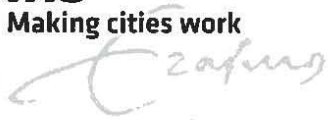


**IHS**  
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**Thesis**

**Title: Perception of Urban Forms: The Effect of Place Attractiveness on the Overall City Image**

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**The Effect of Place Attractiveness on the  
Overall City Image**

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## **Summary**

The image of the city is a complex concept that has been studied by a number of disciplines throughout decades. The present study contributes to the discussion by analyzing the overall city image of inhabitants as influenced by their perceptions of place attractiveness. To do so, an online survey has been conducted with the inhabitants of the city of Rotterdam, by using place photography as an attractiveness evaluation tool. With the aim of replicating the multifaceted characteristic of the city, the pictures represented various urban elements; namely, buildings, waterfronts, avenues, and squares, which enabled to compare the role of different location categories in the process of an overall city image formation. The research analysis took the form of Structural Equation Modeling (SEM) in order to accurately assess the structural relationships between variables and constructs. The findings emphasized the significant direct effect of three out of four location categories on the overall city image. The study results also illustrated the mediation effect of place attachment on the relationship between place attractiveness and the overall image.

## **Keywords**

Place Attractiveness, City Image, Place Identification, Place Attachment, Place Perception

## Abbreviations

IHS	Institute for Housing and Urban Development
LoR	Length of Residence
DV	Dependent Variable
H1, 2, 3, ...	Hypothesis 1, 2, 3, ...
WK	Well-known
HG	Hidden gem
RSMEA	The Root Mean Square Error of Approximation
CFI	Comparative Fit Index
TLI	Tucker-Lewis Index
SRMR	Standardized Root Mean Square Residual
SEM	Structural Equation Modeling
KMO	Kaiser-Meyer-Olkin
PCF	Principal Component Factor
ML	Maximum Likelihood
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
AVE	Average Variance Extracted
DE	Direct Effects
IE	Indirect Effects
TE	Total Effects

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# Chapter 1: Introduction

## 1.1. Background

“What is the city but its people?”

Sicinius, Coriolanus, Act 3, Scene 1

Cities are living spaces; streets are shelters, squares are theater stages. In their simplest forms, urban fabrics are geographic compositions of solids and voids. However, they can also be defined as unique patterns that consist of different social and psychological layers. People perceive these urban patterns differently, as a result of not only their visual preferences, but also their attachment and identification levels. The morphological traits of the urban spaces elicit certain kinds of affective responses. The physical quality improvements of public spaces influence the activity patterns; the number of people sharing the spaces; and the length of the time spent outdoors. A better physical framework leads to an increase in the number, duration and scope of activities, illustrating the significance of physical traits on the perception of people.

People evolve bonds toward certain places. They develop cognitive concepts of the physical environment that are related to them not only as individuals but also as members of different social groups (Knez, 2005). People influence places and in return places affect the way people see themselves –which is defined as “place identification”. Place identification is further explained as the process by which people introduce themselves with regard to belonging to a particular place (Stedman, 2002). This process is linked to, *albeit* different from, the notion of place attachment. The latter focuses on how intensely people form a sense of connection to a specific place. It develops to different levels within different scales. The concept of place attachment has been subject to two main research fields; sociology and environmental psychology. The former accepts place attachment as an essential component of local communities; while the latter focuses on searching for measures of environmental quality sensitive to the needs of inhabitants (Giuliani, 2003).

Environmental psychology literature moves the perspective away from the repeatedly analyzed social context to the ignored physical dimension of places; while place marketing literature defines the place brand as the perception of the expression of place physics in the mind of the target groups (Zenker and Braun, 2017). Moreover, urban planning studies further analyze how the physical and morphological features of the city influence its social atmosphere.



This study focuses on identifying the effect of place attractiveness of different locations, as well as differing place attachment and identification levels on the overall perception of the city image by making reference to three main fields, namely; environmental psychology (i.e. place identification and place attachment), place branding (i.e. the image of the city) and urban planning (i.e. morphological aspects). Acknowledging the fact that place marketing and photography have the power to reinforce each other in the construction of attractive places (Hospers, 2009), the present study uses photography as a perception measurement tool.

## **1.2. Problem Statement**

The different locations within the cities encompass various physical, social, and psychological aspects that are perceived differently by the people. Some might be attracted to a particular landscape, simply because of its physical traits; while others might feel attached to or identified by the very same place. As cities include a wide variety of urban elements, the aesthetical evaluations of people differ from one location to another. Some people might have a vivid image of a city that they once visited, purely because of remembering its beautiful public spaces, while others might devote the overall image of a city to one particular piece of iconic architecture. A city's waterfronts might be perceived as lively, and avenues might be described as colorful. As a result, people might devote the meanings of these particular components to the whole city. In other words, based upon their perceptions of different urban elements, people might think of the *whole* city as being lively and colorful.

The physical evaluations of places depend not only on attractiveness but also on the distinctiveness of places. Unique public squares and distinctive avenues provide their cities with a certain kind of identity. When wandering around a city, an interesting street furniture might gain a seat in a person's memory to further influence their views about the whole city. If a city harbors a peerless waterfront or an original building with a specific aesthetical feature, this might drastically change people's perceptions of the whole city. People also develop bonds towards certain places. Forming a sense of connection, in time, some even identify with places in which they live. For instance, they might even describe themselves as belonging to a particular city. The same place could be perceived as exciting or boring; pleasant or uninteresting, depending on the observer.

The places within one city differ not only in terms of the way they are aesthetically perceived but also as a result of various attachment and identification levels of its inhabitants. Whether or not the variation in the perception of different urban elements within the city leads to the overall image formation, and if it does, whether place attachment or identification actually plays a role in this process is a question to be solved.

### **1.3. Research Objective**

The main objective of the research is to identify the link between the physical evaluations of different locations and the overall city image as well as to analyze if this effect is mediated by the place attachment and place identification of the target groups. The physical evaluations consist of place attractiveness and place distinctiveness. To investigate the potential link between place attractiveness and overall image, the city of Rotterdam will be used as a case study. The reason behind this location choice is the complexity of the city. In order to emphasize the complex nature of the city, the present study will use pictures of a number of locations within Rotterdam to investigate people's differing perceptions. Various locations within the city will be analyzed in terms of both their attractiveness and distinctiveness levels. The study will question whether or not these physical assessments actually lead to the overall image of Rotterdam.

The different locations will include urban elements of various scales and different recognition levels. Buildings, waterfronts, avenues, and public squares will be used to measure the perceptions of people. Each location category will include both well-known and lesser-known places. The present study will assess the internal image of the city, as perceived by its diverse inhabitants. The reason to select the target group of inhabitants over tourists is the fact that the city does not reveal most of its features at one glance. The inhabitants will be more aware of what Rotterdam has to offer and more familiar with most of the components of the city. Moreover, previous research on place marketing places inhabitants, or as Zenker et al. (2017) call them; the *internal target group*, in a prominent position in the process of city promotion.

In sum, the specific research objectives are as follow:

- Identifying how various locations (avenues, waterfront, buildings, and squares) within the city are perceived differently.
- Showing if the popular locations from each category are perceived differently than the lesser known places.
- Analyzing if place attachment and identification mediate the effect of place attractiveness on the overall city image.
- Showing the different effects each location has on the creation of the overall city image.

This study will thus be formed as an explanatory deductive research.

#### **1.4. Provisional Research Questions**

The main research question is formulated as follows:

How do the aesthetical evaluations of different locations within the city affect the overall image? Is this effect mediated by place identification and attachment?

To provide a comprehensive answer to the main research question, three sub-questions have been formulated:

1. How are different locations in Rotterdam as well as the overall city image perceived by different internal target groups?
2. Are popular locations within each category perceived differently than the lesser known places?
  - a. To what extent do place attachment and identification mediate this effect?
3. Which location category has the most effect on the overall city image of Rotterdam?

## **1.5. Significance of the Study**

The effect of place attachment and identification on the overall city image has already been overly-studied by a large number of previous researches. The present study thus chooses to position the perceived attractiveness of places as being the main determinants of the overall city image. This study aims to contribute to the literature by introducing the effect of aesthetical evaluations of several urban components on the overall image formation processes. Moreover, it also investigates the effect of place distinctiveness on attractiveness and identification. To assess the place attractiveness, the present study creates an empirical setting, in the scope of which, the audience is being primed with place images of various locations within the city. There already exist a number of recent studies that use photography as a perception measurement tool; the present study will further prove the reliability of this method by including pictures of locations of different recognition levels; representing both well-known and lesser-known places.

The inclusion of both Rotterdammers and international inhabitants as internal target groups of place marketing, will not only show the different identification and attachment levels towards the city, but also support the participatory approach by illustrating differing perspectives within the singular target group of internal audiences. Therefore, the outcome of the research can be used by the place marketing managers to prepare city image communication plans by considering different place perception levels, as well as by the urban planners by helping them with the adoption of the participatory planning approach through the inclusion of a spectrum of inhabitants on the planning process of new urban developments.

The present study also expects to emphasize the impact of some location categories over the others, when it comes to creating a composite city image. Thus, the results will also guide urban designers not only in terms of identifying successful characteristics of prominent places and further accentuating their certain features, but also adopting these best-practices in the design processes of less-impactful location categories to boost their future performance.

## **1.6. Scope and Limitations**

Along with its merits, this study holds several constraints and difficulties that may have an influence on the results of this thesis. Firstly, the concepts of place identity, place attachment, perception, and city image do not have unanimous descriptions, and thus are open to interpretation. These rather ambiguous items often require the audience to develop their own idiosyncratic meanings for them which might result in random responding and/or cause biases such as central tendency and leniency (Podsakoff et al., 2003). To minimize this obstacle, these variables are measured as constructs consisting of multiple-items. The indicators of overall city image, place attachment and place identification have been clearly defined drawing upon previous studies that are proven to be effective in terms of their evaluation methods (Kock et al., 2016; Bhattacharya and Sen, 2003; Zenker and Gollan, 2010).

Secondly, the research strategy consists of replicating a multilateral city via representation of its several locations as place pictures. The use of place photography enables to assess the aesthetical perceptions of people and compare their level of influence in the forming of an overall city image. However, the usage of different quality pictures would possibly create biases in the selection process; by causing the observer to rate the attractiveness of one location higher than the other, solely because of the image quality. Therefore, in order to eliminate this shortcoming as best as possible, a pilot study/pre-survey will be conducted, in which the pilot group will assess the overall look and feel of the selected place pictures, to ensure the final pictures to be of identical quality, in the final form of the survey. Moreover, an online survey has both advantages and disadvantages, the latter being the constraints caused by the absence of an interviewer which limits including open-ended questions and the limited accessibility to the whole population since respondents without the access to internet cannot be included.

The utilization of a highly-educated student sample also represents a limitation for the generalization of the results; therefore, for further research, this study should be extended to also include the perspectives of other relevant stakeholders in order to ultimately obtain the full range of perception levels. Additionally, there is a possibility that the results are masked by the social desirability bias. In other words, the survey participants might have had the tendency to present themselves in a favorable manner, independent from their true feelings about the topic (Podsakoff et al., 2003).

Therefore, it should be taken into consideration that the survey responses of the present study might have been subject to social desirability bias. Another shortcoming of using surveys as a research method is the potential acquiescence response of participants. Acquiescence response means the tendency to agree with the given statement, regardless of their content (Winkler et al., 1982). To prevent the acquiescence response, the present study differentiates between the wording of the questions that refer to the IV and the ones that are asked to measure the DV.

Lastly, the present study limits its scope to only four location categories; buildings, avenues, squares, and waterfronts. Each location category has one example of a well-known and one example of a lesser-known place. All in all, the representation of locations within the city is limited to eight pictures. Inclusion of more categories/sub-categories could provide more reliable information regarding the direct effect of the place attractiveness on the overall city. The target audience is limited to inhabitants of the city of Rotterdam. According to place marketing literature, this internal target group holds a significant importance in terms of city promotion. The present study excludes the tourists and other external target groups of place marketing, thus limits its scope to be representative of only the perceptions of the inhabitants.

## Chapter 2: Literature Review

“There is no physical setting that is not also a social, cultural, and psychological setting.”

Proshansky, 1978, p.152

### 2.1. Urban Aesthetics

The urban planning literature is punctuated by a series of movements that resulted in cities adopting various measures by combining different approaches to tackle series of economic, social and health-related crises. In terms of emphasizing the visual attractiveness of places, a number of architectural styles stand out among these movements.

At the end of the 19<sup>th</sup> century, the Garden City movement emerged as a response to the unhygienic living conditions of the period as it promoted an escape from the industrialized inner-city areas towards big gardens and safe neighborhoods (Howard, 1898). Howard envisioned a series of small, planned cities that combine the amenities of urban life with accessible rural environments, low density housing, and communal open spaces. He specifically emphasized the hygienic and well-ordered appearance of these new urban areas and thus captioned his plan “A group of smokeless, slumless cities” (Howard, 1898).

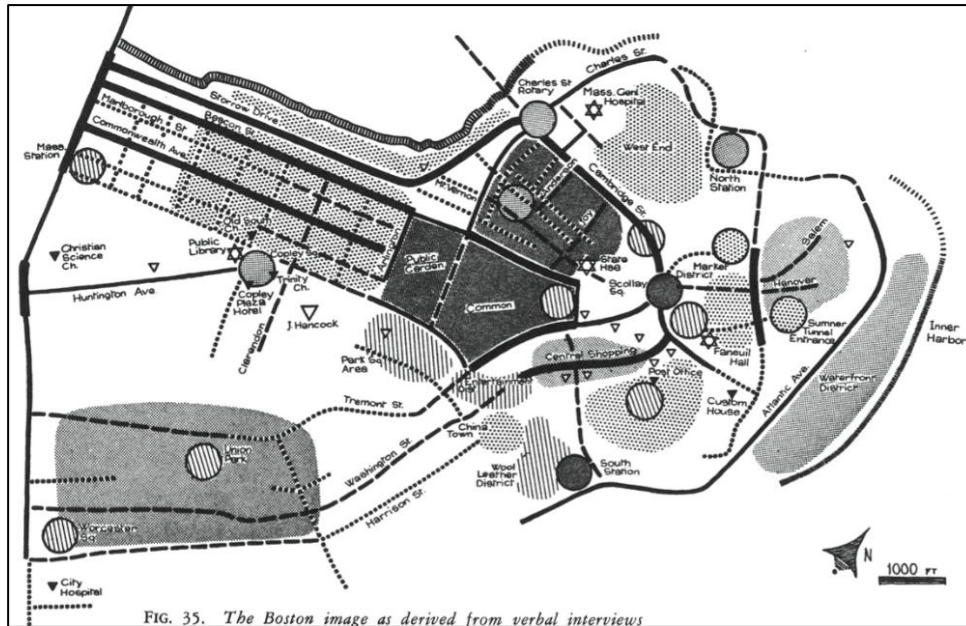
The same period saw the peak of the City Beautiful movement which proposed a “beautification” of cities. Even more concerned with the mere physical attractiveness of places, this movement was characterized by the belief that once the physical form and aesthetical quality are improved, the function would follow. Consequently, the architects that adopted this approach aimed for aesthetically-pleasing, clean, and orderly urban landscapes. The movement was embraced by several cities across the world which renovated their inner urban areas and increased their aesthetical appeal with the aim of attracting more investment. These new plans included magnificent city parks, overly decorated buildings, wide boulevards, and public squares adorned with flamboyant monuments and fountains. Not surprisingly, the movement was heavily criticized of focusing solely on the physical features of the city, thus lacking social sensibility (Wilson, 1964). Contrarily, Chicago architect Sullivan coined the well-known phrase “form ever follows function” shifting the perspective away from the aesthetical attractiveness into the actual functions of places. He implied that a building’s physical features should be formed primarily by the function of the building (Sullivan, 1896).

Different from the City Beautiful movement, he argued that once the functional needs of the building are satisfied, architectural beauty would necessarily follow. With the first skyscrapers being built in the 1890s, Sullivan argued that the exterior ‘shell’ of these high-rise buildings should adapt their appearance to reflect the functions of their interiors. He believed that this would enable these new architectural forms to blend in with the natural beauty of their built environments (Sullivan, 1896).

The functionalist movement leaved its mark in the 20<sup>th</sup> century with many architects believing that aesthetical features should not be the priority. The functionalist plan of “La Ville Radieuse” by Le Corbusier (1933) reconciled Howard’s Garden City model with high density buildings surrounded by green spaces, only this time growing vertically; instead of spreading out towards the fringes. This alternative way of designing claimed to offer many health benefits compared to dark and overpopulated worker housings. However, based on the new plan, many lively streets and squares were transformed into concrete roads and highways. The new high-rise buildings and wide roads had significant implications on the spatial preferences of people and paved the way for the emergence of isolated areas. As such, the term “desert planning” was coined to explain the effects of functionalism (Gehl, 2011), as clearly illustrated on the later-demolished “Pruitt-Igoe Housing Project”. The failure of functionalism is one of the many examples that illustrate how strongly the physical features of the city influences the preferences of people.

On the second half of the 20<sup>th</sup> century, the situationist artists and planners grew away from the dominant top down approach to planning and sought to capture the city as experienced *by the people*. They revolted against urban renewal plans, and instead focused on bottom-up citizen experiences. For instance, in 1961, Lynch drew the image of Boston city (fig. 1), as derived from interviews with citizens. This new approach of *psychogeography* introduced the role of *citizen perception* into planning (Badger, 2012). The introduction of this new image mapping method enabled the urban planners to ask questions such as: “What is the relationship between the observer and the physical environment of a city?” or “How does the visual quality of a city contribute to the urban legibility?” (Safee et al., 2015)





**Figure 1: The image of Boston (Lynch, 1961).**

## 2.2. The City and its Image

Image can be described as the currency of cultures that represent and promote shared meanings and specific value systems (Morgan and Pritchard, 1998). The place image is the total set of impressions, ideals, beliefs and individual perceptions people develop towards a place (Kotler et al., 1993; Hunt, 1975). A place is an extensive concept (Canter, 1996). It has numerous connotations -geographical, physical, architectural, social, cultural, and so on- and it is, in addition, located at several spatial scales. Speller (2000) defines a place as a geographical space that holds specific meanings resulting from a person's interaction with it.

What differentiate a place from a space are the people that devote various meanings to that landscape through the process of living in it (Ryden, 1993). According to Hoskins and Cresswell (2008), places are comprised of two main constituents, namely; materiality and a realm of meaning. The former is manifested in the built environment while the latter is an intangible notion. Canter (1996) further introduces the term "psychology of a place" by suggesting a definition of place as a product of physical attributes, human activities, and conceptions. Similarly, Stokols and Shumaker (1981) suggest "transactional view of settings" that highlights the connection between people and environment, by referring the two as the components of one unit.

As cities are inherently complex, their images are also multifaceted, highly subjective, and often aimed at different publics (Paddison, 1993 in Richards and Wilson, 2004). The perceived image is directly linked to the associations in people's minds which can often be different than the real characteristics of a place (Shields, 1991). As people experience the city through unique temporal sequences; the places within the city not only differ in terms of their demographics but also are perceived in many different ways, depending on the observer (Lynch, 1960).

On the perspective of behavioral geography, the notion of place imagery can be demarcated into two components; cognitive (perceptual/designative) evaluations and appraisive (affective) evaluations (Stern and Krakover, 1993). The cognitive component refers to the knowledge about objective characteristics of a place, i.e. its physical features; while the affective evaluations are subjective feelings towards the place, i.e. place attachment and identification. Stern and Krakover (1999, p.871) find strong support for the impact of perceptual evaluations on the affective evaluations which in turn influences the overall image of a destination. Similarly, Baloglu and McCleary show that the overall image consists of both affective and cognitive dimensions (1999, p.879). These two are closely related; the affective assessment often depends upon the cognitive evaluation (Baloglu and McCleary, 1999).

People's cognitive evaluations often form their first impressions. Thus, Urry (1995) states that the city holds a graphic image. He suggests that people do not randomly choose which place to visit but rather make their decisions based on the pictures of the places. On the other hand, Lynch (1960) emphasizes the role of appraisive evaluations on the image formation. The morphological traits of the urban spaces elicit certain kinds of affective responses. He argues that place perception is nothing more than a built image that is a product of immediate sensation and the recollection of past experiences. Stern and Krakover (1993) summarize the composite image formation process as *information passing through a set of filters*. A composite urban image is formed by filtering the perceived stimuli (e.g. aesthetical quality of places) by information attributes and personal characteristics of the observer (Stern and Krakover, 1993).

### 2.3. Place Attractiveness

How are cognitive evaluations of architectural quality formulated? A number of previous studies (e.g. Gifford et al., 2000; Nasar, 1983) indicate that the aesthetical characteristics of buildings impact the architectural preferences of people. The overall look and feel of the buildings; their exterior features, architectural style, cleanliness, and decorativeness are among the main predictors of people’s aesthetic appraisals (Nasar, 1983; Stamps and Nasar, 1997). Moreover, these aesthetical evaluations are also highly based upon the emotional impact that the buildings have on the observer (Gifford et al., 2000).

Gehl (2011) draws attention to the fact that architects and urban planners can influence the social interactions in physical settings. A better physical framework leads to an increase in the number, duration and scope of outdoor activities. When the quality of physical environment increases, more and more optional activities occur (table 1). The social activities occur simultaneously, and thus are indirectly encouraged by the physical setting of the public spaces whenever necessary and optional activities are given better conditions (Gehl, 2011, p.12). The physical traits and dimensions of the urban spaces can either promote or prevent isolation and contact (table 2). They affect the type of activities taking place; the number of people on the open areas; and the length of the time spent outdoors.

	Poor Quality	Good Quality
Necessary Activities	○	○
Optional Activities	○	○
Social Activities	○	○

**Figure 2: Relationship between the Quality of Outdoor Spaces and the Rate of Occurrence of Outdoor Activities**

Isolation	Contact
Walls	No Walls
Long Distances	Short Distances
High Speeds	Low Speeds
Multiple Levels	One Level
Orientation away from others	Orientation toward others

**Figure 3: Physical Planning for Isolation and Contact**

Stern and Krakover (1993) state that urban aesthetics reflect the cultural characteristics as well as the state of well-being of the population. They prove that urban aesthetics positively affect the perception of population trait and level of activities; which in turn influences the overall urban image. The more citizens perceive their environment as aesthetically-pleasant, safe and clean; the more likely they report being happy (Leyden et al. 2011). Gehl explains this phenomenon as “a feeling that a place is a thoroughly a pleasant space to be in” (2011, p. 181).

Lynch (1960) relates the physical form of places to the visual sense. He elaborates the image of the place in four categories, namely; legibility, building the image, structure and identity, and imageability. Within this list, legibility is crucial as being the central notion that refers to the readability of a physical setting. It is directly related to the way-finding activities of the people; within the process of way-finding, people engage with the city and its elements based on their mental picture of the exterior world (Lynch, 1960).

Nasar names the evaluative response to the place physics as “emotional quality” by suggesting that people’s perception of place attractiveness is dependent not only upon pleasantness, but also on excitement and calmness of the places. He defines pleasantness as pure evaluation, whereas excitement and calmness are described as mixtures of evaluation and arousal/activity. Exciting places awaken higher levels of pleasantness and arousal than do boring places; in just the same way, relaxing places provoke higher levels of calmness and pleasantness than do the distressing ones (Nasar, 1994, p.380). He concludes his study by suggesting that while seeking pleasantness, the design should encourage order, moderate levels of complexity, and elements of popular styles; while seeking excitement, the design should promote high complexity, atypicality, and low order; and while seeking calmness, the design should opt for high order, naturalness, and familiar elements (Nasar, 1994).

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**The pleasantness of the design depends on:**

- Ordering elements
  - Familiar and historical elements
  - Moderate complexity
  - Moderate discrepancies from the prototypical
  - Popular over “high” styles
  - Reductions in artificial nuisances
- 

(Nasar, 1994, p.397-398)

On one hand, Stern and Krakover (1993) claim that large spaces are considered more appealing because they provide a wide set of opportunities. On the other hand, Gehl discusses that small dimensions make for warmer and more intimate spaces by giving the example of small squares that are generally perceived as warm and personal. People can easily hear and see others, enjoy every detail while also getting the chance to experience the place as a whole. Small places are perceived as interesting and charming. In contrast, larger dimensions, such as wider streets and taller buildings, tend to be found cold and impersonal. When the buildings are enlarged, and the streets are prolonged; the walking distances get bigger and thus the places end up being perceived as dull and uninteresting (Gehl, 2011). Stedman states that it would be unreasonable to assume that people’s constructed meanings are independent of the environmental attributes (2003). His research further demonstrates that the physical characteristics matter, *albeit* underpin place attachment and satisfaction. (Stedman, 2003).

## **2.4. Place Attachment**

“The relationships that matter most to us are characteristically to particular people whom we love and sometimes to particular places that we invest with the same loving qualities.”

(Marris, 1982, p.185 )

The concept of place attachment focuses on how strongly people form a sense of connection to a particular place (Altman and Low, 1992). The connection can be positive or negative, depending on the individual’s experience, and it can, in addition, be developed towards places of various scales (Tuan, 1974). Until recently, majority of the research has been concentrated on the neighborhood and community scales. Especially during the 1980s, when attachment to places was increasingly becoming an object of study, the scholars of the time mainly focused on the affective bond with one’s neighborhood (Giuliani, 2003).

From the beginning of the 2000s, place attachment research took a turn by broadening its perspective to include a spectrum of scales. As illustrated on the exploratory research of Hidalgo and Hernandez (2001), place attachment found to develop to different intensities within different spatial scales; and while some forms of attachment were localized; others could be generalized across a whole region (Lin and Lockwood, 2014).

Place attachment has been subject to two main research fields; namely, sociology and environmental psychology. The former accepts place attachment as an essential component of local communities; while the latter focuses on searching for measures of environmental quality sensitive to the needs of inhabitants (Giuliani, 2003). Therefore, the conceptualization of the place attachment varies depending on whether scholars focus on personal, environmental, or social context (Raymond et al., 2010). Nevertheless, majority of researchers agree that place attachment is an umbrella concept that encompasses social bonding on one hand, and behavioral rootedness on the other (Riger and Lavrakas, 1981). Proshansky emphasizes the variability of attachment. Throughout time, changes that occur on the physical or social world influence the attachment levels of an individual. This line of thought is consistent with the reciprocity of people-place relationships (Proshansky, 1978; Hauge, 2007).

## **2.5. Place Identification**

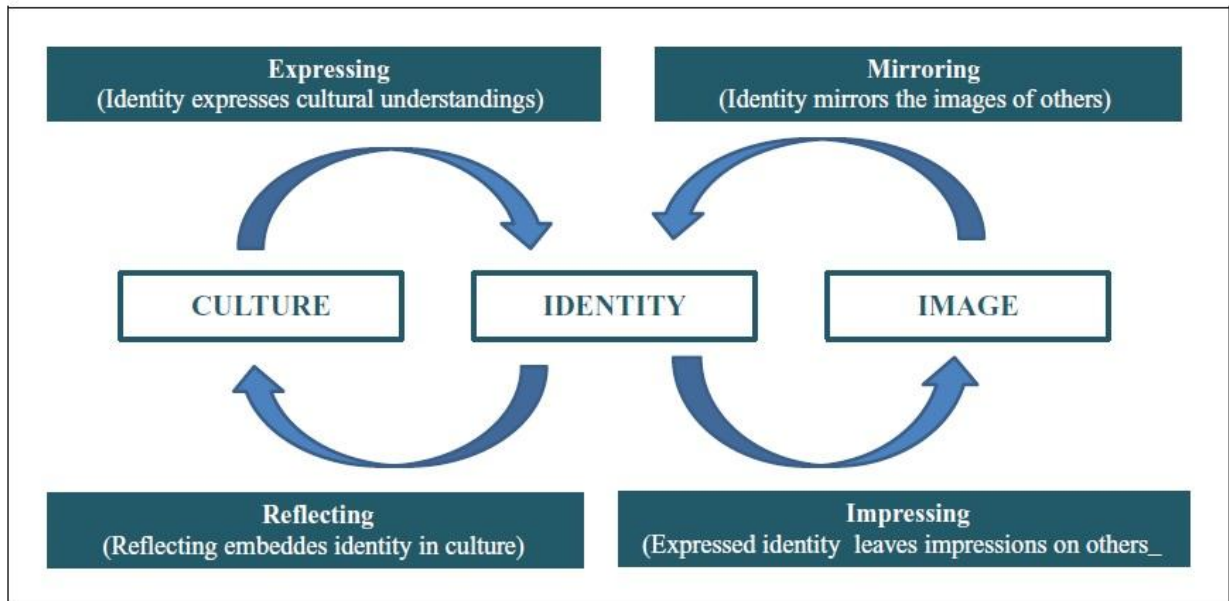
Places are significant sources of identity elements that hold symbols with specific meanings to individuals. Thus, they do not have permanent meanings; by being continuously renegotiated, the spatial symbols in turn reshape the meanings of the places (Breakwell, 1986). Twigger-Ross et al. (2003) define place as a social entity associated with a certain lifestyle, group of people, and social status.

The general term of identity refers to the internal subjective self-concept of an individual. It is shaped by the combination of genetic, cultural, and social factors as well as the built environment. By this means, place is one of the fundamental components of an individual's self-concept. Place identity is the interaction of internal and external views of a place; it is an ongoing conversation about the place culture and image (Kavaratzis and Hatch, 2013). It is a substructure of the personal identity that creates a meaningful connection between the self and the place (Zenker, 2011). It is the process by which people describe themselves in terms of belonging to a particular place (Stedman, 2002).

Places should not be considered as only contexts or backdrops, but they should also be regarded as an integral part of one's identity (Speller et al., 2002). According to Giuliani (2003), people identify themselves more with a place as their level of attachment to the place increases. While describing themselves, people tend to talk about their hometown or their place of residence; or whether they are a city-person or a country (open-air)-person (Hauge, 2007). The reverse is also true; places get influenced by people's identities and consequently reflect what kind of person resides in a setting (Nasar and Kang, 1999). In other words, there is a reciprocal link between the people and their places; people influence places and in return places affect the way people see themselves (Hauge, 2007). The term "place-identity" has been coined by Proshansky in the late 1970s as the incorporation of a place into the self-concept of an individual. It includes cognitions about the physical world that evolve through a person's selective engagement with its environment (Proshansky et al., 1983, p.62). In this context, place-identity is seen as a cognitive database against which the physical environment is experienced. Proshansky (1983) defines five central aspects of place-identity:

- recognition,
- meaning,
- expressive-requirement,
- mediating change, and
- anxiety and defense function.

Kalandides (2011) agrees that place identification is a process rather than being an outcome. He shows that places are not static constructs and identifies the main elements of place identity as: place image, materiality, institutions, relations, and people and their practices. Agreeing with the fact that place identification is a dynamic process, Hatch and Schultz (2002) mention four sub-processes that occur simultaneously (Figure 2): expressing cultural understandings, mirroring the images of others, reflecting and impressing. They offer a conceptualization of place branding that is based on importance of stakeholder involvement (2013).



**Figure 4: The Dynamics of Organizational Identity (Hatch and Schultz, 2002)**

This approach adopts an identity-based perspective by emphasizing the interaction between culture, identity and image (2013). The place culture represents the internal aspects of the place identity; while the place image reflects the external definitions. Through the interaction of these two notions, the place identity gets formed and reformed, continuously (Kavaratzis and Hatch, 2013). Breakwell (1993) introduces four processes related to place identity:

1. Place-related distinctiveness
2. Place-referent continuity and Place-congruent continuity
3. Place-related self-esteem
4. Place-related self-efficacy

Place-related distinctiveness refers directly to place identification, e.g. a person distinguishing themselves from others by saying “I am a Rotterdammer”. Place-referent continuity means perceiving the place as a coherent reference to one’s past, e.g. to live in a neighborhood that reminds one of their childhood, while place-congruent continuity refers to the compatibility of the place with a person’s beliefs, e.g. living in an area that matches one’s opinions. Moreover, place-related self-esteem amounts to the good/proud feeling a person has about its environment. Lastly, place-related self-efficacy symbolizes the sufficiency of a place, e.g. having all the needs of an individual close by (Breakwell, 1993).



In conclusion, identification with a certain place allows individuals to feel “truly at home” through the formation of a strong sense of belonging (Baumeister and Leary, 1995). By reducing the feeling of uncertainty, place identification facilitates decisionmaking (Hogg, 2000) and leads to a number of positive outcomes such as increased commitment and satisfaction (Zenker and Petersen, 2014).

### **2.5.1. Place Attachment and Place Identification**

Hernandez et al. (2007) lists four different perspectives regarding the relation between the concepts of place attachment and identification. Some authors consider the two to be synonymous (Brown and Werner, 1985), while others such as Lalli (1992) suggest that one encompasses the other. Moreover, Jorgensen and Stedman (2001) consider place attachment and place identity as two different factors of the multidimensional construct of “sense of place”. Yet another study suggests that place attachment includes identity, place dependency, and social bonds (Kyle et al., 2005).

In order to compare place attachment and place identity, researchers look at different samples of non-natives and of natives with different lengths of residence (Hay, 1998). It is often observed that people who have lived longer in a place feel greater attachment to it (Taylor et al., 1984). In the case of non-natives, place attachment is developed before place identity (Hernandez et al., 2007). It is only after a long period of interaction that the new setting gradually incorporates with identity (Wester-Herber, 2004). Moreover, Brown et al. (2003) found that this variable has been shown to be mediated at times by the number of relationships, property ownership, and the scope of the attachment. Both place identity and attachment depend upon the person’s place of origin and their length of residence (Hernandez et al., 2007).

To conceptually clarify the relation between the two concepts, they will be referred to as two different notions; since as much as there are overlaps between them, there still exists a differentiation. For instance, one person could be attached to a place without being identified with it. Someone might like living in a place but might not feel that this place is a part of their identity. The opposite is also true, one might feel that they belong to a place but prefer not to live there (Hernandez et al., 2007). Therefore, within the scope of this study, place attachment will be considered as the emotional bond to a place, while place identity will be regarded as the contribution of the place’s attributes to an individual’s self-concept.

## 2.6. Place Distinctiveness

Place distinctiveness is closely linked to both place attractiveness and identification. Place-related distinctiveness is one of the place identity processes, listed by Breakwell (1993), in which people separate themselves from others that do not belong to the same place as they do. In this context, the distinctiveness of a place is of primary importance as being “the characteristic that allow us to differentiate one space from another (Arthur and Passini, 1992, p.87)”. Thus, the distinctiveness of a place stems from its spatial attributes that enhance the ability of recognizing and identifying an environment (Safee et al., 2015). On a broader context, the distinctiveness of urban elements impacts the overall city image. For instance, unique public spaces and avenues provide the city with a specific identity that ultimately influences the perceptions of the people.

There is also a strong connection between place distinctiveness and place marketing, as the latter involves emphasizing the distinctive characteristics of a place to enhance its attractiveness. In terms of accentuating the distinctive characteristics of cities, two of their main five elements, *landmarks* (i.e. iconic architecture) and *edges* (i.e. waterfronts), are of prime importance (Hospers, 2009). In this sense, Hospers (2009) claims that place marketers should learn from Lynch to be more concerned about improving the imageability of their places by accentuating the distinctive characteristics of these locations.

## 2.7. Place Marketing

Place marketing is the process of coordinating the marketing tools with the aim of creating, communicating, delivering, and exchanging the valuable urban offerings of the city, through adopting a people-oriented philosophy (Braun, 2008). It projects a favorable image of the city by evaluating people’s perceptions and associations (Lecompte et al., 2017). People form a shared mental representation of a place, through identification (Proshansky et al., 1983). By creating a favorable internal place image for residents, place marketing provides satisfaction and loyalty, place awareness, and increased perceived quality (Govers and Go, 2009, p.17). Thus, it is closely linked to the notion of place identification, as the latter strongly influences the way people communicate about the city. A clear communication of the place identity prevents the place to be alienated to the city’s inhabitants (Therkelsen et al., 2010).

Three types of city communication are;

- primary communication that includes the city's actions and physical components,
- secondary communication that consists of advertising or public relations, and
- tertiary communication which refers to word-of-mouth, respectively (Kavaratzis, 2004).

Although place marketing is a relatively new field to academic research, the idea that places can be promoted has found widespread application for decades (Kotler et al., 1999). However, place marketing is not just about promotion, but also about building trust and respect towards a place. The significance of the field stems from the increasing competition between cities for attracting investors, citizens, companies, and visitors (Zenker, 2011). Cities use marketing to safeguard their position within the competitive environment. In that manner, place marketing provides a pro-active approach to urban policymaking by better understanding the target groups, in other words city's "customers". The customer-oriented philosophy makes for a better fit between the demand from the customers and the supply of cities (Braun, 2008).

One of the fundamental differences between commercial and place branding is the fact that the latter values the satisfaction of the people, while the main aim of commercial marketers is to bring profit to the organization (Zenker and Martin, 2011). It is undeniable that place branding includes economic intentions; however, it also fundamentally aims to increase the social functions of cities, namely place identification and citizen satisfaction. Thus, it adopts a customer-focused approach, based on the needs of all the target groups (Zenker et al., 2017).

Ever since it has been introduced as a new field, place marketing has been addressed from the perspective of marketing theory. Up until the exploratory research of Hospers (2009), where he compared the imageability of the city (Lynch, 1960) with the tourist gaze concept (Urry, 1990), there remained a lack of urban planning and sociology perspective on the investigation of place marketing applications. Hospers (2009) claims that place marketing is about taking advantage of the city as a built and graphic image. Conversely, Zenker and Gollan (2010) define the aim of place marketing as not only about communicating the physical offerings of the place, but also about the communication of the perceptions that exist in people's minds, as they lead to identification, satisfaction and willingness to stay.

Anholt (2010) states that in order to build and maintain a favorable reputation as responsible members of the global community; countries, cities, and places should place particular importance to their perceived emotional, leadership and social appeal. As a result, place marketing encapsulates the experience of a place, thus significantly influences the development of the city (Lecompte et al., 2017).

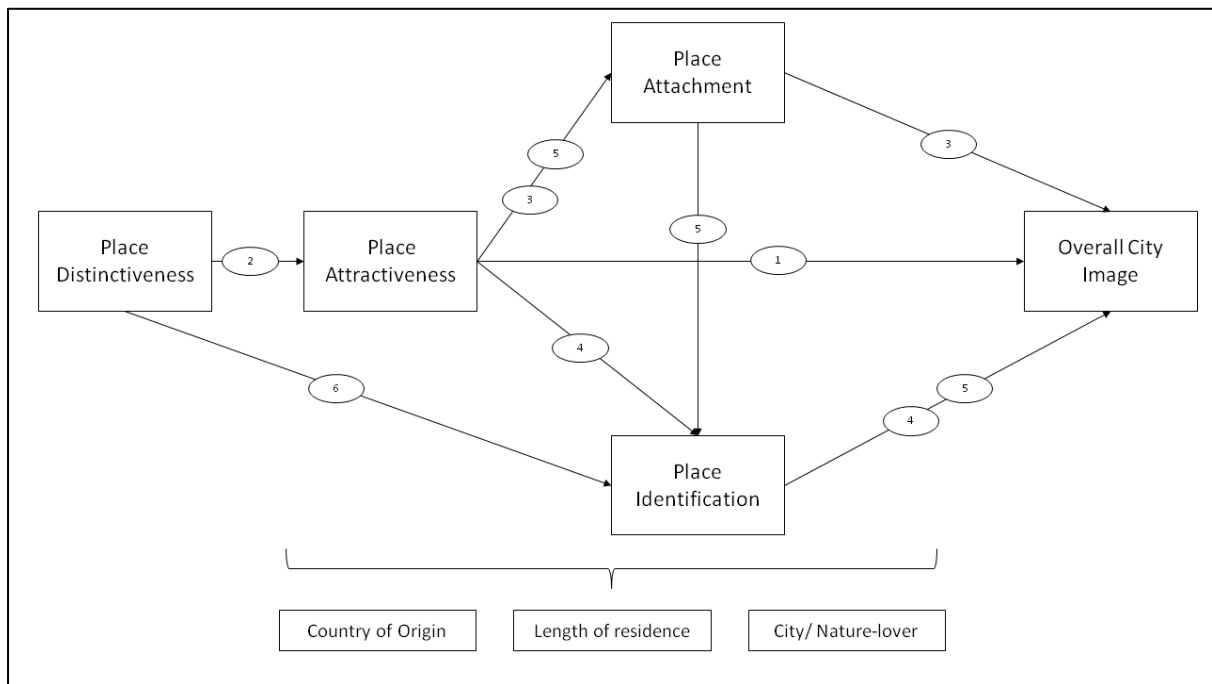
The brand image is defined as a shared reality which is dynamically constructed through social interactions (Aitken and Campelo, 2011). A successful implementation increases the attractiveness of the city for all of the target groups, since different target audiences see different city brands. Place branding influences and in turn gets affected by the city governance processes. Therefore, it cannot be treated separately from the city's comprehensive policy framework (Braun, 2012). Similarly, Cova et al. defines place branding as "the process of collective value creation in brand communities" by demarcating it into four aspects: social networking, impression management, community management, and brand use (Cova et al. in Aitken and Campello, 2011, p.925).

Policy construction for place branding which includes three major steps highlights the link of place branding practices to the notions of place attractiveness, identification and attachment:

1. Indicating the elements that should be promoted such as *place identity elements* that differentiates the place from others and contribute to the *place attractiveness* (Campelo et al., 2014),
2. Determining the suitable measures to promote these characteristics to the targeted audience (e.g. visitors, residents, investors) and thus supporting the creation of a favorable image of the place's identity among these targets (Kavaratzis and Hatch, 2013),
3. Setting up actions (Lecompte et al., 2017).

## 2.8. Conceptual Framework

In light of the literature review, the conceptual framework is formed as below (figure 3):



**Figure 5: Conceptual Framework**

Cities consist of a wide variety of components that might affect the overall image. People are exposed to many different locations within the city on a daily basis. Thus, the affective responses that people have towards these locations are also expected to influence the overall image of the city.

***H1: Place attractiveness has a direct influence on the overall image of the city.***

Places that are perceived as unique and distinctive are expected to be found attractive by the observer.

***H2: The distinctiveness of places affects their attractiveness levels.***

Place attachment is expected to mediate the effect of place attractiveness on the overall image; since people might bond with the city as a result of being attracted to certain locations, and ultimately build a positive overall image.

***H3: Place attachment mediates the effect of place attractiveness on the overall city image.***

Place identification is predicted to be a mediator between place attractiveness and overall image; since people might feel identified by the city which contains attractive places and have a more positive overall image, due to identification.

***H4: Place identification is a mediator between place attractiveness and the overall image of the city.***

Previous research shows that place attachment is closely related to place identification, and that the former is developed before the latter (Hernandez et al., 2017). The present study assumes that the more people bond with the city, the more they feel identified by it and thus have a positive overall image.

***H5: The effect of place attractiveness on the overall city image is double mediated by firstly place attachment and secondly place identification.***

As was shown by previous studies (i.e. Breakwell, 1993), place distinctiveness is expected to significantly influence the identification levels of people; since, people tend to identify with places with distinctive features.

***H6: Place distinctiveness has a significant impact on place identification.***

While testing the abovementioned hypotheses, several relevant variables that might affect the paths between constructs and variables should also be taken into consideration. These variables include length of residence (LoR), place of origin and being a city vs. nature lover. Length of residence might be a potential factor to change the relationships between variables, since over time people might change their perceptions of certain locations. Previous researchers have shown that both place identity and attachment depend upon the person's length of residence (Hernandez et al., 2007). Wester-Herber (2004) proves the effect of LoR on place identification; while Taylor et al. (1984) shows that place attachment is strongly dependent upon LoR. Therefore, the study will test for any potential effect of LoR on the paths, to analyze whether such distinction exists between the two groups.

Turning to the effect of country of origin, Hernandez et al. (2007) show that place identification and place attachment are closely related to the person's place of origin. The potential differences between Dutch and international inhabitants will be taken into account. The present study will test whether or not a person's place of origin changes the effect of place attractiveness on the overall city image. Additionally, Hauge (2007) claims that city-lovers and nature-lovers have differing place identification levels towards the same neighborhoods. This difference might also exist in the relationship between place attractiveness and overall image. The present study will consider being a city vs. nature-lover as a potential factor to moderate the relationships between variables and constructs, thus will test whether there are differences between the two groups.

## **Chapter 3: Research Design and Methods**

### **3.1. Revised Research Questions**

In light of the literature review and the conceptual framework, the revised research question is: To what extent do the physical evaluations of different locations influence the overall image of a city? Is this effect mediated by place attachment and identification?

1. How does the attractiveness of different location categories (architectural structures, avenues, public spaces, and waterfronts) in Rotterdam affect the overall city image?
  - a. Do the better-known locations within each category have a different influence on the overall image than the lesser known places?
  - b. Does the distinctiveness of places impact the perceived attractiveness?
2. Which factors explain the variation in resident perception?
  - a. Does the length of residence affect the overall city image?
3. To what extent place attachment and identification mediate the effect of place attractiveness on the overall city image?
  - a. Does place distinctiveness have a direct effect on place identification?
4. Which location category has the most effect on the overall city image?

### 3.2. Research Strategy

To answer the main research question, the suitable research method is conducting a survey due to the deductive explanatory research question as well as the need for primary data collection to measure the perceptions of a large number of residents in an experimental setting (Van Thiel, 2014). Drawing upon previous studies, the present study questions whether perceived attractiveness of different locations leads to an overall image by investigating the first impressions of places, presented as pictures.

The first impression consists of only physical evaluations, in other words the aesthetics of the place such as the overall look and feel of the physical setting. To investigate the potential link between place attractiveness and overall image, the city of Rotterdam will be used as a case study. The reason behind this location choice is the complexity of the city. Rotterdam is not a typical Dutch city, nor is it a mainstream travel destination. Being almost completely re-built after the bombings, in fact, from the perspective of a first-time visitor, the city is far from being *easy to read*. Rotterdam is a city of contrast; besides containing many contemporary structures within its aptly named *Cool district*, it also stands firm of its reputation as a port city. It does not have a typical center; instead it is highly polycentric and complex in nature. The city involves many iconic buildings, several large parks, and well-preserved historic districts -such as *Delfshaven*- that have been miraculously escaped the bombings. Rotterdam is a *multifaceted* city. Therefore, in order to emphasize the complex nature of the city, the present study will use pictures of a number of locations within Rotterdam to investigate people's differing perceptions. Various locations within the multilateral city will be analyzed in terms of both their attractiveness and distinctiveness levels. As a result, the study will question whether or not these physical assessments actually lead to the overall image.

In sum, the study analyzes the impact of physical characteristics and aesthetical appeal (e.g. attractiveness and distinctiveness) of various locations within the city of Rotterdam on the overall image formation, while also considering the potential effect of the recognition levels/popularity of places (e.g. mainstream places vs. hidden gems). Additionally, consistent with previous findings, the present study also considers the influence that the notions of place attachment and identification have on the relationship between place attractiveness and overall image.



Thus, it aims to:

- Identify how the perceived attractiveness of various components of the city (avenues, waterfront, buildings, and squares) influence its overall image;
- Show if the well-known locations from each location category have a different impact than the hidden gems;
- Analyze the effect of perceived distinctiveness on the attractiveness of locations;
- Show the different total effects each location has on the overall city image.
- Investigate if place attachment and place identification mediate the impact of place attractiveness on the overall city image.
- Analyze whether place distinctiveness influences place identification levels.

### **3.3. Research Method: Experimental Design**

In the course of their daily lives, people come across many different locations within the city. At first sight, they might be attracted to these locations or find them highly unattractive. The interesting question is whether this attraction influences their overall city image. In order to investigate this potential relation, an experimental research method will be conducted via an online survey. The study constructs an empirical (online) setting, in which the participants are primed with similar quality pictures of various locations of Rotterdam.

The methodology consists of conducting an online survey with Dutch and international students at Erasmus University Rotterdam by using photography as a perception, in other words, a first impression measurement tool. The questions will include pictures of multiple places that people might potentially encounter if they were to take a walk around Rotterdam; waterfronts, avenues, buildings, and public squares. Inclusion of these four categories allow for reflecting the multifaceted nature of the city, while also providing an environment for a thorough investigation of the different attractiveness levels of the city's locations. With this aim, the observers are firstly requested to rate the given locations based on the attractiveness levels, i.e. whether they find it aesthetically pleasing or not. Each location category also involves two sub-sections: well-known areas and lesser known places, or *hidden gems*. It would be more obvious for a well-known place attractiveness to directly impact the overall image; while a lesser-known place might rather have an indirect effect.

Apart from place attractiveness, the study also measures the distinctiveness of these locations. Therefore, after evaluating the attractiveness levels of the places, the participants then proceed to rate the given locations based upon their level of distinctiveness levels, i.e. how unique they are perceived. The study expects that people's evaluations regarding the distinctiveness of a place would not be independent from their aesthetic preferences. After the evaluations about the distinctiveness and attractiveness of places, the survey continues with environmental psychology questions focusing on place attachment and place identification. Place attachment questions include statements about sense of belonging, dependence to place, and preference to stay. As it is already proven that place attachment has a significant impact on the overall image with previous research, the present study further predicts that it would mediate the effect of place attractiveness on the overall image. People might bond with the city, as a result of being attracted to a certain location, and ultimately have a more favorable overall image.

Place attachment ratings are followed by place identification questions that measure the degree to which people consider Rotterdam to be a part of their identity. According to previous research, place attachment also leads to place identification. This positions place identification as a mediator in the relationship between place attachment and the overall image. With that link in mind, the present study formulates another estimation that goes: place attachment and place identification *both* mediate the effect of place attractiveness on the overall city image. Another direct link is expected to be formed between distinctiveness and place identification.

The arrangement of questions; firstly, priming people with pictures and asking them to rate their attractiveness and distinctiveness, then requesting them to indicate their identification and attachment levels, and lastly to rate the overall image, enables a thorough investigation to assess whether or not perceived attractiveness directly, or indirectly via place attachment and place identification, affect the overall city image. The closed questions ensure both quantifiable and generalized data collection while enhancing the level of external validity by providing the ability to standardize measurements. It is also important to note that all participants are exposed to the same pictures.

The flow of the experiment can be summarized as below:

1. Eight identical quality pictures of four different locations (one well-known and one lesser known place for each category) are presented.
2. The participants are asked to rate the given location based on its physical attractiveness (7-point bipolar scale), its distinctiveness (7-point bipolar scale) and to specify whether they are familiar with the place or not (yes/no question).
3. In order to calculate their place attachment to Rotterdam, participants are asked a 3-item question (7-point likert scale).
4. With the aim of assessing the place identification, a 4-item question is used (both 7-point likert scale).
5. In order to rate the overall image of Rotterdam, a 4-item question is used (7-point likert scale) focusing on cognitive and affective evaluations of people towards the whole city.
6. Lastly, participants answer demographic questions regarding their education level, age, gender, length of residence. Moreover, they are also asked to specify whether they are a city-person or not.

### **3.4. Operationalization**

#### **3.4.1. Variables**

##### Overall City Image

The dependent variable of the research is the overall image; in other words, the extent to which the general perception of a place/city is evaluated. To reflect the complexity of the notion of place imagery, overall image will be measured in the form of a four-item construct. This will allow for predictive validity, considering the fact that especially in social sciences, multi-item constructs outperform single-item scales (Diamantopoulos et al., 2012). The present study measures the overall image by adjusting the scale used by Kock et al. (2006) in their destination image research. Their model comprises of four determinants of the destination image that ultimately assess the overall perception of the target group. The question is formed as follows: All things considered, living in Rotterdam is ... (7-point likert scale)

- |                      |                              |
|----------------------|------------------------------|
| 1. good/bad          | 3. favourable/unfavourable   |
| 2. positive/negative | 4. worthwhile/not worthwhile |

### Physical Evaluations: Place Attractiveness

One of the main purposes of the present research is to investigate the particular role of pure aesthetical evaluations of the physical setting, also known as place attractiveness, on the creation of the overall image of the city. Previous studies find significant evidence for the impact of place attractiveness on the overall city image. “An urban image that is based on first-hand information is largely shaped by the environment’s visual appearance (Stern and Krakover, 1993, p.145).” Following the recent work of Hidalgo et al. (2013), the present study extends the emerging research that measures the perceptions of places represented as pictures. The places are gathered under four location categories: architectural structures, avenues, public spaces, and waterfronts. The degree to which people are pleased by the physical environment is measured to investigate the influence of place attractiveness on the formation of the overall city image.

### Physical Evaluations: Place Distinctiveness

According to previous research, place distinctiveness has a strong influence on place identification (Aitken and Campelo, 2011; Breakwell, 1993, etc.). The present study also assumes that place distinctiveness would be closely linked to place attractiveness; since people would potentially be more attracted to the places that they think of as a rare finding.

### Place Attachment

Place attachment is the extent to which people bond with a certain physical setting; in this case with the city of Rotterdam. Consistent with past studies (Hidalgo and Hernandez, 2001), it is expected to have a mediating effect on the influence of place attractiveness on the overall city image.

### Place Identification

Place identity is defined as a substructure of self-identity (Proshansky et al., 1983). Thus, place identification refers to the degree which a place feels like a part of an individual’s identity. It is the process by which people describe themselves in terms of belonging to a particular place (Stedman, 2002). Similar to place attachment, the present study expects place identification to be a mediating factor on the impact of place attractiveness on the overall city image. The present study refers to Breakwell’s four processes (1993) of place identity while measuring the identification levels of the inhabitants.

### **3.4.2. Other Relevant Variables**

The other relevant variables of the model include length of residence, country of origin, and being a city/nature-lover. Other control variables include personal demographic characteristics of the participants such as age and gender. Such variables might impact people's answering patterns and interfere with the effect of constructs and variables on the dependent variable. By identifying control variables beforehand, the current study will test for the potential moderating effect of these variables and ultimately aiming to limit such interference (Van Theil, 2014, p.81).

#### Length of Residence:

Previous studies (i.e. Hernandez et al., 2007) prove that length of residence has a significant effect on both place attachment and identification. Taylor et al. show that people who have lived longer in a place feel greater attachment to it (1984). Similarly, it is only after a long period of interaction that the new place slowly incorporates with identity (Wester-Herber, 2004). Thus, the present study directs the questions to two internal target groups (inhabitants) with differing lengths of residence; namely, the Dutch inhabitants and the international inhabitants, to compare whether such distinction exists between the two groups.

#### Country of Origin

According to Hernandez et al. (2007), place identification and place attachment are closely related to the person's place of origin. The present study takes this finding into account and further questions whether or not a person's place of origin changes the effect of place attractiveness on the overall city image. To analyze the potential moderating effect, the participants are asked to specify whether they are an international student or a Dutch student.

#### City-lover vs. Nature-lover

According to Hauge (2007), the divide between city vs. nature-lovers manifests itself in the concept of place identification. While introducing themselves, people talk about which city they belong to and whether they are a city-person or a country-person. The present study thus includes a 5-point bipolar question to further investigate whether such dichotomy results in alternating effects on the perception of the overall image.

### 3.4.3. Indicators for the Concepts Used

Concept	Definition	Indicators	Values
<b>Place Attractiveness</b>	Degree to which a physical setting pleases or appeals the senses	Aesthetical evaluations First impression	The more aesthetic the place is, the higher the attractiveness score (7-point bipolar scale)
<b>Overall Place Image</b>	Degree to which the overall perception of a place is evaluated	Cognitive and affective evaluations Stimulus factors	The better image the city has, the higher the score (7-point likert scale)
<b>Place Attachment</b>	Degree to which the individual bonds with a physical setting emotionally	Sense of belonging evaluations Dependence to the place Preference to stay	The more the individual feels like home at a city, is dependent to its offerings and prefers to stay there, the higher the attachment score (7-point likert scale)
<b>Place Identification</b>	Degree to which the place is considered to be a part of one's identity	Place appropriation evaluations	The more the place feels like a part of one's identity, the higher the identification score (7-point likert scale)
<b>Place Distinctiveness</b>	Degree to which a place is considered to be unique and distinctive	Aesthetical evaluations	The more distinctive the place is, the higher the distinctiveness score (7- point bipolar scale)
<b>Familiarity with the Place</b>	The extent to which the person is familiar with the given location	Assessment of familiarity levels	The more familiar a place is to the person, the higher the familiarity score (7-point bipolar scale)
<b>Length of residence</b>	The length of residence in Rotterdam	Assessment of the length of residence in Rotterdam	Six categories: half a year or less >6 months- 1 year; >1-3 years; >3-5 years; >5-10 years; more than 10 years
<b>City vs. nature-lover</b>	Degree to which the person considers themselves as a city-lover or a nature-lover	Environmental preference evaluations	The more one considers themselves a city-lover, the higher the score (5-point bipolar scale)
<b>Demographic information</b>	Age, gender, education level, and country of origin of the participants	Indication of demographic information	Age, gender, and education are categorical variables. Country of origin is a yes/no question
<b>Architectural background</b>	Whether the participant holds an architectural education or not	Specification of having/not having an architectural background	Yes/no question

Table 1: Summary of Variables

<b>Variable</b>	<b>Source of Scale for Measurement</b>
Overall Place Image	Kock et al., 2016
Place Attachment	Zenker and Gollan, 2010
Place Identification	Bhattacharya and Sen, 2003
Place Distinctiveness	Bhattacharya and Sen, 2003

**Table 2: Sources of Scale for Measuring the Variables**

### **3.5. Sample Size and Selection**

The study uses a purposive sampling method (Van Thiel, 2014). The participants are selected on the basis of two criteria; being a student and being an inhabitant of Rotterdam. Moreover, they will be split into two groups based on their country of origin: Dutch inhabitants and internationals. This division will allow for comparing the different perspectives within the internal target group. The sampling method can also be considered a cluster sample. A cluster sample is defined as “selection of a number of units on the basis of a shared future or characteristic (Black, 1999, p.118)”. Cluster sampling allows for generalizing the findings to the entire population.

### **3.6. Data Collection Method**

The current study collects primary data in an experimental setting. An empirical study will be conducted to measure the effect of place attractiveness on the overall city image. There is a lack of data on place attachment and identification on the city level as well as on the evaluation of place attractiveness on the location level within the city of Rotterdam. Therefore, the most fitting data collection method for the present study will be the construction of an online survey. While creating the online survey, the operationalized variables will be translated into questionnaire items as closed questions and statements (see Annex 1). The closed questions and scaled statements will facilitate the evaluation process while also allowing for standardization of the results as well as generalization of the survey findings. The results are expected to illustrate the influence of perceived attractiveness of the various locations within the city, mediated by the place identification and attachment levels.

### 3.6.1. Pilot Study

One of the main challenges of using surveys as a research strategy is having the point of “no return” (Van Thiel, 2014). To increase the reliability of the research method, a pilot study (Annex 2) will be conducted. The pilot respondents will rate the similarity of the overall look and feel of the location pictures. After ensuring that the pictures are of similar quality, the online survey will be constructed. A different pilot group of similar demographic profile will answer the first draft of the final survey and give feedback on practical matters such as the screen display. The final version of the online survey will then be prepared and disseminated.

### 3.7. Data Analysis Methods

The collected data will be analyzed by conducting a Structural Equation Modeling (SEM) in R. The present dataset will contain three constructs with multiple-items. Hence, the data analysis should include both a factor analysis and a multiple regression analysis. SEM combines measurement models with the structural ones. It is a multivariate statistical analysis technique that is a combination of both confirmatory factor analysis and path analysis. The present study uses SEM because it estimates multiple and interrelated dependence, simultaneously.

The general model will be designed as below:

$$\text{Overall City Image} = B_0 + B_1 \times [\text{Place Attractiveness}] + B_2 \times [\text{Place Attachment}] + B_3 \times [\text{Place Identification}] + B_4 \times [\text{Place Attractiveness}] \times [\text{Place Attachment}] + B_5 \times [\text{Place Attractiveness}] \times [\text{Place Attachment}] \times [\text{Place Identification}] + B_6 \times [\text{Place Attractiveness}] \times [\text{Place Identification}] + E$$

The first model will analyze the data for all location categories to compare the different effects of perceptions of various locations on the overall image. Then the location-specific SEM models will further investigate the relationships between variables via path analysis. The location-specific models will disentangle the indirect effects between variables and constructs to investigate the mediating effects. Lastly, the potential moderating effects of the other relevant variables will also be taken into consideration.



### **3.8. Validity and Reliability**

Certain measures have been taken to ensure maximum validity and reliability. The selected research method, online survey, will enhance both the validity and reliability of the present study due to the representation of various locations within the city, as well as the inclusion of generalizable and quantifiable closed questions.

Priming the participants with various location pictures will ensure a valid evaluation of the operationalized variables of place distinctiveness and place attractiveness. Additionally, the usage of multiple-item constructs to measure the complex concepts of overall city image, place attachment, and place identification will improve the reliability. To further enhance the reliability of the analysis, a common method bias test will be conducted, prior to the data analysis for all location categories, to see if the variance in participant responses are caused by the measurement method rather than the constructs the measures represent (Podsakoff et al., 2003). Lastly, the data analysis will take the form of SEM to accurately estimate both the confirmatory factor analysis and path analysis (ibid). SEM will be estimated with the Satorra-Bentler correction which is proved to provide a reliable result for goodness-of-fit statistics (Satorra and Bentler, 1994).

# Chapter 4: Research Findings

## 4.1. Data Description

Variable	Observations	Mean	Skewness	Kurtosis	Std. Dev.	Min. Value	Max. Value
<b>Overall Image</b>							
Image1	255	5.85	-1.63	7.04	1.16	1	7
Image2	255	5.80	-1.53	6.33	1.18	1	7
Image3	255	5.73	-1.40	5.71	1.22	1	7
Image4	255	5.77	-1.47	5.91	1.22	1	7
<b>Buildings (Well-Known: WK; Hidden Gem; HG)</b>							
Attractiveness Building WK	255	5.98	-1.43	5.93	1.07	1	7
Distinctiveness Building WK	255	6.39	-2.15	9.20	0.9	1	7
Familiarity Building WK	255	6.35	-2.52	9.92	1.23	1	7
Attractiveness Building HG	255	5.25	-0.56	3.07	1.25	1	7
Distinctiveness Building HG	255	5.05	-0.35	2.66	1.28	1	7
Familiarity Building HG	255	3.99	0.045	1.54	2.25	1	7
<b>Avenues</b>							
Attractiveness Avenue WK	255	4.82	-0.49	2.63	1.48	1	7
Distinctiveness Avenue WK	255	5.12	-0.52	2.59	1.50	1	7
Familiarity Avenue WK	255	5.86	-1.62	4.76	1.62	1	7
Attractiveness Avenue HG	255	4.35	-0.46	2.86	1.40	1	7
Distinctiveness Avenue HG	255	3.08	0.52	2.73	1.48	1	7
Familiarity Avenue HG	255	3.51	0.33	1.73	2.13	1	7
<b>Squares</b>							
Attractiveness Square WK	255	5.42	-1.05	4.22	1.32	1	7
Distinctiveness Square WK	255	4.88	-0.48	2.68	1.51	1	7
Familiarity Square WK	255	5.63	-1.36	3.86	1.74	1	7
Attractiveness Square HG	255	4.78	-0.50	2.64	1.53	1	7
Distinctiveness Square HG	255	5.47	-0.87	3.44	1.34	1	7
Familiarity Square HG	255	4.32	-0.17	1.60	2.19	1	7
<b>Waterfronts (WF)</b>							
Attractiveness WF WK	255	5.91	-1.06	4.06	1.09	2	7
Distinctiveness WF WK	255	5.80	-0.99	4.02	1.23	1	7
Familiarity WF WK	255	5.62	-1.21	3.95	1.56	1	7
Attractiveness WF HG	255	5.58	-0.95	4.23	1.18	1	7
Distinctiveness WF HG	255	4.73	-0.36	2.81	1.46	1	7
Familiarity WF HG	255	4.22	-0.12	1.79	1.97	1	7
<b>Place Identification</b>							
Identification1	255	3.64	-0.08	1.84	1.73	1	7
Identification2	255	4.66	-0.71	2.87	1.50	1	7
Identification3	255	3.97	-0.30	2.03	1.64	1	7
Identification4	255	4.81	-0.79	3.10	1.52	1	7
<b>Place Attachment</b>							
Attachment1	255	5.43	-1.13	3.69	1.54	1	7
Attachment2	255	5.33	-0.99	3.60	1.39	1	7
Attachment3	255	3.54	0.34	1.83	1.94	1	7
<b>Control Variables</b>							
Length of Residence	255	2.92	0.18	1.20	1.91	1	6
Age	255	28.44	2.22	8.95	8.22	21	37
City Lover	255	3.30	-0.24	2.14	1.25	1	5
Education	255	2.63	-0.82	3.42	0.66	1	4
Nationality (Dutch=1)	255	0.39	0.43	1.19	0.49	0	1
Architecture Background	255	0.19	1.60	3.57	0.39	0	1
<b>Dummy Control Variables</b>							
Gender	255	0.49	0.02	1.00	0.50	0	1
LoR	255	0.47	0.102	1.01	0.50	0	1
Education	255	0.66	-0.688	1.474	0.474	0	1
City/Nature	255	0.44	0.229	1.052	0.498	0	1
Age	255	0.50	-0.008	1.000	0.501	0	1

Table 3: Descriptive Statistics

The survey has been conducted with 256 participants and measured the structural relationships between the following items: place distinctiveness, place attractiveness, place identification, place attachment, and overall city image. The survey concluded with questions regarding common demographic attributes such as age, gender, country of origin, and educational background. Moreover, a question about being a city vs. nature lover has been included to be later used for testing the effect on place identification and city image. In general, the average age of the respondents was approximately 28. One respondent chose not to specify their gender; thus, this response has been omitted, leaving the analysis with 255 observations (table 3) with an even distribution of female/male respondents (mean= 0.49).

Moreover, an additional question assessed whether the participant has an architectural background or not, as it is proven to affect the aesthetical evaluations quite significantly (Gifford et al., 2000). The study sample includes 48 participants with an architectural background who are expected to evaluate the given locations through a professional perspective. As a result, they judge both place attractiveness and place distinctiveness of places differently. This might cause a problem while estimating the group models –to test the potential moderating variables. Thus, potential discrepancies have been eliminated by omitting the observations with architectural backgrounds (see table 4 for descriptive statistics).

Variable	Observations	Mean	Skewness	Kurtosis	Std. Dev.	Min. Value	Max. Value
<b>Overall Image</b>							
Image1	207	5.87	-1.57	6.93	1.14	1	7
Image2	207	5.78	-1.50	6.56	1.14	1	7
Image3	207	5.69	-1.46	5.93	1.23	1	7
Image4	207	5.78	-1.48	6.00	1.20	1	7
<b>Buildings (Well-Known: WK; Hidden Gem; HG)</b>							
Attractiveness Building WK	207	5.95	-1.40	5.77	1.08	1	7
Distinctiveness Building WK	207	6.39	-2.05	8.63	0.9	2	7
Familiarity Building WK	207	6.32	-2.46	9.67	1.24	1	7
Attractiveness Building HG	207	5.33	-0.64	3.45	1.19	1	7
Distinctiveness Building HG	207	5.01	-0.36	2.75	1.24	2	7
Familiarity Building HG	207	3.87	0.12	1.56	2.25	1	7
<b>Avenues</b>							
Attractiveness Avenue WK	207	4.74	-0.43	2.59	1.49	1	7
Distinctiveness Avenue WK	207	5.11	-0.53	2.57	1.54	1	7
Familiarity Avenue WK	207	5.87	-1.65	4.83	1.64	1	7
Attractiveness Avenue HG	207	4.35	-0.48	2.81	1.42	1	7
Distinctiveness Avenue HG	207	3.10	0.53	2.79	1.47	1	7
Familiarity Avenue HG	207	3.64	0.21	1.68	2.12	1	7
<b>Squares</b>							
Attractiveness Square HG	207	5.39	-1.02	3.99	1.35	1	7
Distinctiveness Square HG	207	4.91	-0.41	2.55	1.50	1	7
Familiarity Square HG	207	4.43	-0.25	1.67	2.17	1	7
Attractiveness Square WK	207	4.69	-0.47	2.62	1.55	1	7
Distinctiveness Square WK	207	5.38	-0.82	3.33	1.38	1	7
Familiarity Square WK	207	5.67	-1.44	4.10	1.73	1	7
<b>Waterfronts (WF)</b>							
Attractiveness WF WK	207	5.86	-1.06	4.15	1.10	2	7
Distinctiveness WF WK	207	5.72	-1.00	4.15	1.25	1	7
Familiarity WF WK	207	5.67	-1.21	4.01	1.50	1	7
Attractiveness WF HG	207	5.60	-0.88	3.99	1.18	1	7
Distinctiveness WF HG	207	4.73	-0.34	2.80	1.45	1	7
Familiarity WF HG	207	4.28	-0.13	1.83	1.95	1	7
<b>Place Identification</b>							
Identification1	207	3.71	-0.11	1.81	1.75	1	7
Identification2	207	4.64	-0.74	2.93	1.50	1	7
Identification3	207	4.05	-0.43	2.14	1.66	1	7
Identification4	207	4.86	-0.90	3.35	1.51	1	7
<b>Place Attachment</b>							
Attachment1	207	5.57	-1.28	1.11	1.52	1	7
Attachment2	207	5.35	-1.04	3.63	1.43	1	7
Attachment3	207	3.71	0.23	1.72	1.98	1	7
<b>Control Variables</b>							
Length of Residence	207	3.18	-0.10	1.18	1.88	1	6
Age	207	28.38	2.14	8.00	8.92	16	67
City Lover	207	3.35	-0.31	2.13	1.27	1	5
Education	207	2.58	-0.62	3.02	0.70	1	4
Nationality (Dutch=1)	207	0.46	0.14	1.02	0.50	0	1
<b>Dummy Control Variables</b>							
Gender	207	0.50	-0.01	1.00	0.50	0	1
LoR	207	0.54	-0.16	1.03	0.50	0	1
Education	207	0.62	-0.49	1.24	0.49	0	1
City/Nature	207	0.47	0.13	1.02	0.50	0	1
Age	207	0.47	0.11	1.01	0.50	0	1

**Table 4: Descriptive Statistics only including participants without an Architectural Background**

## **Test of Main Models with Control Variables as Moderators**

As illustrated in the conceptual framework, the study estimates a number of moderators to be present in the model. The study tests the potential moderating effect of other relevant variables by grouping the model based on country of origin, being a city vs. nature lover, and length of residence to specify any potential significant differences between the groups. To do so, the categorical (e.g. city-lover) variables have all been transformed into dichotomous variables while testing for the moderation effect. The moderation test has been conducted by creating group models based on dichotomous control variables. This transformation was made in order to be able to distribute the entire model based on two groups (table 4). For instance, the city-lover vs. nature-lover question includes a 5-point bipolar scale. Whereas the transformed moderating variable of City-lover only consists of two items; 0=nature-lover and 1=city-lover. The mean of this new variable (0.44) proves the fact that observations are evenly distributed between two items. By grouping the model based on the city-lover dummy variable, the new group models can be easily compared in order to investigate the different paths between variables.

In order to identify whether or not the grouped-models actually show a significant difference between the groups, the study compares the non-group model with the group-models and check the Satorra-Bentler corrected chi-square. If the p-value of this test is less than 0.05, then, it can be concluded that there are group differences. However, this does not mean that all paths are different. Next, the paths involving distinctiveness and attractiveness are restricted one by one to assess whether these are different between the two groups. An additional Satorra-Bentler corrected chi-square difference test is then run in order to ultimately prove whether the path is really different (if  $p < 0.05$ ) between groups. If this test is still significant, then the grouping variable proves to be a moderator of that relationship.

While running the group models, the paths between place attachment, place identification, and overall image (place attachment → place identification, place attachment → image, place identification → image) as well as the factor loadings of these three constructs have been restricted to be identical between groups, with the exception of the length of residence variable, which is indeed expected to moderate the relationship between place identification, place attachment, and overall image.

The restriction of the paths between three constructs for all the remaining group models will allow for analyzing the actual moderating effect of the control variables on the influence of place attractiveness and distinctiveness (place attractiveness→image, place attractiveness→place attachment, place attractiveness→place identification, place distinctiveness→place attractiveness, place distinctiveness→place identification).

In addition, other control variables, such as demographic characteristics of the participants (e.g. age, gender) will also be tested for any potential moderating effects. Education is omitted from the moderation test because the student sample already consists of mostly high educated people, thus a potential difference between the groups would not reflect the moderating effect of education levels. Furthermore, the variable which indicated the familiarity with given locations will not be included in the SEM model. It is not feasible to transform the familiarity variables into dichotomous as the familiarity varies between the four locations, between the buildings, squares, avenues and waterfronts as well as between the hidden gems and the well-knowns. Additionally, for group analysis in SEM, the groups should include at least 100 observations and therefore only dichotomous groups can be created with the present sample. Thus, the abovementioned testing method cannot be used to analyze the potential moderating effect of familiarity. Alternatively, the present study includes familiarity with the given location directly in the model as a control variable on the attractiveness of the locations.

## Common Method Bias Test

Common method bias occurs when variations in responses are caused by the measurement method rather than the constructs the measures represent (Podsakoff et al., 2003). The current study assessed whether common method bias posed a problem in the research findings by loading all the items upon one common factor in the scope of a principal factor analysis (table 5). The model with one single factor for all survey items did not show an acceptable fit (RSMEA= 0.13; CFI= 0.435; TLI= 0.38; PCLOSE= 0.00; SRMR= 0.123). Therefore, the model fit indicates that common method bias does not seem to be a problem for the current study and that the variations in responses are actually caused by the constructs that the measures represent.

<b>Fit Statistics</b>	<b>Value</b>
<b>chi2_ms(275)</b>	1443.537
<b>p &gt; chi2</b>	0.000
<b>chi2_bs(300)</b>	2374.975
<b>p &gt; chi2</b>	0.000
<b>RMSEA</b>	0.129
<b>90% CI, lower bound</b>	0.123
<b>upper bound</b>	0.136
<b>Pclose</b>	0.000
<b>CFI</b>	0.437
<b>TLI</b>	0.386
<b>SRMR</b>	0.123
<b>CD</b>	0.877

**Table 5: Principal Factor Analysis Model Fit Indices**

## Factor Analysis

The dataset consisted of three constructs; namely, overall image (3-item, adopted from Kock et al., 2016), place attachment (3-item, adopted from Zenker and Gollan, 2010) and place identification (4-item, adopted from Bhattacharya and Sen, 2003). The use of constructs with multiple-items aimed to increase the predictive validity of the abovementioned variables (Diamantopoulos et al., 2012). Bartlett's test for sphericity and the Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy have been conducted in STATA for all three constructs, prior to the factor analysis (Cureton and D'Agostino, 1983). The results showed a significant p-value for Bartlett's test for sphericity (p-value = 0.00) as well as a large value of KMO (0.868) and thus proved the fact that a factor analysis should be conducted for the three constructs.

Next, the factor analyses took the form of Explorative and Confirmatory factor analysis (CFA). The former has been conducted in STATA with both maximum likelihood (ML) and Principal component factor (pcf) analysis. According to the results, all items loaded significantly ( $p < 0.001$ ) on the factors. The factor loadings were all higher than 0.50 (Annex 5). The eigenvalues of constructs are as follow: place identification: 2.25 ( $>1$ ), place attachment: 3.22 ( $>1$ ), overall image: 1.81 ( $>1$ ). They are all significant factors.

Furthermore, a confirmatory factor analysis with the Maximum Likelihood (ML) estimation has been conducted in order to assess the composite reliability (CR) and discriminant validity. Table 6 reports the standardized factor loadings ( $\beta$ ) of each item within the three constructs, Cronbach's alpha as well as the CR and discriminant validity (AVE) of the model. All items have been loaded significantly ( $\beta > 0.5$ ) to the constructs. The values of Cronbach's alpha and Composite Reliability (CR) were higher than 0.80. Therefore, the internal consistency is proven (Fornell and Larcker, 1981).



Construct	Item Label	$\beta$	Cronbach's $\alpha$	CR
<b>Place Identification</b>	Identification1	0.80	0.83	0.85
	Identification2	0.52		
	Identification3	0.85		
	Identification4	0.83		
<b>Overall Image</b>	Image1	0.90	0.94	0.94
	Image2	0.90		
	Image3	0.89		
	Image4	0.90		
<b>Place Attachment</b>	Attachment1	0.79	0.82	0.83
	Attachment2	0.80		
	Attachment3	0.78		

**Table 6: CFA (SEM) results including fully standardized factor loadings ( $\beta$ ), Composite Reliability (CR), and Cronbach's  $\alpha$**

Moving on to the assessment of discriminant validity, Average Variance Extracted (AVE) evaluates the discriminant validity of the model by measuring the amount of variance captured by the construct in relation to the amount of variance due to measurement error (Fornell and Larcker, 1981). Table 7 compares the squared correlations (SC) between the constructs and AVE estimates. All SC are lower than AVE estimates, thus it is proven that the factors have discriminant validity (Fornell and Larcker, 1981).

AVE and SC	Place Identification	Place Attachment	Overall Image
Place Identification	<b>0.59</b>	<i>0.41</i>	<i>0.26</i>
Place Attachment	0.64	<b>0.62</b>	<i>0.58</i>
Overall Image	0.51	0.57	<b>0.80</b>

The correlations are reported under the diagonal, the SC are above the diagonal in *italics*, AVE estimations are indicated on the diagonal in **bold**.

**Table 7: Discriminant Validity of Place Attachment, Place Identification and Overall Image**

## 4.2. Structural Equation Modeling (SEM)

As the variables include a number of constructs with multiple-items (place identification, attachment, and overall image), the research analysis should include a factor analysis, besides a multiple regression analysis. To serve this purpose, Structural Equation Modeling (SEM) has been conducted in R. SEM is estimated with Satorra-Bentler correction. This estimation method enhances the reliability of the results for goodness-of-fit statistics and provides standard errors, p-values, confidence intervals, and the analysis of effects robust to data non-normality correction (Satorra and Bentler, 1994).

### 4.2.1. Model 1: SEM with All Location Categories

In order to analyze which location category has the most effect on the overall image formation process, a preliminary model with all location categories has been run (Annex 3). Kline (2010) states that at a minimum, the following model fit indices should be reported; model chi-square, RMSEA, CFI, and SRMR. This comprehensive model had a good fit as indicated by SEM model indices; SRMR=0.077 (Hu and Bentler, 1999), RMSEA=0.05, Pclose= 0.46 (MacCallum et al., 1996), Model Chi-square= 392.00 with 257 degrees of freedom, p-value chi-square= 0.00. It is not uncommon with SEM models to have a chi-square that is significant. Moreover,  $R^2$  of the dependent variable (overall image) is 0.41 (>0.25). Hair et al. (2014) state that for complex models, the model can be considered a good fit if the CFI and TLI values are higher than 0.9. The model 1 is a complex model which contains all location categories. CFI is 0.93 and TLI is 0.91 (>0.9), thus the model has an acceptable fit.

According to the SEM results of the Model 1 (Annex 3), place distinctiveness leads to place attractiveness in all location categories, regardless of the popularity levels of the places. Thus, the second hypothesis (*H2: The distinctiveness of places affects their attractiveness levels*) is fully supported. People who find these places attractive also find them distinctive.

The only two location categories that have a direct effect on the overall image of Rotterdam are waterfronts and buildings. The attractiveness of the well-known building (0.17\*\*) and lesser-known waterfront (-0.12\*\*) directly impact the overall image. Surprisingly, the latter has a negative influence on the overall image.

Consistent with previous studies (Hernandez et al., 2007), place attachment has a strong direct effect on the overall image (0.43\*\*\*) and on place identification (0.54\*\*\*). Surprisingly, place identification does not have a direct effect on the overall image. The variables that stand out regarding their effects on place attachment consist of the well-known building attractiveness (0.29\*\*\*) and well-known square attractiveness (-0.16\*). These two places have a direct significant impact on the place attachment levels of the inhabitants in Rotterdam. Another surprising finding is the negative influence of well-known square attractiveness on place attachment.

Turning to place identification, across all location categories, people identify with the city as a result of finding the lesser-known building attractive (0.18\*\*) as well as well-known avenue distinctive (0.25\*\*\*). Surprisingly, the more distinctive well-known buildings (-0.17\*\*) and lesser-known buildings (-0.16\*) are perceived, people feel less identified by the overall city. Building distinctiveness has a negative direct effect on place identification. The surprising outcomes and potential indirect effects as well as direct and total effects will further be analyzed in location-specific models.

#### **4.2.2. Location-Specific Models**

With the aim of analyzing what kind of effect the attractiveness of buildings, avenues, waterfronts, and squares have on Rotterdam's image, SEM has been conducted for all four locations in R. Aside from the direct relations between variables, SEM in R provides p-values for all the indirect effects. The multiple regression analysis has been conducted in R in order to investigate both indirect and total effects in detail for each model.

##### **Model 2: Buildings**

The SEM fit indices for the model 2 show that the independent and mediating variables explain 39% of the variation in the overall image ( $R^2 = 0.394$ ). The model chi-square is 135.57. P-value of chi-square is 0.02. The SRMR of the model is 0.06 (<0.08) (Hu and Bentler, 1999), RMSEA is 0.04 (<0.08), Pclose is 0.88 (MacCallum et al., 1996). CFI is 0.98 (>0.95) and TLI is 0.97 (>0.95) (Hu and Bentler, 1999). As proved by the fit indices, the model 2 has a good fit. Table 8 specifies the effects of the SEM model 2.

Effects of	On	Direct Effects (DE)	Indirect Effects (IE)	Total Effects (TE)
Well-known building attractiveness	Place Attachment	0.28***		
	Place Identification	0.14*		
	Overall Image	0.20*	0.17	0.37***
Lesser-known building attractiveness	Place Attachment	0.06		
	Place Identification	0.22***		
	Overall Image	0.04	0.07	0.11
Well-known building distinctiveness	Place attractiveness	0.23**		
	Place identification	-0.10		
Lesser-known building distinctiveness	Place attractiveness	0.48***		
	Place Identification	-0.13		
Place attachment	Place Identification	0.59***		
	Overall Image	0.39***	0.11	0.50***
Place Identification	Overall Image	0.19		
Familiarity	Well-known building attractiveness	0.09		
	Lesser-known building attractiveness	-0.06		

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported.

**Table 8: Results of testing the Model 2 on SEM**

SEM results (table 8) illustrate that attractiveness of a well-known building directly and positively affects the overall image of the city (0.20\*). The more a well-known building is found to be aesthetically pleasing, the more favorable the overall city is perceived. This direct relation illustrates the importance of the design features of well-known buildings, as they represent the city that they belong to. This outcome also shows that graphic representations of popular buildings significantly enhance the image of the overall city.

On the other hand, the attractiveness of a lesser-known building does not have a significant direct impact on the overall city image. People who are attracted to lesser-known buildings do not necessarily have a positive image of Rotterdam. The attractiveness of the lesser-known building, however, does lead to place identification (0.22\*\*\*). The perceived beauty of a hidden gem (building) intensifies the identification levels of the inhabitants. As such, people might even describe themselves as belonging to the city with the hidden gem. Because place identification does not directly lead to overall image, it also does not have a mediating effect on the effect of lesser-known building attractiveness on overall image (table 9). The attractiveness of the well-known building also leads to an increase in place identification (0.14\*). Contrary to previous studies (i.e. Breakwell, 1993), distinctiveness does not affect place identification levels of inhabitants. Place distinctiveness of neither well-known nor lesser-known building has found to have a significant impact on place identification. Finding the buildings distinctive does not suffice to make people feel like the whole city is part of their identity.

There exists a close link between distinctiveness and attractiveness for both the well-known building (0.23\*\*) and the hidden gem (0.48\*\*\*). The more distinctive a building is perceived, the more it is also found to be attractive. The effect is much more emphasized in the case of hidden gems. The distinctiveness of a hidden gem influences the attractiveness of the building much more strongly than the relationship between well-known building distinctiveness and attractiveness. Consistent with previous research (Hernandez et al., 2007), place attachment has a direct positive effect on both place identification (0.59\*\*\*) and the overall image (0.39\*\*\*). Contrary to previous findings though, place identification does not have a significant influence on the overall image.

Furthermore, well-known building attractiveness directly affects place attachment (0.28\*\*\*). Inhabitants of Rotterdam feel more attached to the city as a result of being attracted to the well-known building. Furthermore, turning to the indirect effects of the model (table 9); the SEM results illustrate the indirect effect of the path between place attractiveness, attachment and overall image. This outcome emphasizes the fact that place attachment mediates the effect of well-known building attractiveness on the overall city image (0.11\*\*). As the attractiveness levels of a well-known building increase, so does the attachment levels of people towards the whole city, meaning people who find the well-known building to be attractive also form stronger bonds with the whole city.

The more people find the well-known building attractive, the more they get attached to Rotterdam and as a result, have a more positive overall city image. The mediating effect of place attachment is not present on the impact of lesser-known building attractiveness. Place identification is also not proved to be a mediator in this model, as illustrated by the insignificant indirect effects on all designated paths (table 9).

<b>Indirect Effects</b>	<b>Effect</b>
Path 1. Well-known building attractiveness – place attachment – overall image	0.11**
Path 2. Well-known building attractiveness – place identification – overall image	0.03
Path 3. Well-known building attractiveness – place attachment - place identification – overall image	0.03
Path 4. Lesser-known building attractiveness – place attachment – overall image	0.02
Path 5. Lesser-known building attractiveness – place identification – overall image	0.04
Path 6. Lesser-known building attractiveness – place attachment - place identification – overall image	0.01

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported.

**Table 9: Disentanglement of the Indirect Effects on Overall Image**

In sum, only the attractiveness of the well-known building has a direct significant impact on the overall image of the city. This might be due to the fact that the selected well-known building is the Rotterdam Centraal Station, which is a modern transportation hub that was built as part of the efforts of *re-imagining* the city. “[It represents] Rotterdam’s bold ambitions for urban development and renewal (Benthem Crouwel Architects, MVSA Architects, and West 8)”. The architects further define the structure by using terms such as practical, comfort, and allure; which also fit the overall image of Rotterdam. On the other hand, the selected hidden gem was the Water tower in de Esch area, which represented the preserved and historical aspects of the city.

Therefore, according to the results, it can be stated that hidden gems, because of being less-known, are considered to be not as attractive as the well-known buildings. Lastly, in the case of buildings, none of the control variables proved to be a significant moderator. Familiarity also has not been found to influence the attractiveness of locations.

### **Model 3: Avenues**

The model fit indices for the SEM results of the model 3 are; SRMR= 0.06 (<0.08) (Hu and Bentler, 1999), RMSEA= 0.06 (<0.08), Pclose= 0.15 (MacCallum et al, 1996), CFI= 0.95, TLI=0.94 (>0.9). Hair et al. (2014) indicate that TLI value that is higher than 0.9 proves an acceptable fit. Model chi-square= 178.70, p-value of chi-square= 0.00. Moreover, the variables explain 36% of the variance on the overall image.

Avenues play an important role in the process of way-finding, during which people develop symbolic meanings of the whole city (Lynch, 1960). This is also illustrated in the SEM outcomes (table 10); the distinctiveness of avenues positively influences the attractiveness (0.36\*\*\*, 0.46\*\*\*). Distinctive avenues hold specific symbolic meanings. People might perceive that distinguishable avenues make for more pleasant landscapes and thus find those unique avenues much more attractive than the unoriginal ones.

Neither the well-known, nor the lesser-known avenue attractiveness has a direct impact on the city image (table 10). The indirect effects of place attractiveness on overall image are also not significant. Thus, neither place attachment nor place identification has a mediating effect on the relationship between place attractiveness and overall image.

One of the important outcomes is the effect of lesser-known avenue attractiveness on place attachment (0.16\*). The attractiveness of lesser-known avenues tightens the bonds that people form with the whole city. People get increasingly attached to Rotterdam as a result of being attracted to the hidden gems.

Effects of	on	Direct Effects (DE)	Indirect Effects (IE)	Total Effects (TE)
Well-known avenue attractiveness	Place Attachment	-0.05		
	Place Identification	-0.01		
	Overall Image	0.06	-0.04	0.02
Lesser-known avenue attractiveness	Place Attachment	0.16*		
	Place Identification	0.04		
	Overall Image	-0.02	0.10	0.08
Well-known avenue distinctiveness	Place attractiveness	0.36***		
	Place identification	0.21**		
Lesser-known avenue distinctiveness	Place attractiveness	0.46***		
	Place Identification	-0.02		
Place attachment	Place Identification	0.62***		
	Overall Image	0.43***	0.14*	0.57***
Place Identification	Overall Image	0.23*		
Familiarity	Well-known avenue attractiveness	-0.03		
	Lesser-known avenue attractiveness	0.07		

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported.

**Table 10: Results of testing the Model 3 using SEM**

In order to compare the effect of building attractiveness vs. avenue attractiveness on place attachment, the raw coefficients (RC) will be taken into account. Compared to the influence of avenue attractiveness (RC: 0.14\*) on place attachment, the coefficient of the building attractiveness (RC: 0.31\*\*\*) is higher. This might be due to the fact that the buildings which directly impact the place attachment are well-known, whereas the avenues which influence the attachment levels are lesser-known. Thus, it can be stated that well-known buildings influence place attachment more than lesser-known avenue attractiveness. The difference between standardized coefficients might also explain the absence of mediating effect of the place attachment on the avenue model (model 3).



The mediating effect of place attachment on the path between place attractiveness and the overall image, which was proved to be significant in the case of well-known buildings, is not significant in the case of lesser-known avenues. In fact, the model 3 does not have any significant indirect effects, apart from the mediating effect of place identification between attachment and overall image (0.14\*).

Additionally, the distinctiveness of the well-known avenue has a direct positive effect on place identification (0.21\*\*). This outcome is not surprising, as the more people find a certain location to be unique, the more they feel like the city reflects their identity, since they might also like to think of themselves as unique individuals -just like their city. Consistent with Hernandez et al. (2017) place attachment leads to place identification. Different from the building model (Model 2), place identification directly and positively influences the overall image of the city.

Lastly, none of the group-models based on control variables had a significant difference between groups. Therefore, it is shown that the grouping variables (length of residence, place of origin, and being a city/nature-lover) do not have a moderating effect in the Model 3. Familiarity also did not affect the attractiveness of avenues.

In sum, the avenue model did not have any indirect effects (neither place attachment, nor identification, nor both together) of place attractiveness on the overall image. The most important significant direct effects in Model 3 consisted of the paths between place attractiveness and distinctiveness, lesser-known avenue attractiveness and place attachment, and lastly between well-known avenue distinctiveness and place identification.

### **Model 4: Squares**

The model fit indices for the model 4 are; SRMR= 0.079 (<0.08) (Hu and Bentler, 1999), RMSEA= 0.06 (<0.08), pclose= 0.06 (MacCallum et al., 1996), CFI= 0.94 (>0.9), TLI= 0.93 (>0.9) (Hair et al., 2014), Model chi-square= 190.04, chi-square p-value= 0.00. Moreover, the variables explain 37% of the variance on the overall image (R<sup>2</sup>= 0.37).

<b>Effects of</b>	<b>on</b>	<b>DE</b>	<b>IE</b>	<b>TE</b>
Well-known square attractiveness	Place Attachment	-0.07		
	Place Identification	0.03		
	Overall Image	0.13*	-0.03	0.10
Lesser-known square attractiveness	Place Attachment	0.21**		
	Place Identification	0.09		
	Overall Image	0.01	0.10	0.11
Well-known square distinctiveness	Place attractiveness	0.42***		
	Place identification	0.03		
Lesser-known square distinctiveness	Place attractiveness	0.51***		
	Place Identification	0.01		
Place attachment	Place Identification	0.62***		
	Overall Image	0.43***	0.14*	0.57***
Place Identification	Overall Image	0.23*		
Familiarity	Well-known square attractiveness	0.01		
	Lesser-known square attractiveness	0.14*		

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported.

**Table 11: SEM results of the Model 4**

According to the SEM results of the model 4 (table 11), there is a direct link between square attractiveness and the overall image of the city. The attractiveness of a well-known square directly leads to a positive overall image of the city (0.09\*). This direct effect was not present on the results of the model that has been run with all location categories; it only revealed itself in the location-specific model. This might be because the coefficient is significantly lower than that of the building and waterfront attractiveness. People form an overall favorable image of Rotterdam as a result of being attracted to the well-known square. The image of the city gets enhanced by the representation of its well-known squares.

Similar to the avenue model (Model 3), both place identification and place attachment have a significant effect on the overall city image. The more people feel identified by Rotterdam and the more they are attached to the city, the more they have a favorable city image. This outcome is consistent with previous research (Hernandez et al., 2007). The lesser-known square attractiveness does not have a direct impact on the overall image; however, it does have a direct effect on place attachment. An increase in the attractiveness of a hidden gem results in higher attachment levels with the whole city (0.21\*\*). Compared to the previous two models, the effect of place attractiveness on place attachment is most dominant in well-known buildings (RC: 0.31\*\*\*), followed by lesser-known squares (0.19\*\*), and the least impact is present for lesser-known avenues (0.14\*). Similar to the building model, and different from the avenue model, the effect of lesser-known square attractiveness on the overall image is mediated by place attachment (0.09\*). An attractive hidden gem makes people form tighter bonds with the city; which ultimately leads them to perceive the overall image as highly positive. People who are attracted to the hidden gems get more attached to the overall city, and as a result build an overall positive city image of Rotterdam. This is the only indirect effect that the model 4 has in terms of the path between attractiveness and overall image.

Similar to model 2 and model 3, the positive direct effect of distinctiveness on place attractiveness is also present in this model (0.42\*\*\* and 0.51\*\*\*). The distinctive physical characteristics of a place significantly enhance its perceived attractiveness levels (Aitken and Campelo, 2011). Therefore, people who find the squares to be distinctive also feel attracted by them. Lastly, none of the control variables moderate the paths in the model 4. Familiarity with the lesser-known square has found to influence the attractiveness of the location (0.14\*).

Indirect Effects	Effects
Path 1: Lesser-known square attractiveness – place attachment – overall image	0.09*
Path 2: Lesser-known square attractiveness – place identification – overall image	0.02
Path 3: Lesser-known square attractiveness – place attachment – place identification - overall image	0.03
Path 4: Well-known square attractiveness – place attachment – overall image	-0.03
Path 5: Well-known square attractiveness – place identification – overall image	0.01
Path 6: Well-known square attractiveness – place attachment - place identification – overall image	-0.01

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported.

**Table 12: Disentanglement of the Indirect Effects on Overall Image**

### **Model 5: Waterfronts**

The model fit indices of the model 5 are; SRMR= 0.07 (<0.08) (Hu and Bentler, 1999), RMSEA= 0.06 (<0.08), Pclose= 0.06 (MacCallum et al, 1996), CFI= 0.94, TLI= 0.93 (Hair et al., 2014), Model chi-square= 187.84, p-value model chi-square= 0.00. The variables explain 38% of the variance on the overall image ( $R^2 = 0.377$ ).

Waterfronts can change the perception of the whole city, as they are generally considered to be the prime locations into destinations for local culture and entertainment (Project for Public Spaces, 2009). Thus, the results were expected to emphasize the effect of waterfront attractiveness on the overall image.

The results show that attractiveness of the well-known waterfront does have a direct positive effect (0.11\*) on the overall image of Rotterdam (table 13). This means that the mere physical evaluations of the well-known waterfronts within the city significantly enhance the city image. When exposed to the graphic representations of the well-known waterfronts within Rotterdam, people who are attracted to those images end up having a much more positive overall image of the whole city.

On the other hand, a surprising finding is the negative effect of lesser-known waterfront attractiveness on the overall image (-0.12\*\*). Surprisingly, the image of Rotterdam gets decreased by the fact that it has an attractive lesser-known waterfront. The less people are attracted to this hidden gem, the more they have a positive image of the overall city.

Effects of	On	DE	IE	TE
Well-known waterfront attractiveness	Place Attachment	0.17*		
	Place Identification	0.11		
	Overall Image	0.11*	0.12	0.23***
Lesser-known waterfront attractiveness	Place Attachment	0.12		
	Place Identification	-0.03		
	Overall Image	-0.12**	0.06	-0.06
Well-known waterfront distinctiveness	Place attractiveness	0.50***		
	Place identification	-0.04		
Lesser-known waterfront distinctiveness	Place attractiveness	0.57***		
	Place Identification	0.14		
Place attachment	Place Identification	0.60***		
	Overall Image	0.42***	0.14*	0.56***
Place Identification	Overall Image	0.23*		
	Well-known waterfront attractiveness	0.14*		
Familiarity	Well-known waterfront attractiveness	0.14*		
	Lesser-known waterfront attractiveness	0.08		

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported.

**Table 13: SEM results of the Model 5**

In the case of the influence of waterfront attractiveness, neither place attachment nor identification seems to have a mediating effect on the overall image formation. The impact is thus solely dependent on the aesthetical evaluations of the observers, regardless of their emotional assessments.

Furthermore, the more a waterfront is perceived to be distinctive, the more it is also found to be attractive (0.50\*\*\* and 0.57\*\*\*). The direct effect of distinctive characteristics of a waterfront significantly enhances its attractiveness, regardless of its popularity levels. Similar to the all three of the previous location-specific models, place attractiveness affects place attachment. The attractiveness of the well-known waterfront has a direct positive influence on place attachment (0.17\*). Across all location categories, the effect of buildings (RC: 0.31\*\*\*) is much more dominant compared to the effect of square (RC: 0.19\*\*) avenue (RC: 0.14\*) and waterfront attractiveness (RC: 0.18\*) on place attachment. Lastly, familiarity with the well-known waterfront has found to directly and positively affect the attractiveness of the location (0.14\*).

#### *Length of Residence (LoR)*

While testing the moderation effect of LoR, the paths between place attachment → image and place identification → image have not been restricted between the two groups in order to report the potential differences. These relationships are expected to differ between short-term and long-term inhabitants (Hernandez et al., 2007). According to the results of the Satorra-Bentler corrected chi-square test, the two groups proved to be significantly different from one another. The difference stemmed from the effect of lesser-known waterfront attractiveness on the overall image (table 14). Inhabitants who have been living in Rotterdam for less than a year evaluated the overall image of the city more negatively, as a result of being attracted to the lesser-known waterfront, which was an unexpected outcome.

<b>Direct Effects of</b>	<b>on</b>	<b>Group 1: Short-term residents (&lt;1 year)</b>	<b>Group 2: Long-term residents (&gt;1 year)</b>
Lesser-known waterfront attractiveness	Overall Image	-0.25***	0.03

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients are reported. Only the differences between the two groups have been reported.

**Table 14: SEM results of the Model 5 grouped by length of residence**

The mediating effect of place identification on the influence of place attachment on overall image is only present for the case of short-time residents (table 15). Inhabitants who have been living in Rotterdam for less than a year have an overall positive image of the city as a result of being firstly attached to, and secondly identified by the city.

<b>Indirect Effect (Group: length of residence &lt; 1 year)</b>	<b>Effect</b>
Path: Place attachment – place identification – overall image	0.10*

\*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*;  $p \leq 0.001$ ; Standardized coefficients and Std. Error are reported.

**Table 15: Disentanglement of the Indirect Effect of Square Attachment on Overall Image**

## **Discussion of the Results**

Consistent with Urry’s statement (1995), the present study found that graphic representations of a number of location categories have a significant impact on the overall image formation. The survey results indicated that the attractiveness of well-known buildings, waterfronts, and squares led to a favorable overall image. The overall image of the city increases as a direct result of the perceived high aesthetical quality of its well-known waterfronts, squares, and buildings. Thus, the first hypothesis (*H1: Place attractiveness has a direct influence on the overall image of the city*) is partially supported.

Out of the three location categories, buildings have been found to have the most effect on the overall image. Riza et al. (2012) show that iconic architecture, as a substantial part of the contemporary city, significantly influences the image of the city. Consistent with previous research, the results emphasize the significant impact of well-known building attractiveness on the overall image. There are many examples around the world (i.e. Guggenheim museum in Bilbao, Spain) which accentuate the effect of one iconic building on the image re-formation of cities. Several of these cities are thus commemorated by their renowned public buildings (Project for Public Spaces, 2009). In most of the cases, the attractive iconic buildings boost the overall image of the city by reflecting the local culture (Brizotti-Pasquotto, 2014).

Another direct influence on the overall image results from well-known square attractiveness. Project for Public Spaces define squares as the “civic soul of neighborhoods” by emphasizing the fact that squares are the places that foster the public life. Squares have historically been the center of communities, thus their attractiveness levels are closely related to the overall perception of the city (Project for Public Spaces, 2005). Memluk (2013) also agrees that squares have a direct link to the overall image of cities and further explains this relationship by accentuating the visual landscape value of the public squares which contribute greatly to the perceived image of the whole city.

Moving on to the effect of waterfronts, the well-known waterfronts have been found to directly influence the overall city image. As seen from most of the city postcards and city promotion advertisements, the cities’ well-known waterfronts are often used to attract the attention of the target group. According to the results of the present study, the internal target group links the well-known waterfront attractiveness directly to the overall image of Rotterdam. It should also be noted that only well-known places within each three location category proved to enhance the overall city image. Lesser-known waterfronts also had a direct effect on the overall image, but the effect was negative. Therefore, it can be concluded that well-known places are perceived to be more attractive by the inhabitants and thus contribute to the overall image formation of the city.

Furthermore, place distinctiveness has been proved to always directly influence place attractiveness. This direct impact is present for all location categories. Thus, the second hypothesis (*H2: The distinctiveness of places affects their attractiveness levels*) is fully supported. The unique characteristics of places that allow people to differentiate one location from another (Arthur and Passini, 1992) also enhance the attractiveness of these locations. People feel much more attracted to the places that they consider unique. Safee et al. (2015) indicate that the distinctiveness of places results from their attractive physical features. Therefore, it can be concluded that place attractiveness highly depends upon whether or not the place is considered distinctive. Both well-known and lesser-known locations that are perceived to be unique and distinctive also found highly attractive by both inhabitant groups.

The effect of place attractiveness on place attachment was present for three location categories of differing popularity levels. Tuan (1974) proved that place attachment can be developed towards places of various scales (ibid). Consistent with his findings, the present study shows that well-known building, lesser-known avenue and lesser-known square attractiveness lead directly to increased place attachment levels.



Moreover, on the same lines with Hidalgo and Hernandez (2001), place attachment has found to develop to different intensities within these three location categories. Well-known buildings were found to have the most effect on place attachment levels of the inhabitants of Rotterdam.

Additionally, a couple of indirect effects have been found in the location-specific models. Place attachment has been found to mediate the effect of lesser-known square attractiveness and well-known building attractiveness on the overall image of the city. People who are attracted to the hidden gems (squares) and iconic buildings also feel more attached to the city which harbors such features. As a result of high attachment levels, they then form an overall favorable image of the whole city (Hernandez et al., 2007). Thus, the third hypothesis (**H3: *Place attachment mediates the effect of place attractiveness on the overall city image***) is also partially supported. Place attachment does mediate the effect of building (well-known) and square (lesser-known) attractiveness on the overall city image.

Another indirect effect is present on the path between place attachment and the overall image. For three out of four location categories (except from the building model), place identification mediates the effect of place attachment on the overall city image. This is consistent with previous research which indicates that place attachment significantly influences the place identification levels, as it happens prior to identification (Hernandez et al., 2007). However, the present study has not found any indirect effects of place attractiveness mediated by place identification. Place identification does not act as a mediator between attractiveness and overall image. The fourth and fifth hypotheses are thus rejected.

Consistent with previous studies (i.e. Breakwell, 1993), place distinctiveness has been shown to directly influence place identification. The well-known avenue distinctiveness significantly increases the identification levels of the inhabitants. Thus, it can be stated that people tend to identify with the whole city which has distinctive well-known avenues. The direct impact was present in one out of four location categories, thus the sixth hypothesis (**H6: *Place distinctiveness has a significant impact on place identification.***) is also partially confirmed.

The present study also tested for potential moderating effects of other relevant variables and demographic variables. According to the Satorra-Bentler corrected chi square test results, contrary to previous studies (Hauge, 2007 and Hernandez et al., 2007), there are no significant differences between people from different places of origin and city vs. nature lovers.

There is however a significant difference between people with shorter length of residence and long-term inhabitants, which manifests itself in the perception of waterfronts. The lesser-known waterfront attractiveness directly (though negatively) influences the overall image of the people with a shorter length of residence. Thus, length of residence is proved to be a moderator in the case of lesser-known waterfront attractiveness, leading to the overall city image. Another impact that was moderated by the length of residence was the mediating effect of place identification on the path between place attachment and overall city image. In this context, Proshansky (1978) and Hauge (2007) emphasize the reciprocity of people-place relationships and show the variability of the concept of place attachment. Proshansky (1978) explains this variability as the impact in the attachment levels of a person resulting from the changes that occur on the physical world (ibid). Therefore, consistent with previous research, the moderating effect of length of residence has been shown on the relationship between place attachment, identification, and overall city image.

## **Chapter 5: Conclusions and recommendations**

As cities encompass various locations with varying physical, social, and psychological characteristics, these various places are perceived differently by the people who experience them through unique temporal sequences. While some people might feel attracted to a place due to its physical beauty; some others might develop bonds towards the very same place, or even feel identified by it. The places within the city differ in terms of their distinctiveness and attractiveness; which in turn affect the attachment and identification levels of the people and ultimately shape the overall image of the whole city. The image of a city is thus influenced by cognitive and affective evaluations. To investigate the link between place attractiveness and overall image, the present study answered the following question by creating an (online) empirical setting: To what extent do the physical evaluations of different locations influence the overall image of a city? Is this effect mediated by place attachment and identification?

According to the results, different locations do have differing influence levels on the overall image of the city. The overall city image is mostly affected by well-known buildings, followed by squares and waterfronts, respectively. Thus, the answer to the question: “Which location category has the most effect on the overall city image?” would be buildings. Avenues do not have a direct effect on the overall city image. The better-known locations within each category (except from avenues) have a different influence on the overall image, compared to the lesser-known places. Firstly, most of the lesser-known places do not have a direct effect on the overall image, to begin with. Secondly, the ones that actually do have an effect (lesser-known waterfronts) influence the overall image negatively. Moreover, place distinctiveness has found to have a strong impact on the perceived attractiveness of places. In all location categories, people who have been attracted to the certain locations also always indicated that they found these places distinctive and unique. Moving on to the factors that were expected to further explain the variation in resident perception, only length of residence has been found to affect the overall city image.

Furthermore, place identification has a mediating effect on the relationship between place attachment and overall image, only in the case of short-term residents. Place attachment has been proved to mediate the effect of place attractiveness on the overall city image, in the case of well-known buildings and lesser-known squares. Lastly, place distinctiveness has found to have a direct effect on place identification in the Avenue model. People feel identified by the whole city because it contains a distinctive well-known avenue.

## **Recommendations for Professionals**

The results of the present study can be used by professionals from various disciplines. The increasing competition among cities leads to a need for cities to stand out from the crowd. In order to increase their attractiveness, some cities might need to redefine themselves by undergoing an image creation, or sometimes a recreation, process. Kavaratzis states that this focus on image creation for cities is also the main factor in the move towards place marketing (2004). Cities are free to choose which image features should be promoted. As a result, place marketers have the power to construct the gaze by providing ideal city images. Photography holds a significant role in the reflection of place images. Therefore, place marketing and photography have the power to reinforce each other in the construction of attractive places (Hospers, 2009). Against this background, the present study used photography as a tool to measure the perception towards different locations of the city which had different popularity levels to explore whether lesser-marketed places have different influences on the overall city image than the mainstream ones. One of the interesting findings was that only well-known places within each three location category proved to enhance the overall city image. This implies that while marketing a city, well-known waterfronts, squares, and buildings should be promoted in order to boost the image of the whole city. The results also illustrated the variance between different profiles of people. These outcomes should be used wisely, to create an efficient place marketing strategy. For instance, while targeting people with shorter lengths of residence, the graphic representations of the city should not include lesser-known waterfronts, as these places are found to affect the overall city image negatively.

For urban designers, the design effects of two out of four location categories are of great importance; public squares and avenues. In order to boost the indispensable link between the city and its public squares, successful square design elements should be closely investigated, especially when designing the lesser-known squares. A successful square design generally includes diverse attractions for a wide variety of people; features amenities that make it comfortable for people to spend more time; public art to attract more people, especially children; and most importantly, a flexible design to adapt to natural fluctuations throughout seasons (Project for Public Spaces, 2005). One implication for Rotterdam's lesser-known squares would thus be increasing the number of amenities and public art on display, while also allowing for flexible usage throughout the seasons via positioning tailor-made design elements.

The location category which did not have any significant influence on the overall image was avenues. When investigating successful avenue examples around the world, the ones that are in demand generally include common design characteristics as the abovementioned square designs, and lead to the creation of a positive and unique image for the city or neighborhood (Project for Public Spaces, 2010). Therefore, an urban design strategy for avenues might be adopting successful design features from the other urban components which *had* a direct influence on the overall image according to the outcomes of this research. For instance, if avenues were to design to provide more interactions via street furniture (i.e. sitting elements), people might spend more time within the avenues, instead of just passing by. This might enhance the attractiveness of those places and eventually lead to an increased overall image of the city.

Lastly, for any urban design implementation on avenues and well-known public squares, especially the opinions of residents should be taken into consideration; since they are the ones who feel attached to the city as a result of finding these places highly attractive. The primary concern of the citizens is their cities to be sustainable and liveable; thus, the planning processes should prevent them to feel underrepresented (Herezniak, 2017). In her well-known ladder of participation, Arnstein (1969) illustrates this challenge by indicating the different levels of citizen participation ranging from manipulation to total citizen control. To serve this purpose, residents should feel represented in the urban planning processes, particularly of the waterfront areas, since their conscious directly link those areas to the overall city (buildings are omitted from this statement, due to their architectural-scale). Thus, urban planners should use the results of this study to ensure the involvement of a spectrum of residents on the new development projects. Especially in waterfront revitalization projects, the public vision should come first (Project for Public Spaces, 2009). Resident participation proves to be an important factor also for place marketing strategies; as there are a number of methods and instruments that aim citizen involvement and promote participation. Therefore, residents of all lengths of residences should be placed at the top of this ladder and given the maximum control in both the planning and marketing processes of their city. This would not only allow for more efficient urban planning implementations, but also would increase the reputation of cities through the contributions of the inhabitants in the place marketing processes.

## Recommendations for Further Research

The present study has taken into account four location categories; buildings, avenues, squares, and waterfronts. Further research could include more location categories within the city such as more landmarks (e.g. sculptures, signs, etc.) and edges (e.g. barriers, borders, etc.) (Lynch, 1960). Moreover, within one location category, the present study analyzed two sub-categories; namely, well-known and lesser-known places. This sub-categorization could be increased by including different scales for each category. For instance, the avenue category might include streets, sidewalks, or other relevant travel channels. Another shortcoming of the avenue category might be linked to the perceived accessibility of the selected paths, as no separated bike lanes were present in either one of the selected avenue pictures. This might have influenced the perceptions of people and led them to think that those streets do not represent the bike-friendly nature of Rotterdam. Thus, future research should be more cautious of this situation.

The present study does not take into consideration one of Lynch's five elements: *districts*. Although the neighborhood scale is already been overly-analyzed within the scope of environmental psychology research, most of the studies do not consider mere physical assessments of places. Thus, further research might put special emphasis on analyzing the place attractiveness of a variety of districts within the city. The priming factor in the present study consisted of similar quality place pictures for abovementioned location categories. The present study used photography as a perception measurement tool. The outcome of using photographic representations of places was on the same lines as Hospers' findings which suggest that place pictures manipulate the perceptions of people towards those places.

Further research might use videos, animations, or even virtual reality (VR) platforms in order to address more senses than only the visual sense, and thus replicating the real-life exposures more successfully. These dynamic methods would be more effective to keep the focus of the audience, compared to the static pictures. However, when using graphic -or in the case of videos and VR, also audio and even tactual- representations of different location categories, one important thing to be cautious of is to have identical quality representations for all categories. In order to ensure the latter, the present study conducted a pilot survey to assess the overall look and feel of the pictures used. A similar pilot study would again be necessary for other representation formats. Moreover, the place representations on social media platforms could also be the subject of the future research.

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# Annex 1: Online Survey

8/16/2018 Qualtrics Survey Software

## Default Question Block

Hello!

This is a quick survey about the city of Rotterdam. It takes approx. 4 min to complete the whole survey.

It consists of two short sections:

- 1- Questions about 8 different locations in Rotterdam, illustrated by photographs.
- 2- Questions about the whole city.

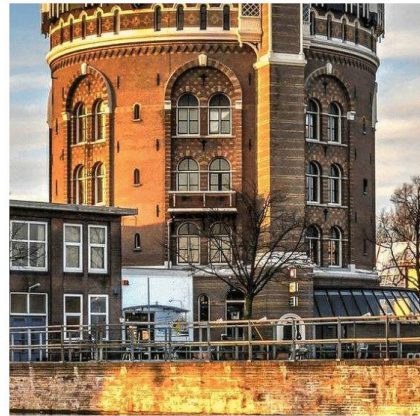
Thank you in advance ;)



<https://erasmusuniversity.eu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview>

1/13

8/16/2018 Qualtrics Survey Software



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7

<https://erasmusuniversity.eu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview>

3/13

8/16/2018 Qualtrics Survey Software

Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

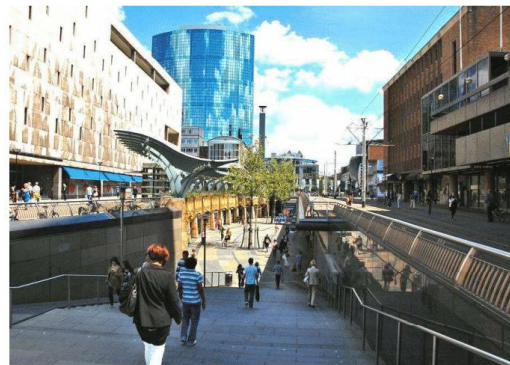
1 ○ ○ ○ ○ ○ ○ ○ 7



<https://erasmusuniversity.eu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview>

2/13

8/19/2018 Qualtrics Survey Software



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7

<https://erasmusuniversity.eu.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview>

4/13



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive).

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive).

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive).

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7



Please rate the attractiveness of the given location from 1 (not attractive at all) to 7 (very attractive).

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate the distinctiveness of this place from 1 (not distinctive at all) to 7 (very distinctive)

1 ○ ○ ○ ○ ○ ○ ○ 7

Please rate your familiarity level with this place from 1 (not familiar at all) to 7 (very familiar)

1 ○ ○ ○ ○ ○ ○ ○ 7

General Questions

How long have you been living in the Netherlands for?

- half a year or less
- >6 months - 1 year
- >1-3 years
- >3-5 years
- >5-10 years
- more than 10 years

Please rate the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Rotterdam feels like home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are a lot of things that keep me in Rotterdam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is no place I would rather live in than Rotterdam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How attached do you feel to Rotterdam?

not attached at all ○ ○ ○ ○ ○ very attached

Please rate the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
If someone criticizes Rotterdam, it feels like they criticize me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am very interested in what others think about Rotterdam.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

A success of Rotterdam feels like my own success.

Strongly disagree  Disagree  Somewhat disagree  Neither agree nor disagree  Somewhat agree  Agree  Strongly agree

If someone talks positively about Rotterdam, it feels like a compliment.

How strongly do you fit to Rotterdam?

not at all ○ ○ ○ ○ ○ very much

All things considered, living in Rotterdam is ...

Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Good
Negative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Positive
Unfavourable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Favourable
Not worthwhile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Worthwhile

How would you rate your overall image of Rotterdam from 1 (very negative) to 10 (very positive)?

1 ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ 10

Would you consider yourself to be more of a City-lover or Nature-lover?

Nature-lover     City-lover

How old are you?

Which gender do you identify with?

- Male
- Female
- Other

- Prefer not to say

What is your current education level?

- Secondary education
- Bachelor's degree
- Master's degree
- PhD

Do you have an Architectural background?

- Yes
- No









Do you hold a Dutch passport?

- Yes
- No

Lastly, please indicate to what extent you use the internet for the following:

	Never	Sometimes	Regularly	Often	Always
Making purchases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information search	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entertainment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work/School activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Annex 2: Pilot Survey

<p>8/16/2018 Qualtrics Survey Software</p> <p><b>Default Question Block</b></p> <p>This is a quick pre-survey to help me construct my final questionnaire for my Master's thesis. I would like to kindly ask you to check the <b>overall look and feel</b> of the given images (in terms of their colors, resolution, quality) and assess if the 2 pictures can be considered <b>similar</b> or not.</p> <div style="display: flex; justify-content: space-around;"></div> <p>Would you say that the given images are roughly in the same quality (independent from their content)?</p> <p><input type="radio"/> Yes <input type="radio"/> No</p> <p><a href="https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview">https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview</a> 1/5</p>	<p>8/16/2018 Qualtrics Survey Software</p> <div style="display: flex; justify-content: space-around;"></div> <p>Would you say that the given images are roughly in the same quality (independent from their content)?</p> <p><input type="radio"/> Yes <input type="radio"/> No</p> <p><a href="https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview">https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview</a> 3/5</p>
<p>8/16/2018 Qualtrics Survey Software</p> <div style="display: flex; justify-content: space-around;"></div> <p>Would you say that the given images are roughly in the same quality (independent from their content)?</p> <p><input type="radio"/> Yes <input type="radio"/> No</p> <p><a href="https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview">https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview</a> 2/5</p>	<p>8/16/2018 Qualtrics Survey Software</p> <div style="display: flex; justify-content: space-around;"></div> <p>Would you say that the given images are roughly in the same quality (independent from their content)?</p> <p><input type="radio"/> Yes <input type="radio"/> No</p> <p>How old are you?</p> <p><input type="radio"/> 18-25 <input type="radio"/> 26-35 <input type="radio"/> More than 35</p> <p>Which gender do you identify with?</p> <p><input type="radio"/> Male <input type="radio"/> Female <input type="radio"/> Other</p> <p><a href="https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview">https://erasmusuniversity.eu.qualtrics.com/ControlPanelAjax.php?action=GetSurveyPrintPreview</a> 4/5</p>



### Annex 3: SEM with All Location Categories

Fit Statistics	Value
<b>chi2 (269)</b>	392.00
<b>p &gt; chi2</b>	0.00 (<0.05)
<b>RMSEA</b>	0.05 (<0.08)
<b>90% CI, lower bound</b>	0.04
<b>upper bound</b>	0.06
<b>PClose</b>	0.46 (>0.05)
<b>CFI</b>	0.93 (>0.9)
<b>TLI</b>	0.91 (>0.9)
<b>SRMR</b>	0.077 (<0.8)

Effects of	On	Direct Effects
Well-known building attractiveness	Place Attachment	0.29***
	Place Identification	0.14
	Overall Image	0.17**
Lesser-known building attractiveness	Place Attachment	-0.02
	Place Identification	0.18**
	Overall Image	0.05
Well-known building distinctiveness	Place attractiveness	0.25**
	Place identification	-0.17**
Lesser-known building distinctiveness	Place attractiveness	0.46***
	Place Identification	-0.16*
Well-known avenue attractiveness	Place Attachment	-0.05
	Place Identification	-0.03
	Overall Image	-0.01
Lesser-known avenue attractiveness	Place Attachment	0.04
	Place Identification	0.02
	Overall Image	-0.01

Well-known avenue distinctiveness	Place attractiveness Place identification	0.31*** 0.25***
Lesser-known avenue distinctiveness	Place attractiveness Place Identification	0.47*** -0.07
Lesser-known square attractiveness	Place Attachment Place Identification Overall Image	0.13 0.02 0.01
Well-known square attractiveness	Place Attachment Place Identification Overall Image	-0.16* -0.03 0.09
Lesser-known square distinctiveness	Place attractiveness Place identification	0.57*** 0.10
Well-known square distinctiveness	Place attractiveness Place Identification	0.39*** -0.05
Well-known waterfront attractiveness	Place Attachment Place Identification Overall Image	0.14 0.13 0.08
Lesser-known waterfront attractiveness	Place Attachment Place Identification Overall Image	0.10 -0.03 -0.12**
Well-known waterfront distinctiveness	Place attractiveness Place identification	0.53*** -0.06
Lesser-known waterfront distinctiveness	Place attractiveness Place Identification	0.56*** 0.09
Place attachment	Place Identification Overall Image	0.54*** 0.43***
Place Identification	Overall Image	0.17

## Annex 4: Principal Component Factor Analysis Rotated Factor Loadings

Construct	Item Label	Factor 1	Factor 2	Factor 3
<b>Place Identification</b>	<b>Identification1</b>	0.19	<b>0.69</b>	0.32
	<b>Identification2</b>	0.05	<b>0.54</b>	0.11
	<b>Identification3</b>	0.18	<b>0.74</b>	0.21
	<b>Identification4</b>	0.16	<b>0.74</b>	0.23
<b>Place Attachment</b>	<b>Attachment1</b>	0.21	0.24	<b>0.67</b>
	<b>Attachment2</b>	0.21	0.29	<b>0.67</b>
	<b>Attachment3</b>	0.22	0.21	<b>0.72</b>
<b>Overall Image</b>	<b>Image1</b>	<b>0.86</b>	0.15	0.21
	<b>Image2</b>	<b>0.88</b>	0.13	0.15
	<b>Image3</b>	<b>0.84</b>	0.16	0.21
	<b>Image4</b>	<b>0.84</b>	0.19	0.25

## Annex 5: IHS copyright form

In order to allow the IHS Research Committee to select and publish the best UMD theses, participants need to sign and hand in this copy right form to the course bureau together with their final thesis.

Criteria for publishing:

A summary of 300 to 500 words should be included in the thesis.

The number of pages for the thesis is about 60.

The thesis should be edited.

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The Chairman, IHS Research Committee Burg. Oudlaan 50, T-Building 14 <sup>th</sup> floor, 3062 PA Rotterdam, The Netherlands	j.edelenbos@ihs.nl Tel. +31 10 4089851
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