles. The submission of papers is very complicated due to the lack of time during the duration of the doctoral program.

6.4. FUTURE LINES OF RESEARCH

As future lines of work, the proposed method allows for its application in other museums as well as cultural institutions. Therefore, it can be used to evaluate other case studies and recommend improvements and changes in the method through its development.

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ANNEXES

ANNEXES

ANNEXE I: Questionnaire design

Table 24. Questionnaire design references

Questions	References
Block 1	Foreit & Foreit (2001); Bedate, Herrero, & Sanz (2004); Noonan (2004); Goldberg & Roosen (2005); Herrero, L. C., Sanz, Bedate & del Barrio (2012); Noonan & Rizzo (2017); Beckman (2018).
Block 2	Scott (2003, 2006); Busacca & Padula (2005); Kinghorn & Willis (2008); Mangham, Hanson & McPake (2009); Carson, & Louviere (2010); Mey & Mohamed (2010); Báez-Montenegro et al. (2012); Lourenço-Gomes, Pinto, & Rebelo (2013); Armbrecht (2014); Jacobsen (2016); Scott (2016); Han & Hyun (2017); Kuo et al. (2018); Loureiro & ferreira (2018); Zanibellato, Rosin & Casarin (2018).
Block 3	Mourato & Mazzanti (2002); Maddison & Foster (2003); Mazzanti (2003); Tohmo (2004); Kinghorn & Willis (2008); Le Gall-Ely (2009); Choi et al. (2010); Fonseca & Rebelo (2010); Plaza (2010); Greiner, Bliemer & Ballweg (2014); Lim, Kim & Yoo (2016); Gómez-Zapata et al.

	(2017); Park & Song (2018); Liu, Chen & Chen (2019).

Source: Own elaboration, 2019.

Table 25. Questionnaire design and application: tourists

Survey type	**Online and *in situ***
Data collection procedure	Questionpro The questionnaire has been distributed by using Facebook Ads (10,36%) and making a segmentation to connect with the target (tourist that visited Madrid). From July 11 to August 8. Channels: • Facebook • Twitter • Instagram Also, the questionnaire has been distributed *in situ (89,64%)* on Paseo del Prado (Madrid). Dates: • 8/08/2019 • 9/08/2019 • 10/08/2019 • 11/08/2019 • 12/08/2019 • 13/08/2019 • 14/08/2019 • 15/08/2019 • 17/08/2019 • 18/08/2019 • 20/08/2019 • 22/08/2019

	• 23/08/2019 • 25/08/2019 • 26/08/2019 • 27/08/2019 • 28/08/2019 • 29/08/2019 • 31/08/2019 • 1/09/2019 • 3/09/2019 • 5/09/2019 • 6/09/2019 • 7/09/2019 • 8/09/2019 • 11/09/2019 • 14/09/2019 • 16/09/2019 • 17/09/2019 • 18/09/2019 • 19/09/2019 • 20/09/2019 • 21/09/2019 • 22/09/2019 • 23/09/2019 • 24/09/2019 • 25/09/2019 • 26/09/2019 • 27/09/2019 • 28/09/2019 • 29/09/2019 • 30/09/2019
Sample size	386

Sampling technique	Simple random selection
Targeted population	10.200.000
Sampling error	5%
Level of trust	95%
Total sample size	Designed: 385 Realized: 386
Total clicks on the survey	1785
Surveys answered correctly	386
Percentage of answer	21,62%
Duration of data collection	From July 11, 2019 to September 30, 2019
Languages	English. Spanish
Data analysis programs	IBM SPSS v.21
Técnicas de análisis de los datos empleados	Univariate: frequencies analysis Bivariate: analysis of correlations Multivariate: regression analysis

Source: Own elaboration, 2019.

Table 26. Questionnaire design and application: local community

Survey type	**Online**
Data collection procedure	Questionpro The questionnaire has been distributed by using Facebook Ads and making a segmentation to connect with the target (tourist that visited Madrid). Channels: • Facebook • Twitter • Instagram
Targeted population	6.578.079
Sample size	389

Sampling technique	Simple random selection
Sampling error	5%
Level of trust	95%
Total sample size	Designed: 385 Realized: 389
Total clicks on the survey	3077
Surveys answered correctly	389
Percentage of answer	36.44%
Duration of data collection	From July 11, 2019 to September 30, 2019
Languages	English. Spanish
Data analysis programs	IBM SPSS v.21
Técnicas de análisis de los datos empleados	Univariate: frequencies analysis Bivariate: analysis of correlations Multivariate: regression analysis

Source: Own elaboration, 2019.

QUESTIONNAIRE FOR TOURISTS

Hello! My name is _____. I work for XXX University. I would like to ask you some questions about museums. The interview is not required, but I would be very grateful if you would answer a few questions. Everything you say will be confidential, and no one will know how you personally answered the questions I am going to ask.

Participation Yes → Continue

No → End Interview

Questionnaire Number: |___|___|___|

Date: ___/___/___

Name of interviewer: _____|___|___|

Zone: _____

BLOCK 1

QUESTION	RESPONSE CODE	SKIP
1. Have you ever heard about Thyssen-Bornemisza National Museum?	1. Yes 2. No	→ Terminate interview
2. Have you ever visited Thyssen-Bornemisza National Museum?	1. Yes 2. No	
3. What other museum have you visited in the last year?	1. Nothing else 88. Other, _____ 99. Don't remember	
4. The last time that you visited a museum, how much did you pay for a ticket?	_____ € Code 0 = nothing / free Code 99 = I don't remember	
5. If the price of the ticket increased 3€, would you continue to buy this ticket?	1. Yes 2. No	
6. If the price increased 5€, would you continue to buy this ticket?	1. Yes 2. No	
7. What is the maximum price you would be willing to pay for a museum ticket?	_____€	

8. If the price of a museum ticket exceeds what you would be willing or able to pay, what would you do?	1. Look for a cheaper museum ticket 2. Look for free visit options 3. Stop visiting museums 88. Other, _____	
9. The current price of Thyssen-Bornemisza National Museum ticket is 13€ for a general ticket and 9€ for a reduce ticket. Do you think that is a public or a private museum?	1. Public museum 2. Private museum	
10. If the price of Thyssen-Bornemisza National Museum ticket increased 3€, would you continue to buy this ticket?	1. Yes 2. No	Likelihood of purchase
11. If the price of Thyssen-Bornemisza National Museum ticket increased 5€, would you continue to buy this ticket?	1. Yes 2. No	Likelihood of purchase
12. What is the maximum price you would be willing to pay for a Thyssen-Bornemisza National	_____€	

Museum ticket?		

BLOCK 2

13. Think about Thyssen-Bornemisza National Museum and the idea and knowledge that you have about this museum. Then, select a value for each attribute:

Attributes	**Not valuable**	**Limited value**	**Average value**	**Valuable**	**Very valuable**
Activities					
App					
Building					
Crowding					
F&B services					
Gift shop					
Identity					
Location					
Permanent collection					
Public museum					
Queue					
Staff					
Temporary exhibitions					
Ticket					

BLOCK 3

The museum is thinking about improving the offer including new options:

Options	Type of visit	Extra services	Effect on ticket
Option A	• Permanent collection • Temporary exhibitions	Free App download	Willingness to pay From 0 to 100€
Option B	• Permanent collection • Temporary exhibitions	Meal included	Willingness to pay From 0 to 100€
Option C	• Permanent collection • Temporary exhibitions	Premium access (no crowding and no queue)	Willingness to pay From 0 to 100€
Option D	• Permanent collection	Personalized and private tour guide (1h)	Willingness to pay From 0 to 100€
Option E	• Temporary exhibitions	Personalized and private tour guide (1h)	Willingness to pay From 0 to 100€
Option F	• Temporary exhibitions	Personalized activities in family	Willingness to pay From 0 to 100€

QUESTION	RESPONSE CODE
14. Sort the different options in order of preference	1. A 2. B 3. C 4. D 5. E 6. F

BLOCK 4

QUESTION	RESPONSE CODE	SKIP
15. Country	77. I prefer don't answer	
16. Gender	1. Femenine 2. Masculine 88. Other	
17. Age	18-24 25-34 35-44 45-54 55-64 Above 64	
18. Education	1. Comprehensive school 2. Vocational training 3. Secondary school 4. Upper secondary school/ matriculation	

	examination 5. Bachelor's degree 6. Master's degree or above	
19. Profession	1. Entrepreneur or in a leading position Official or expert 2. Employee in the service sector 3. Employee in the industrial sector 4. Agricultural entrepreneur or working in the agricultural sector 5. Retired 6. Student 7. Unemployed or outside the job market (e.g. on maternity leave) Other	
20. What is your total revenue per month?	a) 0-500€ b) 500-1000€ c) 1000-1500€ d) 1500-2000€	

	e) 2000-2500€ f) 2500-3000€ g) Over 3000€	

QUESTIONNAIRE FOR LOCAL COMMUNITY

Hello! My name is _____. I work for XXX University. I would like to ask you some questions about museums. The interview is not required, but I would be very grateful if you would answer a few questions. Everything you say will be confidential, and no one will know how you personally answered the questions I am going to ask.

Participation Yes → Continue

No → End Interview

Questionnaire Number: |___|___|___|

Date: ___/___/___

Name of interviewer: _____|___|___|

Zone: _____

Do you live in Madrid?

Yes → Continue

No → End Interview

BLOCK 1

QUESTION	RESPONSE CODE	SKIP
1. Have you ever heard about Thyssen-Bornemisza National Museum?	1. Yes 2. No	→ Terminate interview
2. Have you ever visited Thyssen-Bornemisza National Museum?	1. Yes 2. No	
3. What other museum have you visited in the last year?	1. Nothing else 88. Other,_____ 99. Don't remember	
4. The last time that you visited a museum, how much did you pay for a ticket?	_____ € Code 0 = nothing / free Code 99 = I don't remember	
5. If the price of the ticket increased 3€, would you continue to buy this ticket?	1. Yes 2. No	
6. If the price increased 5€, would you continue to buy this ticket?	1. Yes 2. No	
7. What is the maximum price you would be willing to pay for a museum ticket?	_____€	
8. If the price of a	4. Look for a cheaper	

museum ticket exceeds what you would be willing or able to pay, what would you do?	museum ticket 5. Look for free visit options 6. Stop visiting museums 88. Other, _____	
9. The current price of Thyssen-Bornemisza National Museum ticket is 13€ for a general ticket and 9€ for a reduce ticket. Do you think that is a public or a private museum?	3. Public museum 4. Private museum	
10. If the price of Thyssen-Bornemisza National Museum ticket increased 3€, would you continue to buy this ticket?	3. Yes 4. No	
11. If the price of Thyssen-Bornemisza National Museum ticket increased 5€, would you continue to buy this ticket?	3. Yes 4. No	
12. What is the maximum price you would be willing to pay for a Thyssen-Bornemisza National Museum ticket?	_____€	

BLOCK 2

13. Think about Thyssen-Bornemisza National Museum and the idea and knowledge that you have about this museum. Then, select a value for each attribute:

Attributes	**Not valuable**	**Limited value**	**Average value**	**Valuable**	**Very valuable**
Activities					
App					
Building					
Crowding					
F&B services					
Gift shop					
Identity					
Location					
Permanent collection					
Public museum					
Queue					
Staff					
Temporary exhibitions					
Ticket					

BLOCK 3

The museum is thinking about improving the offer including new options:

Options	Type of visit	Extra services	Effect on ticket
Option A	• Permanent collection • Temporary exhibitions	Free App download	Willingness to pay From 0 to 100€
Option B	• Permanent collection • Temporary exhibitions	Meal included	Willingness to pay From 0 to 100€
Option C	• Permanent collection • Temporary exhibitions	Premium access (no crowding and no queue)	Willingness to pay From 0 to 100€
Option D	• Permanent collection	Personalized and private tour guide (1h)	Willingness to pay From 0 to 100€
Option E	• Temporary exhibitions	Personalized and private tour guide (1h)	Willingness to pay From 0 to 100€
Option F	• Temporary exhibitions	Personalized activities in family	Willingness to pay From 0 to 100€

QUESTION	RESPONSE CODE
14. Sort the different options in order of preference	7. A 8. B 9. C 10. D 11. E 12. F

BLOCK 4

QUESTION	RESPONSE CODE	SKIP
15. Postal code (only Madrid city)	28 77. I prefer don't answer	
16. Gender	1. Femenine 2. Masculine 88. Other	
17. Age	18-24 25-34 35-44 45-54 55-64 Above 64	
18. Education	7. Comprehensive school 8. Vocational training 9. Secondary school 10. Upper secondary	

	school/ matriculation examination 11. Bachelor's degree 12. Master's degree or above	
19. Profession	8. Entrepreneur or in a leading position Official or expert 9. Employee in the service sector 10. Employee in the industrial sector 11. Agricultural entrepreneur or working in the agricultural sector 12. Retired 13. Student 14. Unemployed or outside the job market (e.g. on maternity leave) Other	

20. What is your total revenue per month?	h) 0-500€ i) 500-1000€ j) 1000-1500€ k) 1500-2000€ l) 2000-2500€ m) 2500-3000€ n) Over 3000€	

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