



The Effects of Needs Assessment on Graphic Design in Smart Cities

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Abstract

The smart city or the virtual city are terms that will open up new dimensions of life to the electronics and by using the achievements of the world of information, Internet and e-service providers, encourage citizens to use technology networks. The targeted engagement between smart city and smart citizen is formed when the smart citizen will visit the server or application mentioned not only for one time, but for multiple occasions. This is done when the server software is designed and presented with the level of awareness of the audience's need for content. Based on the design theory of services, the designer is only regulating, designing, observing and interpreting needs and patterns of consumption that can create a user-centered environment for the audience. This descriptive-analytic research has been carried out in answering the question of "designing services" what features in the service cause users of these services to revisit and as a result of their success. . This is done when the server software is designed and presented by being aware of the content requirements of the audience. According to service design theory, the designer is only guided by the rule of designing, observing and interpreting the needs and consumption patterns that can provide a user-centered environment for the audience. This descriptive-analytic research has been done with regard to the concept of "service design" in response to the question: Which features in the service will cause users to revisit these services and thus their success. So for this purpose, the website Airbnb which is a successful website in the field of tourism and booking was analyzed and investigated, and the result shows that not only are the various visual factors but also the need for technology and the appropriate response to the needs of the audience will lead to clients' revisit.

Keywords: Need- Assessment, Graphic Design, Smart Cities, Service Design, Desig



Introduction

Performing need- assessment before designing is an important part of the graphic design process that has significant effects not only in the formation of design thinking but also in its results. The process of need-assessment is hierarchical according to the field in which it is applied. By providing information and video services to meet this need, the present research attempts to assess the relationship between the need for creativity and self-fulfillment which is the last stage needed in the hierarchy of Abraham Maslow's needs.

Through library documents, the present descriptive-analytic study examines the impact of the needs-assessment on design methods video communication aiming at developing or improving services. The question of the research is how can correct measurement requirements affect visual communication design?

By using the needs- assessment In the analysis, the conclusion was drawn that one can interpret the needs of the respondent's behavioral patterns. Then, on the basis of this knowledge only, the design process in video communication was carried out.

By using "image", among other things, as one of the factors to meet the information needs of the respondent, a more favorable result in graphic design of websites, as intermediaries of users and providers of smart urban services, was achieved.

With regard to the background information of this research there was no record of this background but with issues like the impact of technology on the branches of graphics some cases were found but the task of the present research is to raise the issue of need- assessment in this regard.

Needs-Assessment

Need: It is something inside a person which forces him to take action and do something.

In other words, a need is an internal condition that makes a certain achievement look a bit attractive (Robbins, 1993, 205).

Given the focus of the needs-assessment in the current study, the definitions of need from different viewpoints are presented in the table below.

Table. 1. Watkins,R., & Kavale.J. (2014).Needs: Defining what you are assessing. New Directions for Evaluation, 144, 19-31

1	Need denotes a thing without which it is impossible to live, such as one cannot live without breathing or nourishment.	Wiggins 1987
2	Need refers to a thing without which someone will be critically harmed or else will live a life that is impaired.	Wiggins 1987



3	Need refers to commodities that are absolutely essential to support life, and whatever custom provides and it is intolerable for anyone to live without it.	Smith 1776
4	Need refers to set of goals, also called a basic drive, such as need for safety, love, esteem, and self-actualization.	Maslow 1943
5	Need refers to a particular category of goals which are considered to be universal.	Gough 2002
6	Need is considered to be a gap in results between what is and what it should be.	Kaufman 1996
7	Need refers to the necessary conditions and aspirations of full human functioning.	Hamilton 2006
8	Human needs take the form of means or ends and drives or goals depending on context. In total, they constitute significant moments in human existence and are, therefore, not only means but also means and ends.	Hamilton 2003
9	Need denotes an objective requirement to avoid a state of illness .	Marcos 1980

Since the 1960s, needs assessments have become a fairly common business practice. Consequently, the term needs assessment has taken on several definitions and has led to a number of related process models or approaches . Roger Kaufman, professor emeritus at Florida State University, defines a needs assessment in terms of gaps in results .(Kaufman, Oakley-Brown, Watkins, and Leigh , 2003)

Because we live in an imperfect world, gaps exist—they guide our decisions; they define our goals. At their best, gaps determine what results should be achieved before actions are taken. Those gaps are the needs of needs assessments, and they help us make justifiable and informed decisions. (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 15)

Conclusion

Conclusions should state concisely the most important propositions of the paper as well as the author's views of the practical implications of the results.

Benefits of a Needs Assessment

Needs assessments can be a systematic process to guide decision making. No matter how big or small your choices, the decisions you make each day influence your performance, the performance of others around



you, and the performance of your organization and its contribution to society. Systematic processes not only provide initial step-by-step guides, but also offer a foundational set of procedures that you can reflect on, customize, and continually improve in order to enrich your decisions later on . (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 25)

Needs assessments can provide justification for decisions before they are made. After all, once a decision is made, it is typically too late to start justifying your choices. Rather, needs assessments proactively identify (a) the performance data that define your needs, (b) the prioritization of your needs (c) the performance criteria for assessing potential interventions, and (d) the information necessary to justify your selection of one or more activities to improve performance . (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 25)

Needs assessments can be scalable for any size project, time frame, or budget. There is no reason to spend US\$1,000 to resolve a US\$10 performance problem. Likewise, you would not want to take a year and spend thousands of dollars to implement a rigid needs assessment process that would only moderately improve the performance on a small project or program that is about to end. What you want is a process that can be appropriately scaled for the scope of your improvement efforts . (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 25)

Needs assessments can offer a replicable model that can be applied by novices or experts., If you build on the lessons learned from previous decisions needs assessments can offer a replicable process that can be used over and over again and that can be systematically improved upon over time. The fundamental framework for needs assessments provides a flexible structure that you can apply today, tomorrow, and in the future to guide your decisions. (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 25)

Needs assessments can provide a systemic perspective for decision makers .Organizations are built around interdependent systems, systems of subsystems, and even social systems that you will never find in an organizational directory. As a consequence, your decisions constantly have rippling effects that move from one system to the next . (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 25)

Needs assessments can allow for interdisciplinary solutions to complex problems. Unsatisfactory performance in organizations is rarely the result of single problems, issues, or causes. Therefore, performance is rarely improved,by single solutions, interventions, or activities. Through their processes needs assessments encourage you to identify, compare , and—when appropriate—combine the activities that will best accomplish the desired results . (Ryan Watkins, Maurya West Meiers, Yusra Laila Visser , 2012 , 26)

The Needs of Citizens of Smart Cities

The human-environment relationship is a two-way relationship. Both of these are in some way influenced and affected by each other (Imamgoli et al., 2014, 23-44).

The interface between man and environment can be found in environmental psychology so that the level of human needs in one environment as much attention to human psyche, values, lifestyle and Its perceptions, all depend on the community, and vice versa. In general, the environment and behavior are so intertwined that can hardly be separated from each other. Behavior cannot be understood independently of its internal



relationship with the environment. Behavior should be defined in an environmental context (Altman, 2003, 38). With the advent of smart cities and the advancement of communication tools the relationship between man and the environment has become more interactive. The needs and patterns of the audience have been more involved in this and in user-centric approach. Thus, they are replaced by the performance of traditional designers.

The birth of the Internet, the development of the World Wide Web, and the emergence of personal mobile communications make the globalization an incredibly unbelievable power. As a result, the method of communication, business practices, and interaction at the international level change forever. This process tends to eliminate lines between countries and has opened new doors in establishing links between human societies and cultures. Before that, even thinking about it was impossible. Thomas Friedman, author of "The World is Flat", in explaining globalization he states that "globalization is an event all over the world eroding the gap between countries and increasing the unity between people, nationalities and cultures" (Friedman, 2007, 178).

Gap analysis, needs analysis, and performance analysis are occasionally used as synonyms for needs assessment, yet they are more frequently (and more accurately) defined as needs assessment tools. Other tools—such as strategic planning, focus groups, and multicriteria analysis—have also been borrowed and customized from other disciplines to improve our ability to inform decisions. By applying these (and other) tools, needs assessments have arguably become part of the science in the art and science of many business decisions. (Ryan Watkins,R., West Meiers,M., Visser,Y. , 2012 , 15)

Meeting the needs of smart city citizens now requires the presence of websites and apps tailored to their needs and behavior patterns. To this end, the role of the human factor in customer service becomes a decisive factor in the design process. In spite of different approaches to brand value, many scholars and businessmen base their approach on customer orientation because the customer-based approach provides the conditions to better understand consumer needs and demands through which brand future strategies can be tailored to meet those needs. (Rios Rosa, Riquelme,2008,719-742)

Tools, Brokers and Services in Smart Cities

In a relatively short time, the Internet has established an impressive presence as a communication medium, business tool, marketing channel, and social environment substantially changing and reshaping the marketing practice (Biswas and Krishnan, 2004, 681–684) (Sharma and Sheth, 2004, 696–702) (Weis,2010, 420–435)

Many companies use the World Wide Web as a major channel to broaden their reach and market share. This is evident by the total sales of goods and services over the Internet, which increased from \$172.4 billion in 2005 to \$201.7 billion in 2006. This number is projected to further increase to \$328.6 billion in 2010 (USCensusBureau 2007). Given this, it is not surprising that improving users' web experiences has become a major theme in industry research labs (Tedesco and Tullis, 2006) (Tullis and Stetson , 2004). Research indicates that whether a user finds a website visually appealing (Lavie and Tractinsky, 2004, 269-289) (Lindgaard et al, 2006,115-126) often has a powerful impact on forming his or her perception of website usability (Schenkman and Jönsson, 2000, 367-377)(Tractinsky et al, 2000,127-145). Thus, making websites visually appealing has become of great importance to organizations (Djamasbi et al,2007) (Djamasbi et al, 2008).



Electronic commerce in online marketplaces (e.g., eBay, Amazon, Taobao, Rakuten, etc.) has become a prevalent phenomenon by providing platforms that facilitate transactions between sellers and buyers (Pavlou and Gefen, 2004, 37-59). In 2012, eBay recorded sales of \$14.03 Billion and Amazon posted annual sales of \$61.09 Billion (MarketWatch , 2013). In most cases, however, the potential buyers are strangers for the sellers as most of them do not patronize the same seller twice (Pavlou and Gefen, 2004, 37-59) (Pavlou et al, 2007,105-136). In this regard, the ability of sellers to attract and retain potential buyers during their first visits is critical for sellers to ensure their sales performance and survival in online marketplaces.

When a new visitor comes to a seller's web store in online marketplaces, an initial impression will be formed in the first few seconds, and this initial impression often has a large impact on the visitor's subsequent attitudes and behavior (Lindgaard et al, 2006,115-126) (Tractinsky et al, 2006,1071-1083). A good initial impression will drastically increase the chances of that visitor staying and performing transactions on the seller's web store, while a bad one may make the visitor move to other alternative web stores and does not come back again (AlDiri et al , 2010 , 709-718). There are many factors that will influence the visitor's initial impression. Two of these factors are web aesthetics and seller reputation.

Since the web is a visual medium, the initial impressions can be formed based upon visual design elements (i.e., aesthetic stimuli) before any reading or other cognitive processes take place. Lindgaard and Fernandes et al. (2006) found that web visitors could form their first impression mostly based upon the visual appeal of the website within 50 milliseconds. It is also evidenced that the degree of visual pleasantness could have a significant influence on the formation of positive affective responses toward the website (Karvonen ,2000,85-90), and that the beauty of a website is the best indicator of the overall impression of the website (Schenkman and Jonsson , 2000, 367-377). The positive impressions, in turn, have influential impact on the visitors' purchase intention (Robins and Holmes , 2008 , 386-399).

Another critical factor that can influence a new visitor's initial impression on a seller's web store is the seller's reputation. Online marketplaces are characterized by asynchronous transactions between buyers and sellers who are total strangers from geographically dispersed locations, resulting in significant information asymmetry between them. Reputation systems were designed and implemented to mitigate problems arising from information asymmetry (Dellarocas , 2003,1407-1424). The importance of such feedback and ratings for transaction partners has been well documented, and numerous studies have shown that a seller's reputation score has a significant impact on sales performance (Dewan and Hsu ,2004,497-516) (Livingston, 2005,453-465) (Lucking-Reiley et al, 2007,223) and price premiums (Ba and Pavlou , 2002 , 243-268) (Houser and Wooders,2006,353-369) (Resnick et al,2006,79-101).

The Role of Graphic Design on Smart Cities

Graphic design has expanded with the curtailment of the boundaries between creative disciplines and also through the use of modern digital technologies.

It is worth noting that the great power of computer and Internet has been able to contribute to the development of graphic design (Bagheri , Afshar Mohajer , 2015 , 30).

The field and function of graphic design, as one of the most important communication and information tools available, has been greatly influenced by the phenomenon of globalization. At the start of the twenty-first century, graphic designers found themselves in contact with people whom they had never been in contact before.

Their work was challenged by people who had never been challenged before that time and there was a possibility at hand for them to cooperate with the people who had nothing to do with them at all. Doing all



this in former times was a dream. In fact, it is the nature of the most popular tools, such as mass media, including the Internet which provides creative people with the possibility of showing who they are.

This is the point at which the new forms of communications can create more potential for creative designers. In addition, the Internet has revolutionized the exchange of ideas between graphic designers and thus created an unprecedented collaboration among designers. The evolution of graphic design has a close relationship with tools.

It has and will have a technology that will always increase the efficiency of designers (Bagheri , Afshar Mohajer , 2015 , 29) .

The forms and formats of the world's media today are not neutral. They determine the form of presentation and the content of what they want to convey. The genres of the global media, in their linguistic and visual methods, provide their values and identities, not only in terms of content, but also in their structure. While content is often positional, there is a greater willingness to globalize the forms of media and their formats throughout the world. Therefore, if paying attention to the verbal and visual structures and styles of the global media does not matter more than their content, it is, however, not less designers (Bagheri , Afshar Mohajer , 2015 , 29) .

Today, one of the works of graphic designers is to design a website, if not having international clients, but undoubtedly, there will be international audiences.

So, the work of a web designer may be seen by thousands of people every day around the world. Bader believes that in this new world due to the importance of the existence of international users, predicting the potential of users of the site and the usability of the site are directly related to the cultural context of the users (Bader and Barber, 1998).

Therefore, web designers, in addition to solving the aesthetics of the site, decide on the content of the entire site and each page is also responsible for creating content coordination and visual continuity between pages. To succeed in this work, they need to seek a common language among different cultures in the world. (Bagheri , Afshar Mohajer , 2015 , 37) .

Image, Common Language of the Smart City

Researchers have found that the online store overall appearance is an important influence on customer motivation (Childers et al , 2001, 511-535) and attitudes (Schenkman and Jonsson , 2000, 367-377) (Lee , 2007,182-191) while design elements are important cues of website perceived credibility (Karvonen , 2000) and usability (Tractinsky ,1997)(Tarasewich, Daniel, and Griffin , 2001,67-81). Kim and Eastin (2011) showed the positive relationship between perceived credibility of product information and pre-purchase online communication, and the positive relationship between perceived credibility of product information and online buying frequency.

A few attempts have been made to understand the effects of web aesthetics in depth. Several studies have shown that aesthetic design provides sensory pleasure to the users throughout their visits on a website (Batra and Ahtola ,1990,159-170)(Crowley et al. ,1992 , 239-249). Web aesthetics is therefore a strong determinant for overall quality of experience in visiting a website (Benjamin ,1995,62-72) (Jordan, 1998). In addition, web aesthetics can also have positive influence on users' perception of a website's usability (Tractinsky et al,2000,1071-1083). A web survey conducted by Van Der Heijden (2003) with 828 responses found that "perceived attractiveness" influences usefulness, enjoyment, and ease-of-use of the website. These satisfactions with aesthetic website design can significantly induce buying intention in the context of online



stores (Lee and Lee, 2003,1-11). This positive effect of web aesthetics on the sales performance has been further verified by Deng and Poole (2010). The results of their study suggested that a web user’s initial emotional responses (i.e., pleasantness and arousal), evoked by the visual design features of a webpage, will have carry-over effects on subsequent approach behavior toward the website.

Information on a web page is typically communicated through its perceptual elements, such as text and image. Creating a ‘visual hierarchy’ through the proper arrangement of these perceptual elements can naturally guide users in viewing the page. For example, the size of an object is an important factor in its perceived visual importance – the larger the item, the greater its importance and, consequently, the higher its level in the visual hierarchy (Faraday, 2000,1-13). Similarly, images and graphics affect visual hierarchy because viewers tend to process these first. As an example, a number of studies show that people tend to gather information on a newspaper page by scanning images on the page first, then reading the text (Brandt 1954). The location of perceptual elements on a web page also influences the visual hierarchy – components that are placed at the top of a page tend to be perceived as more important (Faraday, 2000,1-13). It is not surprising, then, that people tend to expect the title to be located at the top of a page (Bernard, 2001,171-172). Creating a visual hierarchy on a web page can make it easier to understand, consequently making it more usable. Table 2 displays the summary of factors that affect visual hierarchy by influencing a user’s entry point to a page (Faraday, 2000,1-13).

Table. 2. Faraday, 2000,1-13

Table 1: Factors affecting visual hierarchy by influencing point of entry to a page
1. Motion (animated elements draw user attention before any other elements)
2. Size (larger objects attract more attention)
3. Images (images attract more attention than text)
4. Color (elements with brighter colors attract more attention than those with darker colors)
5. Text style (typographical variations serve as effective non verbal cueing systems for attracting attention)
6. Position (top elements attract more attention than those located on the bottom)

Making web pages more usable is important to companies because a good web design can keep users from moving away from the website. While users may move away from a website for technical reasons (slow download) or content reasons (the information on the page), studies suggest that form (the impression of a page) can also be a reason for moving away from a website. A good web design can also attract new users such as those surfing the web without any particular intention (e.g., to look up a certain piece of information). Such new users may be attracted to a page through various methods, but the visual appeal of the page may be particularly important (Schenkman and Jönsson, 2000,367-377)

While websites with pictures are said to be more aesthetically pleasing in general (Cober et al., 2004,201-218), the inclusion of pictures on a website may be particularly important to Generation Y , as this group likes “cool graphics,” balks at reading large blocks of text, and is impatient and easily bored (Nielsen, 2005). Because Generation Y likes fast service (Fields, 2009), has a “short attention span,” and does not like to read “long boring text” (Perez, 2008), it is likely that this generation particularly enjoys the presence of images on



web pages. According to the theory of visual rhetoric, images can communicate complex messages easily (Scott ,1994,252-273), reducing the necessity of reading. Further, previous research (Oh et al., 2008,237-249) has shown that Generation Y's impression of a store's image and expectation of merchandise quality is influenced by the method of displaying information – specifically, Generation Y prefers a picture-based method of communicating information rather than a text-based method.

Interestingly, picture size is a key factor in persuading users to view videos on cell phones and iPods (Jarratt and Mahaffie, 2007,S39-S57). This suggests that picture size may be important to Generation Y, and, when combined with this group's predilection for little text, may mean that they prefer a large image dominating the page. Prior research has found that there is a positive correlation between the size of the largest image on a web page and visual appeal (Tullis and Tullis 2007). Although the participants in that study ranged in age from 16 to 57, the majority (72%) were under thirty years old, possibly skewing the results towards younger users.

The social presence in communication theory refers to “the extent to which a medium allows users to experience others as being psychologically present” (Gefen and Straub 2003, 11). According to this theory, by creating a feeling of warmth and human contact, websites can create a psychological connection with their users (Yoo and Alavi, 2001,371-390). One way to create a sense of warmth or human contact for the user is by including images of people (Hassanein and Head, 2007,689-708).

Including images of celebrities may be particularly important in creating emotional bonds with Generation Y users (Tsui and Hughes, 2001,14-16). In advertising literature, we find that well respected messengers, such as “TV and movie stars, athletes and musicians” appeal to Generation Y (Cook-Anderson, 2003,8) and can make advertising more convincing (Bush et al.,2004,108-118). Celebrities are viewed as “attractive” and “real” by young people (Atkin and Block, 1983, 57-61) and have a significant influence on their purchasing behavior (Bush et al.,2004,108-118). It is likely that this influence would translate to the web pages of retail companies.

In a study (Chadwick-Dias et al., 2004) that asked participants to design their ideal web page, it was found that younger participants, defined as participants less than forty years of age, were more likely to include a search bar as 6 opposed to many links. Because Generation Y has a short attention span (Perez, 2008) and likes fast service (Fields , 2009), the inclusion of a search feature on a web page may be particularly appealing to Generation Y. For Generation Y, who has grown up with technology, a utilitarian feature like search is more likely to be considered a basic need on Maslow's hierarchy. A generation that has grown with the ability to access information with a few keyboard strokes may be strongly jarred by the absence of such a practical item as a search feature.

According to Scott (1994), the verbal means the greater emphasis is given on words in some of the advertisements in order to evoke the response from the target market. Meanwhile, the visual imagery is considered to be more effective than the verbal message. Visual imagery is stored both as pictures and words in brain and this dual processing increases recall level. Also the visual imagery is considered to be a universal language for the advertisers as an image will depict the same thing for audience belonging to different geographical and cultural settings. However, the meaning of a word maybe different for different people. In this respect, the visual imagery is very effective.(Omar, A. , Mahfuzah Sarif, S. , Shiratuddin , N. , 2015 , 767)



Generation Y has a “short attention span,” and does not like to read “long boring text” (Perez, 2008). A recent study (Tullis and Tullis , 2007) shows a negative correlation between the number of characters on a page and visual appeal. While the participants in that study ranged in age from 16 to 57, the majority (72%) were under thirty years old. Thus, it is possible that these results favored younger users. Additionally, as mentioned previously, past research (Oh et al., 2008,237-249) has found that Generation Y prefers a picture-based method of communication over a text-based method.(Djamasbi, S., Siegel, M., Tullis, T., 2010,6)

Some stimulus trigger the consumers' need or want, and this in turn create the drive to response (Saari, Ravaja, Laarni, Turpeinen, & Kallinen, 2004). In other word, it is more about leading someone into taking certain actions of their own, rather than giving direct commands. For example in advertising, this is often done by creating commercials that make people laugh, using a sexual undertone, inserting uplifting images and/or music and others, and then ending the commercial with a brand/product logo. For that reason, conditioning theory is more applicable to the simple, basic purchase consumers make every day, and the reinforcement advertising plays its most important role along with superior product performance and good service. Persuasion occurs when the change in belief, attitude, or behavioural intention is caused by promotional communication such as advertising and personal selling. Hence, it is important for the advertiser to establish a connection to the consumers to bring back certain emotions when you see their logo in your local store. The hope is that by repeating the message several times, it will cause the consumers to be more likely to purchase the product because he/she already connects it with a good emotion and a positive experience (Saari et al., 2004).

Service Design

A research in 2005 by the Design Council of the United Kingdom pointed out that 97% of manufacturing companies were dependent on design as an integral part of their company and also, the board realized that companies that used the design category were 200% better off the market (Design Council 2007).

Birgit Major, professor of international design in Cologne in Germany and the head of the Global Design Services Network in his book entitled Service Design, as a new phenomenon, states what exactly a service design is. Service design shows the function and service form from the customers'viewpoints.

Its purpose is to ensure a beneficial, functional and desirable approach from the respondent's viewpoint that is influential, efficient and privileged from the employer's point of view. Service design replaces the tradition of product design by user interface design, that provides the transfer of proven creative and analytic design methods to the world of service rules (Mager ،2009 ، 34). He also believes that service designers who jump to the world of needs have had experiences from users and manufacturers. They are responsible for depicting (visualizing), arranging and designing solutions to problems that are not necessarily present today. They see and interpret the needs and patterns of behavior and eventually turn them into services that are possible for the future (Mager ،2009 ، 35).

Airbnb, a Successful Example of Using Image in Meeting the Customer's Needs

Airbnb Company is a startup in the field of tourism and booking services and rental of houses which In 2001, they launched a website called www.airbnbandbreakfast.com.

In 2009, they started taking pictures of rental properties in New York City, but they still did not see any progress in business. In less than one year with a pathology of home-made photographs, selling breakfast



cereals with Obama's and McCain's photo packaging design 2 months before the US election and using the famous personalities, the brand was able to get \$ 772 million from investors, and the value of the brand reached \$ 70 billion in 2019, (Based on reports in Telegraph , WSJ , and The Atlantic).

Today, the company has been able to expand its business in the field of tourism to more than 97,000 cities in 787 countries with needs- assessment visualization . A successful example of the company's visionary projects is the photo mixtape project, which in the fourth issue of the project, introduces Guatemala to attract tourists to the area as follows:

Many people have similar assumptions about Guatemala. They think of it as dangerous, crime-filled, and dirty. They also recommend avoiding the tap water. But after spending some time there I was pleasantly surprised to find some of these perspectives debunked (except for the water bit).

Upon arriving in Antigua, an old sleepy town with no cars on the cobblestone streets, I was lost for an hour, trying to find my listing. Unbeknownst to me, it was on the other side of the street. Although this introductory experience initially left me unsettled, I quickly became more comfortable, and found the lifestyle was something to be desired. Everybody seemed to know each other. Locals and tourists consistently greeted each other warmly with “Hola,” or “Como Estas,” as they passed each other in the streets. The pace of life also moved very slowly, a nice balance to the speed of San Francisco.

My objective while visiting Guatemala was to document a community of creators with the intention of creating an Artists Residency program. We called upon local Hosts to open up their homes to artists. The highlights of my trip were successfully communicating non-verbally with a Tuk Tuk driver when we realized we had a language barrier, and learning textile dyeing and new weaving styles. The songs I selected for this mixtape take me back to my time in this sleepy, creative city. Consider Antigua the next time you are planning your next exploration—it might surprise you. <https://airbnb.design/photo-mixtape-no-4/>

Given the unknown country of Guatemala and the city of Antigua, due to the opportunity to learn a new style of weaving in that city, and the need for audiences, especially artists, the images enhance creativity and self-efficacy in the art of weaving in an unknown city. The need for creativity and self-actualization is the last stage of need in the hierarchy of needs which is based on Abraham Maslow's theory. Accordingly, he states in the book of motivation and personality that even if all these needs were met, often, if not always, we could expect that there would soon be a new dissatisfaction and restlessness. Unless a person would be busy doing something for himself. If the musician wants to finally relax in himself, he has to make a song, and so a painter, in this way, should draw a painting and a poet should lyricsize a poem. One should do whatever he can. He needs only be honest with his own nature. This need can be called self-actualization. (Rezvani,1990,83)

A specific form that will take these needs varies widely from one person to another. In a person, it may be a desire to be an ideal mother, In the other, this can be appealing in a heroic way. In another person, it may appear in the form of a painting or inventions. At this level, people differ to a large extent from each other. The apparent emergence of these needs is usually to meet the previous physiological, safety, emotional needs and also need for respect (Rezvani,1990,84).

Due to the need for creativity and self-fulfillment of the audience, along with a new approach to unconscious and often notorious city recognition, the photographs in the photo project of mix-type-9 have succeeded in solving this need very well.

This reflects the need for accurate determination in the design process, and the correct resolution of the need for photographs, and also the need for self-reflection and creativity in the audience. (image 3 , 4 ,5)



Fig. 1. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture , <https://airbnb.design/photo-mixtape-no-4/>



Fig. 2. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture , <https://airbnb.design/photo-mixtape-no-4/>



Fig. 3. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture , <https://airbnb.design/photo-mixtape-no-4/>



Fig. 4. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture , <https://airbnb.design/photo-mixtape-no-4/>



Fig.5. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture ,
<https://airbnb.design/photo-mixtape-no-4/>

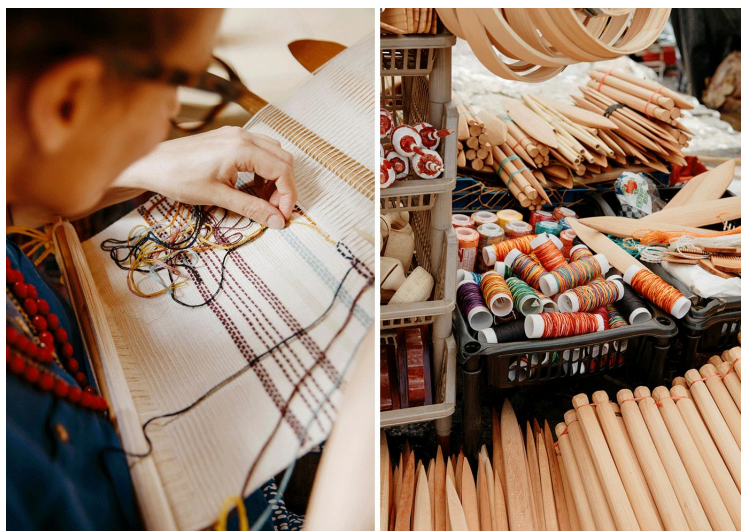


Fig. 6. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture ,
<https://airbnb.design/photo-mixtape-no-4/>



Fig. 3. Photo Mixtape No. 4 A visual playlist for discovering Antigua's creative culture ,
<https://airbnb.design/photo-mixtape-no-4/>

Overview

As illustrated in the screenshots, the Airbnb company managed to use the technology and capabilities of the images in the field of tourism and of creativity and of self-fulfillment and identify and resolve the needs of his smart audiences well. This has given rise to the popularity and value of this brand and has been the reason for users to visit the website. These images have the capacity to show the positive aspects of the city of Antigua by stimulating the need for creativity and self-fulfillment in the audience and the efforts taken to introduce an unknown and often notorious city. Thus, the presence of correct needs-assessment for the design process becomes evident. Then, the correct satisfaction of the need for images, their publication on web pages and the prompting of the need for self-realization and creativity in the smart audience may be regarded as an achievement. Therefore, by recognizing the behavior patterns of the audience and using the "image" as one of the factors for meeting the information needs of the audience, we, as intermediaries of users and providers of smart city services can obtain a more favorable result in the design of the graphic websites.

Conclusion

Today, modern graphic design in smart cities is based on the needs-assessment and understanding of the audience information. Graphic designers no longer speculate about what the industry and the market desire, but by relying on knowing the audience, they draw the design process. By using the visual language without the complexity of the written language, they can convey the message quickly. Therefore, paying attention to the importance of the image in the needs-assessment for the modern graphic design process is essential for any as intermediaries of users and providers of smart city services smart city.



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