

# [This into consideration functional, social and aesthetical](https://assignbuster.com/this-into-consideration-functional-social-and-aesthetical/)

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This study is concerned withcolour and texture preference of exterior architecture in desert environmentwith application on Sultanate of Oman. With regard to the most preferredcolour, six beige variations were assessed by Omani undergraduate ladies. Theseare varied in hue, saturation and brightness. This is because it was noticed thatalmost beige variations are used in traditional and contemporary Omani exteriorarchitecture.  These colours were orderranked from the most preferred to the least as follows: cosmic latte ? Tuscan? unbleached silk? cream? Buff? Ecru.  Inthe texture investigation, the low degrees of roughness were preferred ratherthan smooth and high roughness levels. Cosmic latte of low roughness was foundthe most preferred exterior buildings’ colour and texture in desert environmentand especially Sultanate of Oman.

It is suggested that these results could betaken into consideration by architects and urban designers. Extendinginvestigations concerned with desert environment with focus on Sultanate ofOman is recommended. Adoption, exploitation and application of this researchfindings is suggested for organizations and constitutions concerned withdeveloping and establishing housing and construction. This is to fulfilaesthetical, functional and economical values of exterior architecture.

Architecture is the art and science of designing buildings andstructures (Merriam-Webster. com, 2016). This would include a large variety ofconstructions ranging from urban planning to furniture design. This includesplanning, designing and constructing form or space taking into considerationfunctional, social and aesthetical aspects and values. Aesthetical values inarchitecture such as variety, equilibrium, repetition, harmony andexpressiveness are fulfilled using basic design elements including contrast, proportion, scale, balance, rhythm, unity and character.

Formal aestheticelements include form, colour and texture. Colour researchers are interested ingaining better understanding of interrelations of these elements in order toenhance architecture design process (Anter & Billger, 2010). Colour is oneof the most important architecture aesthetic elements that could achieveseveral architectural requirements. It could link building and environment (Serra, 2013a). Texture has a great impact on colour appearance and visual quality. Itwould exist with variable levels from soft to rough. Caivano, J.

reviewed research studies focused on colour inarchitecture and environmental design from ancient times to 2006. He reportedthat material aspects were the focus of colour in architectural researchstudies. In the 19th century, studies were characterized for descriptivity andobjectivity. In the 20th century, researches were either concerned with colourscientifically or rhetorically. He suggested that architects would be better tointerrelate colour science and art in the architecture field (Caivano, 2006).

Smith, D. in 2008 introduced a theoretical concept for designersregarding colour-person-environment relationship. This is including urbandesign, landscape architecture, and industrial design, as well as architectureand interior design. She indicated that colour assists understanding a place. Aperson in this relationship is viewer, participant and immersed. She showedthat colour is a key component of person.

It was reported that the designersshould consider how the designed objects or places can influence how peopleexperience their daily activities (Smith, 2008). Cubukcu and Kahraman compared building exterior colour preference ofTurkish architects and non-architects. One building was chosen and colouredusing variations of hue, saturations and lightness. They found that yellow andblue are the most liked colours. Moreover, architects and non-architectsdiffered in their colour preference. Participants highly preferred colours offull brightness and moderate to low saturation and colours of moderate to highbrightness and full saturation (Cubukcu & Kahraman, 2008). Anter and Billger discussed different approaches of colour research inarchitectural.

They reported that research studies related to colour appearanceand emotion are independent of each other. Colour research in the architecturearea is linked to its real situation. Therefore, it is impossible to accuratelygeneralise these studies’ results but could be used to extrapolate colourtendency and directions. Results of studies based on different approaches andmethodologies could not be compared or combined but could assist analysing andaddressing architecture problems, questions and patterns (Anter & Billger, 2010). Serra et al. in 2012 studied colour composition in modernarchitecture. They carried out a comparative study of three of the mostrelevant colour composition systems in the first half of the 20th century(Purism and Le Corbusier, Expressionism and Taut, Neoplasticism and Rietveld).

Three widespread ideas were investigated. These were the prominence of whitehues, the use of ” flat colours,” and the conception of colour during the ideationphase. They concluded that the three systems limited the range of colour toavoid ” colour excesses” of the painted decoration, and debug form. Therewas tendency to reduce shades but not so usual.

Colour was used to transformarchitecture rather than conforming to it. There was ethical basis in choosingcolour in addition to aesthetical concerns. Architects were concerned withvalues beyond ethical and aesthetical values. These were political, economic, hedonistic, communicative values (Serra, García, Torres, & Llopis, 2012). Later in 2013, Serra and Codoner analysed the colour compositionfeatures in postmodern western architecture (1960-2000). This was to helpunderstand the roots of contemporary colours used in architecture.

The mainfeatures of four decades (60’s, 70’s, 80’s and 90’s) were analysed. In the60’s, two main trends were reported; namely ecological and technologicalutopias. In the 70’s, they pointed out different chromatic trends used byneo-rationalist architects.

In the 80’s, architects used semantic values ofcolour to bring high architecture to common public. In the 90’s, there was thedevelopment of computer aided media and colouring technologies of materials. This led architects to be deconstructivist exhausting colour possibilities inarchitecture (Serra & Codoñer, 2014). Serra, J. discussed the versatility of colour in contemporaryarchitecture aiming at establishing concepts of the way colour was employed. Four concepts related to “ versatility” were set. These are transformation, fragmentation, movement, and novelty. Transformation affects the visual aspectof the building.

Fragmentation affects the unity of the building. Movementaffects the position as architects either use static colours suggestingmovements or actual moving colours. Novelty applies the use of technology inapplying and choosing colours used. He indicated that colour versatility in thefuture should not be isolated from its environment context (Serra, 2013b). Later in 2013, he analysed the architectural colour classificationsystems suggested by previous researchers and reported three main plasticstrategies.

He considered these systems as complementary rather thancontradictory. These were that colour can describe a building and its function. It can affect a building’s architectural shape.

Besides, colour is arranged forits intrinsic value. The most interesting successful colour composition is theone integrating the three systems or strategies (Serra, 2013a). Previous research studies indicated that building is linked toenvironment. This is because there are mutual interrelations betweenarchitecture, environment and human.

Each environment has its significantfeatures affecting architecture design. Desert environment is a specialenvironment signified for its geographical nature and climate conditions. Thisrequires designing appropriate architecture fulfil aesthetical and functionalvalues. This study is concerned with aesthetic aspects of architecture indesert environment of Sultanate of Oman. Research studies investigating desert environment of Sultanate of Omanwere reviewed. There were found limited studies.

One of these studies is astudy carried out by Hegazy, S. found that 77. 4% of the respondents in herstudy satisfied with contemporary vernacular architecture in Sultanate of Oman. This is because of using inherited traditional Omani style. The researchrecommended extending investigations in Oman concerning a wide range of usingmore abstracted forms of Omani traditional architecture, and more tendencies todevelop the use of eco–friendly materials (Hegazy, 2015). The author found that the literature review lacking knowledge relatedto spatially complex situations of desert architecture and specially Sultanateof Oman.

It was found important to investigate aesthetical values ofarchitecture in Sultanate of Oman with special focus on colour and texture. This is to fulfil aesthetic unity in the city which affect positively thesurrounding environment and consequently on human living in this environment. This study aimed at determining the most preferred colours andtextures of architecture in Muscat as a desert environment. This is becausethey are very important architectural aesthetic and functional values.  This study objective is to present theresults to organizations and constitutions work on housing and construction tobe adopted in developing architecture design of Muscat- Sultanate of Oman. 1.

Method1. 1. SubjectsResearch studies showed that there areseveral factors in psychophysical experiments would be assessor dependent.

These factors include age, gender and cultural and educational background. Therefore, it was decided to use 50 Omani ladies studying in the finalyear-graphic design department. 1. 2. StimuliThis study is concerned with architecturein desert environment with focus on the Omani environment. A building ofcontemporary Omani style was selected from Al Mouj city- Muscat. The picture of this buildingis used as the main sample in the experiments conducted.

In this study, two experimentswere carried out. The first experiment is concerned with colour and the secondis focused on texture. 1.

3.    Experiments1. 3. 1. Studyingthe color of  Omaniarchitecture It was noticed that variety of beige colouris being used in the exterior architecture in Oman. Therefore, it was decidedto choose six different variations of beige almost used.

The picture of thebuilding set as the main sample was coloured into those six beige variationsusing Photoshop software employing the HSV color model (see Figure 1). The Hue (H), Saturation (S) and Value (V) values used in this experiment are listed in Table 1. Table 1 Hue(H), Saturation (S) and Value (V) values of colours used  Colours Hue (H) Saturation (S) Value (V) Cosmic latte 40° 94% 90% Cream 57° 18% 100% Unbleached silk 22° 21% 100% Tuscan 35° 34% 98% Buff 49° 46% 94% Ecru 45° 34% 76%  1. 3. 2. Studyingthe texture of  Omaniarchitecture The texture of building exterior is highlyaffecting its appearance. Therefore, it was decided to make variations oftexture for the most preferred colour.

This was carried out using Photoshopsoftware employing “ Texturizer” filter-“ Craquelure” subfilter. This subfilter simulates the cracking of the paint. In “ Craquelure” subfilter spacing, depth, and brightness could be set. The default values ofspacing and brightness (i. e. 10) were used.

Six depth values were applied inorder to produce variety of textures for the same colour found preferred by thesubjects. These are 0, 2, 4, 6, 8 and 10. (See Figure 2) Value of zero isused to present the smoothest texture; however, the value 10 was used topresent the roughest texture.      In each of the previous experiments, thepaired comparison method was used to determine the most preferred colour ortexture. The number of samples (n) in each experiment is 6. Therefore, in eachtest there will be n(n-1)/2 pairs to be compared (i. e.

15pairs). Each pair is shown to the participant to choose the preferred one. 2. Results and discussion2. 1. Assessment  of Omani architecture color Six pictures coloured in the six beigevariations (see Figure 1 and Table 1) were exhibited tothe 50 participants in pairs to choose the preferred one. The results are shownin Figure 3. From Figure 3, it was found thatcosmic latte is the most preferred beige for exterior buildings in Omanfollowed by Tuscan, unbleached silk, cream, Buff and Ecru is the leastpreferred beige.

The values of Hue, saturation and value of the most and leastpreferred colours were compared. With regard to hue, the colours assessed werefound ranging from 22° to 57° (HSV system). Both colours (i.

e. the most andleast preferred) were found in the middle of this range (Cosmic latte 40° andEcru 45°). The most preferred colour “ cosmic latte” was found themost saturated beige assessed of 94%. However, the least preferred colour” Ecru” was found of significantly lower saturation (i.

e. 34%). Withregard to value, beige variations assessed were found ranging from 100% to 76%. Ecru value was found in the least end of this range.

However, cosmic lattevalue was found in the middle of this range of 90%. 2. 2. Assessment  of Omani architecture texture From the previous experiment, cosmic lattewas found the most preferred beige.

Therefore, the picture of building colouredin cosmic latte was used in this experiment employing 6 texture variations. These texture variations were used to produce 6 pictures of the buildingexterior of different textures (see Figure 2). The pictures wereshown to 50 participants in pairs to select the preferred ones. The datacollected were used to order rank the texture variations used preference fromthe most to the least.

The results are shown in Figure 4. It is stated in section 2. 3. 2. that the Craqueluresubfilter was used to make 6 different pictures of different textures. This wascarried out employing different depth degrees.

In this subfilter, the higher valueof depth was, the more rough the paint of building exterior was. From Figure4, the pictures assessed for texture were rank ordered as follows:  2? 4? 0? 6? 8? 10 depth. This means that thesubjects preferred low and medium levels of roughness (presented here by 2 and4 depth) rather than smooth and highly rough levels. 1. Conclusions and implicationsInthis study, colour and texture preference of exterior architecture in Sultanateof Oman were investigated. 50 Omani ladies studying in the final year – Graphicdesign department were employed to carry out subjective assessment.

Twoexperiments were conducted (i. e. colour and texture assessments). The samplesused were 6 pictures in each assessment. The first experiment was focused onthe colour preference of building exterior and the second was concerned withtexture. In the colour assessment, beige variations were used to colour abuilding presenting contemporary Omani architecture. These beige variationswere order ranked from the most preferred to the least as follows: cosmic latte? Tuscan? unbleachedsilk? cream? Buff? Ecru.  In the textureinvestigation, the low degrees of roughness were preferred rather than smoothand high roughness levels.

It was concluded in this study that cosmic latte oflow roughness could be the most preferred exterior buildings’ colour andtexture in desert environment and especially Sultanate of Oman. These resultshave practical and economic implications for urban and architects designers. Thisis because effective exploitation and application of colour and texture inexterior architecture could be reflected in its aesthetic, functional andeconomic values.