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From Editor

In this issue of “International Journal of Electronics, Mechanical and Mechatronics Engineering (IJEMME)”, we have especially selected the scientific areas which will cover future prospective Engineering titles such as Robotics, Mechanics, Electronics, Telecommunications, Control systems, System Engineering, Biomedical, and renewable Energy Sources.

We have selected only a few of the manuscripts to be published after a peer review process of many submitted studies. Accepted papers are as follows:

Event Reconstruction By Inverse Methods

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Investigation Of The Effect Of The Dyeing Method On The Dyeing Properties
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Determination of Losses In Urban Transformation Example of Sulukule

Nima Safdari¹
Bilge Işık²

Abstract

It is a common issue for many cities over the world to maintain and preserve any historical and cultural assets by means of physical, social and economic improvement of the blighted zones created by the outmoded historical centurms that are far from meeting the today needs, unsecure, and prone to disasters. In Istanbul, one of the zones that need to be preserved is the Neslişah and Hatice Sultan (Sulukule) district in the historical peninsula. This settlement has recently undergone radical changes by the urban transformation project. This study aims at elaborating any historical, cultural, economic and social assets of the old district inducing large scale changes in the Sulukule District, followed by a theoretical clarification of the urban transformation, urban renewal definitions, types and application methods. The samples studied include a number of world cities including Alberobello in Italy, Nuremberg in Germany, Mostar in Bosnia-Herzegovina, and Safranbolu in Turkey, which are all comparable to the changes experienced in Sulukule. The regional history, the “Roman” population living in the settlement, and the pre- and post-transformation settlement are analyzed to determine any possible losses of historical, social, economic and cultural assets due to the project in question.

1. Introduction

The Historical Peninsula in Istanbul has hosted many civilizations throughout the history. It has a unique heritage with her civil architectural examples and monumental works as well as historical and cultural texture extending from the past to the today in Turkey and over the world. This historical and cultural texture has failed in completing its development and change due to the lack of care and maintenance for many years.

As a result of the same negligence and destruction, some obsolete ruin and rubbish zones. In addition to the physical collapses in such zones, a number of social, economic and cultural problems have emerged. It is another risk for such obsolete zones to be prone of earthquakes. One of such zones in the historical peninsula is the historical Haticesultan and Neslişah (Sulukule) District. The district had been recently restored with the historical and cultural works adjacent to the

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historical territories. Among such restorations, Sulukule is to be particularly elaborated, as it takes place on the preservation zone of the territorial waters of the Peninsula of Istanbul, i.e. the world heritage fields, and in the oldest “Roman” settlements over the world, and is the first field of this process of initiating the large-scale urban transformation in Istanbul.

Objective: The reason of elaborating the urban transformation in the Sulukule District is that the possibilities and rights of the people of a specific zone are not improved, but just extorted as to annihilate the historical assets. The comparable changes in Turkey and over the world were elaborate to analyze the Sulukule District.

Scope: For the study were selected the Sulukule, Neslişah and Hatice Sultan Districts. In the theoretical framework, some literal searches were carried out on such concepts as the city, urbanization, urban restoration and urban transformation, and the arguments on such concepts were elaborated. In this context, the urban transformation was taken into consideration for its purpose, legal grounds, fields and methods of applications in Turkey and over the world. Some information was given in regard to the preservation areas in the urban transformation. The history of the urban transformation project in Sulukule and the examples In Turkey and over the world were studied in this paper. The physical situation of the region was elaborated, and compared with the old photographs, and some searches on the historical heritage were made to form a basis for the study. Discussions were held with the Resettlement Projects Management and the Project Survey Management of the Municipality of Fatih in Istanbul, and the old and new resettlement plans were obtained to examine the pre- and post-transformation situation, intervention process as well as the social, cultural and architectural characteristics.

2. Theoretical Framework

The urban restoration and transformation are not solely concepts, but represent a very comprehensive conceptual approach. And the planning tools used for “transformation” are explained within the framework of the concept of urban restoration. For the time being, the urban transformation in Turkey is implemented like in Sulukule and many other places in the city, where it covers streets, building islands or a portion of a district, completely independent of the integrated urban plans. When a urban transformation project becomes independent of the urban plans, and partially implemented as to break ties with the city complex and the project environment, it results in a complete lack and ignorance of planning and functioning (Süleyman Balyemez).

2.1. Objectives of Urban Transformation

The urban transformation has emerged to serve for six basic goals (Yıldırım, 2006):

- Improving the urban welfare and life quality, and increase the income level of the centrums with the aim of enhancing the economic competitiveness of the cities;
- Establishing relations among the physical conditions and the social issues to diminish the social isolation;
- Adopting multi-stakeholder urban policies and participative planning in line with the democratic trends;
- Efficient use of the urban areas as to prevent unnecessary expansion and profusion as to protect and improve the environment;
- Getting the areas of transformation integrated with the entire city;
- Meeting the need of continuous change intrinsic to the urban areas.

2.2. Legal Grounds of Urban Transformation in Turkey

Following are the laws and acts that form the legal grounds of the urban transformation projects as well as any other projects implemented under different names, but with the same approach.

- Resettlement Act No. 3194,
- Resettlement Amnesty Act No. 2981,
- Act No. 5104 on “Northern Ankara Entrance Urban Transformation Project”,
- Act No. 5366 on “Restoration, Preservation and Sustainable Utilization of the Damaged Historical and Cultural Immovable Assets”,
- Section 73 of the “Municipalities Law” No. 5393 of 2005, and
- Act No. 6306.

2.3. Implementation Zones of Urban Transformation

The implementation zones of urban transformation are classified in the following headlines:

- Shanty zones,
- Zones gained upon dislocation of the industrial fields from the centrums,
- Centrums,
- Zones probe to disasters and urban risks.

2.4. Implementation Methods in Urban Transformation

Below listed are the headlines of implementation methods:

- Urban preservation
- Urban improvement
- Urban renovation
- Urban restoration
- Urban revitalization
- Gentrification

3. Examples Of Urban Transformation Over The World

In this study are elaborated the actual improvement, transformation and preservation

projects on the basis of a number of examples, e.g. Alberobello in Italy, Post World War-II Nürnberg in Germany, Mostar City in Bosnia-Herzegovina, and Safranbolu in Turkey with the aim of defining the accuracy of using the basic concepts in the course of transformation and preservation.

3.1. Alberobello in Italy

Alberobello is a small town in the Province of Bari in Italy. It is known with the old buildings constructed in 1500 Trulli form. The Trulli's are the stone buildings with conic roofs. The old texture has been being preserved in the course of preserving historical assets by the Alberobello Transformation Projects. Alberobello is included in the UNESCO World Heritage List since 1996. The Trulli's are currently used as housings, stores, restaurants and accommodation facilities. The preservation and gentrification of such old assets have attracted tourists from all over the world, whereupon the living conditions of the district people have been improved in economic respects.



Figure 3.1 and 3.2. : Transformation Project in Alberobello,Italy (www.italyheaven.co.uk).

3.2. Nürnberg in Germany

Like many German cities, Nürnberg is attached to the State of Bavaria. The city was damaged in the course of global military conflicts from 1939 to 1945, i.e. the World War II, involving a majority of the world countries. Being one of the Roman-German Empire centums, Nürnberg was restored after the war. The city was rebuilt after the war, and regained her pre-war appearance, including the re-building of some medieval buildings.



Figure 3.3: Centrum of Nürnberg, 1950, *Figure 3.4:* Post-war restorations in the World War II destruction centrum of Nürnberg (www.stadtalas-muenchen.de).

3.3. Mostar in Bosnia-Herzegovina

Mostar is the biggest and most important city in the Region of Hersek in Bosnia-Herzegovina. Though the city suffered a terrific damage during the 1992-1995 civil war, it is still an extraordinary site of the European cultural heritage. As the oldest texture is the resettlement area surrounding the Mostar Bridge, it just forms the oldest urban texture in the city (Özyaba, 2004).

The buildings damaged in the city were repaired, and the historical works were restored after the war. The destructed Mostar Bridge has been rebuilt by the Company “Yapı Merkezi” in Turkey, for which the foundation, body walls and floors have been

restored, keeping faithful the genuine works. In the Conservative Resettlement Plan for Mostar takes place the Historical Bridge integrated with the Marketplace and historical districts, where the urban texture around the historical bridge has been handled as a part of an integrated system.



Figure 3.5: Post-war Mostar

Figure 3.6: Mostar Today (www.bosniavolimte.blogspot.com.tr).

The housing zones in the old urban texture have been rehabilitated with the outmoded parts of the city being restored (Özyaba, 2004).

3.4. Safranbolu in Turkey

Being a town near Ankara, Safranbolu is a specific town that presents the historical and cultural works of the traditional Turkish social life in the city scale. Her rich cultural heritage and her success in preserving the same heritage have made Safranbolu a world

city (Ministry of Culture and Tourism of the Republic of Turkey).

As the town was announced as a urban preservation site in 1975 by the Supreme Board of Preservation of Cultural and Natural Assets, the deserted cottages have been converted into such facilities as hotels and restaurants, and the initial steps have been taken to restore the monumental works, so that the handicrafts sank into oblivion have started to become famous once again. 1.008 historical works have been registered in the old centrum that has been announced as a preservation site of the UNESCO World Cultural Heritage.

A resolution for preservation of Safranbolu was taken in the late 1976. By this initial resolution for preservation (Ahunbay, 1998), it has been stipulated to:

- Declare any applicable cultural, historical and social grounds, and determine the prerequisites for transitional reconstruction works till the implementation of a planned preservation, and
- Determine the structures to be preserved, and take actions for preserving the road form elements, road pavements and road textures, garden walls, and their natural scenes, and
- Keep the infrastructural elements under supervision.

Doğan Kuban reported the purpose of the preservation plan in 2001 as follows: Realizing the contemporary needs within the limits of the historical site existence, while meticulously preserving all the features and characteristics of the historical texture (Anon, 1998).



Figure 3.7 and 3.8: Appearance of a historical building in Safranbolu before and after the preservation attempts (www.forumcad.com) (www.karabukrehberi.net).

It is important for the people to recognize the value of their own assets, so that an old cultural asset could be preserved. In this context, the people of Safranbolu are aware of the fact that a house or cultural asset gets a higher material value than the comparable ones when it is preserved in its genuine form. In Safranbolu, the traditional lifestyle of the Turkish community has been reflected in the city scale, which has allowed well preserving the regional historical and cultural assets and rich heritage.

4. An Example Of Urban Transformation In Turkey: Sulukule

Sulukule, is a district that takes place at the lowest point of the ramparts between Topkapı and Edirnekapı in the Historical Peninsula of Istanbul (Figure 4.1).

4.1. Historical and Cultural Settlement of Sulukule

The first settlements date back to the Byzantine Era in Sulukule that takes place adjacent to the terrestrial waters of the historical peninsula of Istanbul, where the district people then dealt with such activities as fortune-telling and wizardry. In the Ottoman Era, the other Roman people living in some other places were invited to the district as a result of the attempts to refresh the life in Istanbul. At that time, the Roman people dealt with the music and dance, and the houses were first influenced by the State pressure against the music, dance and entertainment houses in the Republican Era, and therefore many of such places were closed (UÇAN, 2011).



Figure 4.1: Sulukule Area (google Maps)

4.2. Sulukule Urban Transformation Project

Having a high importance for the natural, historical, cultural and archeological heritage within the historical peninsula announced as a “Urban and Historical Site” by the Resolution No. 6848 of July 12 1995 of the “Cultural and Natural Assets Preservation Board No. 1” of Istanbul, “Neslişah and Hatice Sultan District (Sulukule) has been announced as a Restoration Area as per the Council of Ministers Decree No. 26147 of April 22, 2006, effectuated upon publication in the Turkish Official Gazette No. 26318 of October 13, 2006 under the Law No. 5366. The area was revised as to cover the Neslişah and Hatice

Sultan Districts for the projects implemented by the Metropolitan Municipality of Istanbul, Municipality of Fatih and the Public Mass Housing Administration (TOKİ) in 2005. The restoration site, taking place adjacent to the Land Ramparts between Edirnekapı and Vatan Street and within the boundaries of the Rampart Preservation Line, occupies an area of 91.731,46 m². In the project site takes place 12 islands, 378 lots, 10 districts and 3 streets. For renewal, an adequate number of housing units were included in the project for production on the land of 13 thousand square meters owned by the Municipality of Fatih (Municipality of Fatih).

Following the destructions in Sulukule, TOKİ called a public bidding for construction on the basis of the preliminary designs, and the Contractor “Sulukule İnşaat” started the construction activities. Within the framework of this project, total 577 housing units of 75, 100 and 120 square meters have been built up in 165 blocks.

In the course of the implementation of the Sulukule District Restoration Project, the district people had to leave the social and cultural environment occupied by them for many years, and some part of them removed to Gaziosmanpaşa, Balat and Edirne, and 337 families to The TOKİ housings in Taşoluk and Kayabaşı. Some 5 thousand Roman citizens were determined in the region, and 3 thousand 500 Romans (703 landlords and 303 tenants) were removed from the district before the destruction activities. As a result of the wrong policies, they removed to Karagümrük, their old quarter, just before the end of one ear. Many Roman families lived together and side by side in the housings attached to each other in the form of small rooms, and reflected this form of solidarity even in their spatial organization.

Mr. Şükrü Pümdük, the President of Sulukule Roman Society has not sold the house remaining from the grandmother of his father, and applied to the Court, saying “Whatever they pay... They annihilated my culture. How one could measure it with money”, and the lawsuit is yet pending. Saying “They ended up the entertainment industry. I started to work in Taksim. How could I return to Taşoluk at 3 o’clock night time? It costs 100 liras to take a taxi, and it is my earning for the day”, the musician of the Sulukule Roman Orchestra could withstand in Taşoluk with his family only for one month. As the rental fees are 300 to 450 liras in the TOKİ housings, and the total living charges reach some 1500 liras with the central heating, monthly apartment fees and transport charges, the Sulukule District migrants mostly had to return (www.kentseldonusum.info).

According to the UNESCO Standards, the rampart surroundings are required to survive, and be preserved, not only with their physical assets, but also with the cultural texture and old assets, there is a need for Sulukule in the ramparts included in the World Heritage List to be preserved under the appropriate conditions.

While the old Sulukule was a poor but vivacious part of the city, it has now turned into a dead mass housing site. Though the quarters around the zone keep vivacious, Sulukule is now sterile and independent of its surroundings.

The villa-like buildings have been arranged in the apartment format, and each building has three flats, each of some eighty square meters. The buildings have been designed to have oriels to fit the old building concept. Two big buildings, a shopping mall and a school, were constructed in addition to 665 housing units, so that the shops and stores of the streets of

the old district have all been collected in one shopping mall. While the Sulukule district was not only a housing field, but had the nature of an economic and vibrant touristic and cultural district of music, dance and entertainment houses, only one music and cultural center was built in the new district.



Figure 4.2: Transformation Project in Sulukule (Municipality of Fatih).

Following the process of transformation for 6 years in Sulukule, the property owners moved to their houses, only one half in size of their old houses, and had to endure debts just equivalent to the total cost of such constructions due to the difference of value for extra charges and expenses. Furthermore, the lottery drawn among the stakeholders result in random assignment of the buildings and housing units to the old building owners. And the new district habitants raise objection to the membership fee of 230 liras collected in the new housings.

It explains why the low and medium income level people of Sulukule prefer hiring or selling the housings rather than residing there.

- The Rampart Preservation Band determined by UNESCO was reduced to one half in the Project.
- The specific island morphology and street texture were not preserved.
- The public areas were opened for building in the project, and the street sections were enlarged.
- No green fields and parks were assigned.

The formed building typology does not fit the existing street texture and registered structures.

4.3. Old Building Characteristics of Istanbul and Sulukule

Before implementation of the Sulukule Urban Transformation Project, the old buildings were characterized with the wooden frame and mud brick filled one or two story buildings called “nogging” houses (Yapı Olgusu, Mimarlık 81/11-12).

It is an old method used in the villages and towns throughout Turkey. The “noggin structure, namely mud brick filling in the wooden frame” has been very frequently applied, and is still used. Figure 4.2 (Bilge, 2006).



Figure 4.3: Former Architectural Feature of Sulukule; nogging structures with wooden frame

4.4. Decision for Cancellation of Sulukule Urban Transformation Project

Claiming that the destructions and reconstruction of the project buildings on a preservation site are contrary to the resolutions of the Preservation District Board, and that the property rights of the Roman people are violated, the Istanbul Büyükkent Branch of the Chamber of Architects under the Union of Turkish Chambers of Architects and Engineers (TMMOB), and the TMMOB Chamber of Urban Planners Istanbul Branch and the Association of Roman Culture Improvement and Solidarity filed lawsuits for cancellation of such projects. As the Court denied to decide on the interruption of implementation, and then the Administrative Court finally annulled the project due to the lack of public benefit upon application of the Municipality of Fatih in 2012. Meanwhile, all the buildings were destroyed, and the project was completed in spite of the court verdict on annulation (Sulukule Platform).

5. Evaluation And Conclusion

Over the world, the zones outmoded in time and creating problems due to the lack of maintenance are restored to improve the lifestyle of the local people through the renovations performed through the urban transformation projects. However, the wrong policies may sometimes cause some losses due to the restoration interventions. One of such examples is the Sulukule District that takes place within the historical peninsula of Istanbul. Having been announced as the "Site of Urban Renovation" as per the law No. 5366 in November 2005, the Neslişah and Hatice Sultan Districts (Sulukule District) have been subjected to many wrong operations, and now considerably destroyed with the district people forced to migrate, whereupon a new project has been implemented, completely independent and irrespective of the old district. In this study is tried to elaborate the cultural

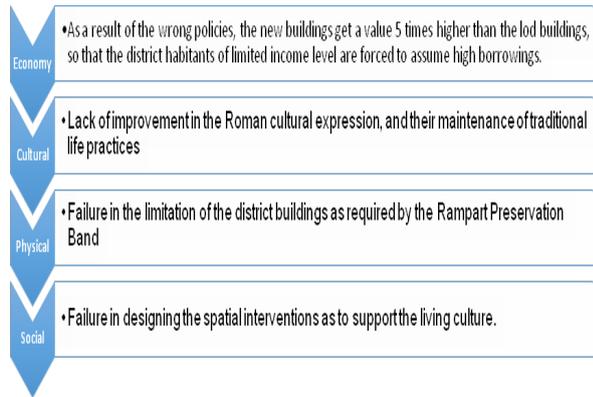
and historical heritage of the Roman people the quarter habitants within the framework of the architectural features of the new buildings and the actual effects of the process launched with the urban restoration project in Sulukule. The evaluation of economic, cultural, physical and social criteria through the field work performed in the new Sulukule and the negotiations with the Municipality revealed some losses.

In terms of the **economy**, the habitants of the old Neslişah and Hatice Sultan Districts were dislocated from their own heritage and removed to some other places before, but returned to their old districts after completion of the project implementation, but they were forced to sell the new buildings due to their borrowing to the municipality and banks as a result of the value difference between the old and new buildings, while some of them hired their new housings, so that the old Roman people had to resettle in different streets of the district. As the new buildings are not appropriate for the people of Sulukule to maintain their lives, it has harmed the regional people.

In **cultural** aspects, the Roman people as an important characteristic element of the district need to gather and live in the old Sulukule region just in the centrum, so that they could keep up with their ties with music, dance and arts. Before destruction, they were resettled in the TOKİ mass housings in Taşoluk, but could not resettle in the new housings due to the wrong policies and interventions upon completion of the project, so that they have remained landless. The concept or urban transformation has created such problems as the lack of land, and loss of cultural characteristics for Sulukule and the Roman people.

For the **physical** and architectural respects, the renovation project currently implemented in Sulukule has been developed and realized without respect to the history and cultural heritage of the old district. The entire regional history has been destructed, and the new housings built up in the completely flattened field are not similar to the historical Sulukule houses at all. No measure has been taken to limit the structuring in consideration of the Rampart Preservation Band, so that the ramparts and buildings would be in a good harmony.

Following are the losses caused by the Sulukule Renovation Project:



In this context, the interventions to be made in the districts to be transformed should not be limited to only one street, lot or district and their surrounding fields, but implemented in consideration of satisfying the fundamental needs of the region, and maintenance of a strong infrastructure and humanistic values by means of an appropriate planning.

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Association Rule Mining to Extract Knowledge from Online Store Transactions of a Turkish Retail Company: A Case Study

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Abstract

Data mining techniques have been implemented in many fields namely, marketing, insurance, finance, medicine, computer science and many more. In marketing it is used as a tool to cluster and classify customers so that their buying patterns, demographical information, market basket can be analyzed to help the CRM representative and decision makers [1]. In this study online store transactions of multi-branch Turkish Retail Company have been analyzed and many associations rules have been discovered. The analyzed volume of transactions of completed sales exceeds 14000 for a single season. At first data is cleaned from unrelated fields then presented to R studio to implement the Apriori algorithm[2] in order to extract knowledge and obtain association rules between goods. Results are proven be worthy over the conventional methodologies. The extracted data are tested successfully with a sample group of customers to validate the association rules which give unique insights about customer behaviors.

Keywords: *Association analysis; Apriori Analysis; Data Mining*

1. Introduction

Data mining techniques have been implemented in many fields namely, marketing, insurance, finance, medicine, education, computer science and many more. In marketing it is used as a tool to cluster and classify customers so that their buying patterns, demographical information, market basket can be analyzed to help the CRM representative and decision makers [1]. Data mining has been being used mainly for three purposes: classification,

clustering and extracting association rules for given data sets. Market basket analysis is field of study of data mining which tries to emerge any meaningful relationship between sale transactions in a big data set. In this study It is aimed to extract meaningful association rules between sales transaction database of a Turkish Retail company. We acknowledge their contribution to this study for supplying their unique online store sales dataset.

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A. Association Rules

In [2] R. Agrawal et al. proposed the association rules between database sales transactions of a supermarket to describe the frequent patterns and associations. Every transactions are represented in itemset groups then probabilities of these itemset are calculated to satisfy two metrics namely Support and Confidence Eq(1) and Eq(2) respectively. The implication of the form (ItemSet) $X \Rightarrow (ItemSet)Y$ is called an association rules Support means that If the probability of transaction on database contain X and Y itemset together s and percentage is S%, one could say, the rule $X \Rightarrow Y$ holds in the database with Support S. If the percentage of transactions in the database containing X that also contain Y is c%, the rule $X \Rightarrow Y$ has Confidence c. [3-4]. In order Rules to be accepted they are filtered by predetermined Support and confidence thresholds to finally state the rules. Lift is a metric used for interestingness and defined as eq (3).

$$\text{Support}(X \rightarrow Y) = P(XUY) \quad (1)$$

$$\text{Confidence}(X \rightarrow Y) = P(Y|X) \quad (2)$$

$$\text{Lift} = P(Y|X) / P(Y) \quad (3)$$

2. Background Study and Methodology

A. Literature Review

Despite Market basket analysis is not a new concept it has been a point of attraction to many researcher since it gives good clues for decision makers and marketing strategies and those strategies are most of the time unique to the interested data sets.

The Apriori algorithm was developed to efficiently discover frequent itemsets. Name Apriori is derived from “prior” since algorithm uses data from previous step. This method relies on the assumption that subset of an

itemset also carries the properties of the itemset [2, 11].

Since then, new several algorithms such as the FP-Growth algorithm have been proposed for this purpose [4]. Due to great success and widespread usage of Apriori algorithm, many variations of association rule algorithms have been proposed [3]. These different algorithms can be classified in three groups according the data they used for association nominal/ Boolean data [2, 5], ordinal data [6], and quantitative data [7, 8]. In [9] for an online store a recommendation system is established based on Bayesian Network and Association Rules. The detailed description of the Apriori Algorithm is given in [2].

In this study a clustering algorithm namely Expectation Maximization (EM) is used since such clustering algorithms are used to classify grouped data according to their resembling. In our study resembling are extracted using EM clustering algorithms. EM Clustering algorithms [12];

- In every iteration of EM algorithm value of probability function increases.
- Under general regularity conditions it has confident convergence
- Calculations are relatively easy and applicable
- Cost of iteration is low when compared with cost of other methods
- Missing value guess also available

b. Methodology

Blok diagram of the proposed methodology has been given in Fig. 1.

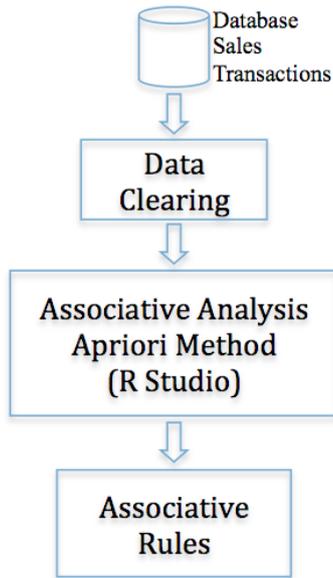


Fig.1. Block Diagram of Determining Associative Rules

There are more than 14000 sales transaction for a single season. Therefore first step of a data mining is to select raw data form transection and clearing them with either projection of filtering. When the processed raw data is read to analyze it is feed to analyses engine to further process and produce knowledge. Figure 1 summarizes our process.

Clustering algorithms (such as Expectation Maximization EM algorithm) are used to classify grouped data according to their similarities. Since our data has some missing parts we have chosen EM clustering algorithm to discover the demographical representation of the database transactions. EM clustering Algorithm is chosen especially when there is a data dropouts (missing data) or clustering in such a way that the number of underlying data points is unknown [10]. EM (Expectation Maximization) clustering algorithm is utilized according acquired discount amount, gender and marital status. Result are represented as in Table I.

Table.1. Result of EM Algorithm

Set Number	Acquired Discount Amount	Gender	Marital Status	Percentage
Set 1	10%	Female	Married	14%
Set 2	10%	Female	Single	10%
Set 3	10%	Male	Married	4%
Set 4	10%	Male	Single	2%
Set 5	15%	Female	Married	28%
Set 6	15%	Female	Single	13%
Set 7	15%	Male	Married	6%
Set 8	15%	Male	Single	4%
Set 9	20%	Female	Married	9%
Set 10	20%	Female	Single	3%
Set 11	20%	Male	Married	1%
Set 12	20%	Male	Single	1%
Set 13	25%	Female	Married	2%
Set 14	25%	Female	Single	1%
Set 15	25%	Male	Married	1%
Set 16	25%	Male	Single	1%

Table 1 can be interpreted as; In set 1 %10 discount amount married females group account for %14 of all transactions.

Second Set represents %10 discount amount single female group which accounts for %10 of whole groups. Likewise Third Set represents %10 discount amount married men group which accounts for only %4 of the universal set. Table 1 can be interpret likewise.

Moreover after two iteration two distinct group of products are obtained %93 in one group %7 is in other group.

3. Results

At the end of the study for some of the selected Itemsets (X and Y) depicted in Table 2 support, confidence and lift values found to be 100%. Support level is defined as $supp(X)$ an itemset X is defined as the proportion of transactions in the data set which contain the itemset. Confidence level defined as: $Conf(X \rightarrow Y) = \frac{supp(X \cup Y)}{supp(X)}$ meaning X item sold with Y item.

Table.2. Association Rules for Support, Confidence Lift %100

Itemset X	Itemset Y
Tight pants	T-Shirt
Deep Slits Silk Tunic	Hand Portfolio
Pearl Leather Bracelet	Rubber based Loafer and 3 lines long leather pearl necklace
Crepe Dress with Scarf	Flared dress Scarf Crepe and 3 lines long leather pearl necklace
Ruffled Chiffon blouses	Jean Pant Love
Jean Pant Love	Jean Pant The London Pant
Black Jean	Dark Grey jean pant
Knitting Multicolored	Knitting beige
Knitting	Classical skirt
Classical silk Shirt	V-neck sleeveless dress
Lid Pocket Classic Coats	Box Collar Sweater
Boot	Silk Cashmere Sweater
Christmas ornament	Decorative Gift Package
Sweatshirt	Scarves and shirts
Knitting Tube Skirt	V-neck Sleeveless blouse, Crepe cigarette pants
Lace Tube Skirt	Embroidered Sleeveless blouses

In Table 3 association rules of itemsets having support and confidence %50 and lift value 100% are given;

Table.3. Association Rules for Support and Confidence %50, Lift %100

Itemset X	Itemset Y
Goose feathered coat	Double-sided thin-card
Knitting Tube Skirt	V-neck Sleeveless blouses
plain T-shirt	Long Sleeve T-Shirt
Tights Pants	Low-Shoulder loose T-shirt

As it can be seen from Tables II-III Association rules have been generated with the established model. Any row can be read as Customers who bought X itemset also bought Y itemset with related Support, Confidence and Lift amounts. We can interpret Table II like If a customer buys a tight pant, s/he will probably buy a T shirt. As an other example, If a person buys a Christmas ornament, s/he would buy a Decorative gift package. The Support, confidence and Lift metrics of those decisions is %100.

A. Evaluation of the Results

Second and important phase of the study was to evaluate weather this rules are valid. In order to confirm the correctness of the association rules a relatively small model campaign have been carried out on the selected target customers who only bought X itemset with a support and Confidence and Lift Value %100. The sample set of customer are chosen according to clustering results of table 1 which helped us to select number of customers to represent whole transactions. In this pilot study the chosen customers have been informed that there would be a discount in the corresponding Y itemset for a short period of time. It has been inspected that these customers shopped the Itemsets Y in the given period of time. %78 of customers shopped the Itemsets Y in the given period of time. %12 percent of the customer did not respond to the pilot campaign, %7 percent were out of city and the rest %3 did not give any reason for not participating the campaign.

4. Conclusion

In this study online store database transaction of Turkish retail company have in analyzed to perform market basket analysis. Apriori algorithm is utilized to perform associative analysis, which is implemented in R studio. As it could be inferred from Table 2 and Table 3 many meaningful associative rules is established to better understand the consumer behaviors. In order to evaluate and test the association rule small promotion campaign is carried out and result shows that the association values are valid.

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Importance Of Public Relations In Natural Stone Mining And Its Contribution To The Industry

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Deniz İskender ÖNENÇ²
Nusret GÜNGÖR¹
Akın AKBULUT¹

Abstract*

All activities done in marble and natural stone industry has a social dimension. Mining continued serious work in all branches of international companies before the creation of a sustainable culture of marble social dimension of public relations in the foreground is the driving force.

Sustainable and professional public relations policy, marble-work capacity improves the natural stone industry. Public relations, stakeholders or the general term of communication bridge between the industry and public as a linear sets. Earnings for both sides to form a structure that allows.

Public Relations, the license of holder the legislation specified obligations shall also deserve allowed outside of the “social license” saves. Therefore, invisible costs are minimized enables local people to build a solid foundation is. Transparent, stable, sustainable and mutually based on dialogue, persuasion development of a stakeholder management strategy builds.

Public relations, environmental and social events aimed at developing various reviews and assessments at least once, and completely eliminating the number down. Solutions to the problems, thanks to sound management of public relations based on principle of producing the maximum benefit to the creation of a continuous production chain is established. The approach is most criticized for marble rubble criticism provides the right to be informed.

If public relations installed correctly, marble, based on group to operate more efficiently and provide a continuous power. Improves access to social resources, crates confidence. Obstacles that hinder activities (protest, such as cessation of work) reduces the formation and allows all employees to focus on the work they do. This case, employment, production, marketing, sales and earnings are.

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1. Introduction

Public Relations (PR) is one of the most important tools of today in all aspects of social life. It is an indispensable tool for all organizations

from international companies to small-scale companies and establishments. Even if its importance was not recognized until recently in our country, today, public relations has a great importance in terms of public-company relations. Public relations have several positive effects on both the public and a company. PR evolves into an indispensable unit for all stages of activities related to natural stones. Perhaps the most important aspect for the permit holder investor is the reputation it can earn in the public through public relations. In addition, public relations also provides for increase in sales in profit-oriented organizations. The most important benefit of public relations for the public or society is to be able to access direct information in relation to the company conducting activities and to have the opportunity to directly communicate requests, demands and complaints as they are to such companies. In this context, a sincere relation with the community through notices, newspapers and mass communication tools/ face-to-face meetings with the community strengthen public relations [1].

2. Public Relations And Natural Stone Mining

Public relations yield positive results in terms of both companies and the community in case of investments which have the potential of creating environmental and social changes in the areas where they are implemented such as mines, dams, hydroelectric power plants, wind power plants, geothermal energy plants, energy transfer lines, fuel and natural

gas plants, etc. therefore, public relations helps natural stone permit holders fulfill their liabilities underlined in the regulations and lets them have the “communal/social approval” they deserve. This way, invisible costs are minimized and a solid ground is established with the community. It contributes in the development of a shared management strategy which is convincing and which is based on a transparent, stable, sustainable and mutual dialogue. Organization of a professional public relations division specific to the area or region where the natural stones are located will ensure the continued and healthy implementation of natural stone mining activities [2,3].

Tours can be organized to natural stone quarries on certain days within the frame of public relations. Such tours will be intended to keep the community nested with the mine. As it is known, secondary uses such as turning mining areas the production of which are terminated into museums and entertainment centers or open-air theaters make it possible for the community to consider natural stone mining from a different perspective. Furthermore, such secondary uses create both social and economic benefits [3].

In case of activities such as fairs, symposiums, workshops and seminars, etc. the groups from the industry and the citizens who are not included in the industry are informed. In addition, seeking for business connections and different markets, advertisement and introductory campaigns, renewal and improvement of the introduction techniques of the product are all based upon public relations and its specialized branches.

Public relations minimizes and eliminates in time the negative comments and ideas on

the environmental and social developments. Solutions specific to problems ensure the creation of a continued chain of production based on the maximum benefit to be produced thanks to a healthy management of public relations. Such approach also brings the opportunity to provide correct information and the ability to convince people in relation to the criticisms directed at natural stone quarries and natural stone residual heaps. A healthy public relations policy can easily maintain the stages of informing the public on the fact that natural stone residuals are raw materials/inputs which can be used in different industries in ever-increasing amounts, that no harmful chemicals are used in natural stone quarries and that the visual pollution is only temporary.

Public relations is based on the following interactions at the surveying, processing, manufacturing and covering stages of the natural stone mining: valuing people and their opinions (respect), telling the truth and building up trust (honesty), drawing a clear and complete portrait (transparency) and assuming the responsibility for the acts performed and promises given (reliability). If based upon such four (4) main principles, public relations will be successful and the natural stone mining industry will be positively affected by the public relations. This positive influence will also help this important sector of the mining industry attain the highest rank it deserves as a significant branch of activity which always creates reputation and trust [1,2,3].

The fundamental principles of public relations coincides with the principles of ethical conduct. If such fundamental principles are pursued in all activities of the public and private sector, the quality, production, exportation, employment, added value and

reliability of the natural stone sector will constantly increase. The community/target mass should be informed on the works to be conducted and the PR specialist assigned to provide such information should inform the public with face-to-face meetings on site in order to increase the level of success in public institutions and establishments and the operator of such activity in both of two main sectors. The community should be informed not only during the execution of natural stone activities but also after the completion of the activities in relation to the results of such activities for an effective and productive PR implementation. Afterwards, feedbacks should be received to learn about the success and/or problems and they should be evaluated. Advantages such as the fact that no chemical reagents are used, permanent environmental pollution is not generated and blasting works are not performed help PR activities in natural stone sector to attain success and the targeted result in a healthier and faster way. This particular shows the harmony between PR and natural stone sector. The fact that PR activities are human-oriented and implemented for the existing condition and future of the natural stone sector which plays an important role in the development of our country will take the image and prestige of this sector to upper levels in the eye of the public in all aspects [1].

When conducting survey works for the natural stones in the targeted area, PR tries to learn about the relevant area with the help of community, villagers, shepherds, neighborhood governors, etc. who are contacted. During the drilling works, PR uses the required manpower from the closest village and receives logistic support in addition to benefiting from the infrastructure services. The natural stone investor does

not deny his support to the community and sponsors them in common services such as construction of roads, schools, prayer houses and supply of potable water within the frame of PR activities.

3. Results

Public relations (PR) provides the investors who are engaged in the activities subject to natural stone mining permits with a more productive and continued driving force and the target mass is completely convinced in time. PR improves the access to social resources and creates an environment of trust. It minimizes the occurrence of preventions which will hinder natural stone mining activities (protests, work stoppage, etc.) and minimizes the dangers and risks by ensuring that all workers focus on their tasks. Therefore, PR brings greater and continued high-quality production, employment, marketing, sales and revenue with a human-centered proactive approach.

The effective use of public relations will create solid and unshakable bonds between the permit holder investor and the community, help change the negative perception of the community regarding the natural stone quarries whereas it will allow for the community to take more active part at the stage of harmony between the environment and surveying, production and covering stages of the natural stone mining industry.

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Experimental Analysis Of Thermoplastic Cooler In Led Lighting Systems

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Abstract

Nowadays, Led lighting systems are becoming prevalent day by day due to an efficient light source. In fact, taken the luminous efficiency and also long life of Led lighting system must be cooled effectively. In recent years, leds designed by thermoplastic cooling systems are preferred in LED systems due to being more economical by comparison to the AL cooler. This paper, Thermoplastic material in cooler system, compared the AL cooling systems will be examined in terms of effects of leds as experimental.

Keywords: *Led Lighting, Thermoplastics, Energy Efficiency, Led Cooler, Temperature Losses, Energy Dissipation*

1. Introduction

Corresponds to the consumption of electrical energy consumed in lighting system, It produces heat and light energy which is caused by spending the energy of about 25% in our country [1]. Therefore, demanding for using of Led type sources are particularly efficient light sources, increased rapidly at the present time. But, designing by using Leds has the important issues in order to obtain an efficient lighting system. Unless attention to these issues, Ensuring the efficiency of the Led systems is not possible, but also can cause serious problems in terms of life time of Leds. The most important of these issues, is the ones that heat energy occurring in junctions

of leds can not be transferred effectively. Also increasing of light intensity can be produced by driving at higher currents which can increase the temperature in junctions of leds[2]. Thus, it should be cool by making heat transfer effectively.

2. Structure Of Led Systems

Led is a shortened form which is defined as a light emitting diode. Having a solid-state crystal structure of Leds, provides unidirectional current flow. These crystal structure means that P-type and N-type silicon material is combined together that is called as junction point. The Electric Current flows from P-type(anode) to N-type(cathode)

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which provides foton emission and produces temperature in junction point [3].

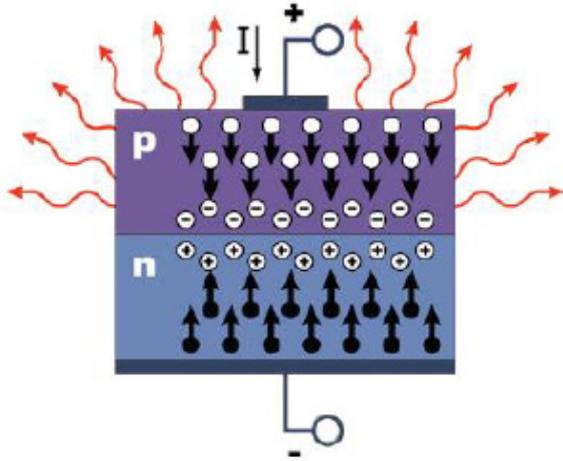


Figure 1. Led Structure

Generally, luminous Efficiency in leds emitting of monochromatic light, is related to the wavelength of light. But In today’s technology, leds can produce all wavelengths in the visible spectrum therefore efficiencies and luminous intensities is reduced compared to monochromatic leds.

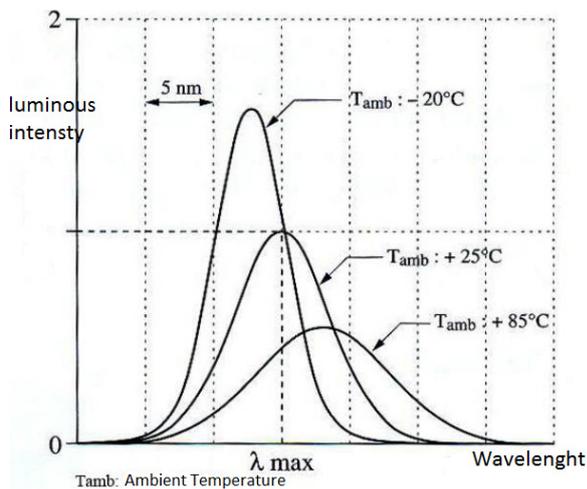


Figure 2. Variations of Light Intensity and Wavelength of Led with Ambient Temperature

In studies conducted on this subject, it is seen that the wavelength of the Leds is extended by increasing ambient temperature [3].

On the other hand, Compared to other lamps, Leds have advantages such as long life and low energy consumption. Leds have emerged since 1962 and production of their increased in recent years. However the most important of the problem that arise with the use of Leds is that the high temperature which spreads in junction points(t_j) that effects the lifetime and efficiency as adversely[4]. Therefore, it needs to cool by special cooling systems. These kind of systems are classified in two parts as active cooler and passive cooler. Passive cooling systems are widely used in Led lighting fixtures due to the cheap costs. Therefore there is need for efficient cooling design which is considered the good thermal conductivity, cooling surface area, thickness, size and air groove. Therefore, it is important to make a good thermal analysis, simulation and tests[3] [5].

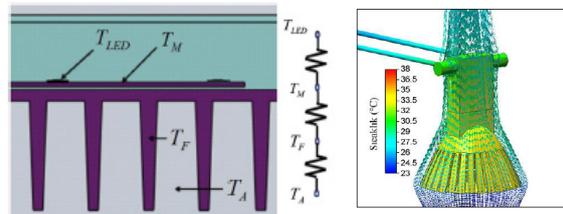


Figure3. Thermal Flow

3. Temperature Measurement Method Of Led Systems

The junction temperature of Leds can not be measured directly. Therefore, the bottom surface of the Led sources(TSP-solder point) is to be measured afterwards , calculated for junction temperature. For this reason, the thermal resistance(R_{thj-sp}) between the junction point and the welding

points must be known. Led junction temperature is to be calculated by the following equation [6].

In this equation;

$$T_J = T_{SP} + (R_{thj-sp} \times V_f \times I_f)$$

T_J : Junction Temperature,

T_{SP} : Solder Point

V_f : Led Forward Voltage,

I_f : Led Forward Current,

R_{thj-sp} : Thermal Resistance Between T_j and T_{sp} .

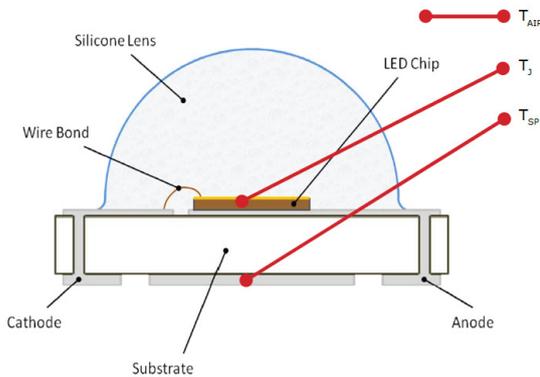
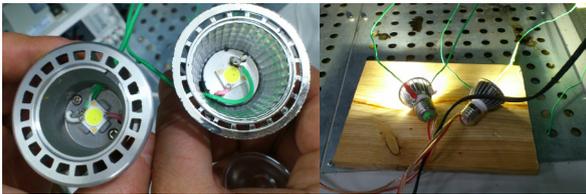


Figure4. Led Junction Temperature(T_j) and Surface Relationships

4. Experiments and Results

In this study, The temperature measurements of two identical led bulb with thermoplastic and AL cooler, are made in terms of cooling performance, and the effects to these both leds have been examined in terms of photometric performance and compared.



The temperature measurement and photometric results obtained in the experiments conducted which are shown in table1 and table2 respectively.

Table1. Results of Measured Temperatures of Led bulbs

Temperature in Parts (°C)	With AL Cooler	With Thermoplastic Cooler
Led Solder Point (Surface)	78°C	108°C
Cooler Outer (Surface)	65°C	57°C

Table2. Results of Measured Photometric Values of Led bulbs

Derived Data	With AL Cooler	With Thermoplastic Cooler
Radiant Flux (Watts)	0,56	0,58
Luminous Flux (lumens)	196	176
Scotopic Luminous Flux (lm')	341,80	368,40
Correlated Color Temperature (deg. K)	4896	5011
Luminous Efficacy (lm/W)	65,3	58,6
Power Consumption (W)	3	3

5. Conclusion and Discussion

In this study, two identical led bulb with thermoplastic and AL cooler prototypes were analyzed in thermal and photometric criteria as experimental point of view.

As it is seen from the data obtained, When compared AL and Thermoplastic cooling systems, The thermoplastic cooling material is not effective heat transfer compared the AL cooling material, is clear. Because Led surface temperature with thermoplastic material remains high compared to the sample with AL cooler , besides the differences between the Led surface temperature and the cooler outer surface temperature, are high value in spite

of the same as the volume of coolant and the position which masks the leds to the surfaces. Also because of the fact that the temperature in led bulb with thermoplastic cooler, is to be high compare to led bulb with AL cooler, even all system's power consumptions are the same, the point of view of which is analyzed in terms of photometric, it clearly shows us that the luminous flux negatively effected. Thus, it is seen that luminous efficiency of thermoplastic led bulb negatively effected compare to led bulb with AL cooler.

As a result, Because of using of the thermoplastic cooler which is low cost, may adversely affect the luminous efficiency of Led systems. Therefore these kind of systems surely must be examined detail.

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INSTRUCTIONS ABOUT THE ACCEPTED MANUSCRIPTS:

Page Design: Text body area is (195mm x 275mm). 30 mm margin from top, 20 mm from down and 25 mm margins should be left on right/left sides.

Title: should be in 16 pt. bold, capital letters with Times New Roman font in Microsoft Word format. Authors’ names, affiliations, e-mail addresses should follow the title after double line spacing with authors’ names in lower case and surnames in capital letter in 14 pt. the rest in 10 pt. in the same format.

Abstract: should not exceed 200 words with the word “Abstract” in 12 pt. italic, bold, abstract text in 9 pt. italic, all in Times New Roman font in Microsoft Word format.

Keywords: not exceeding 5 should be in 9 pt. bold.

Document Character: Subtitles should be in 10 pt. bold, capital letters and text body 10 pt. both with Times New Roman font in Microsoft Word format. **The manuscripts should be written on two columns, be single spaced with single line spacing between paragraphs.** The subtitle of the first section should start after a single space following the keywords, the other subtitles also with a single line space following the text, there should also be single line spacing between the previous text and the subtitle.

SECTIONS: Formulas should be numbered sequentially. Referring to formulas should be as Eqn (.). Figures and Tables should be placed into the text body and captions for both should be 10 pt. Table numbers and captions should be placed before the Table. If necessary, both columns may be used for large Figures and Tables.

CONCLUSION section should have a title written in 12 pt. bold, capital letters and the text in 10 pt. all in Times New Roman font in Microsoft Word format. Conclusion should not be a version of the Abstract.

REFERENCE numbers should be given in brackets as illustrated below:

Referencing books:

[1] Özsu M., T, Valduriez, P., Principles of Distributed Database Systems, Prentice Hall, New Jersey, 128-136,1991.

Referencing papers:

[2]G. Altay, O. N., Ucan, “Heuristic Construction of High-Rate Linear Block Codes,” International Journal of Electronics and Communications (AEU), vol. 60, pp.663-666, 2006.

SHORT BIOGRAPHY of the authors should follow references after a single line space, names in 9 pt. surnames in 9 pt. and the text in 9 pt. The text should not exceed 100 words.

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