

Artículo de investigación

**Benchmarking Operations Strategies via Hybrid Model:
A Case study of Café-Restaurant Sector**

Estrategias de operaciones de evaluación comparativa a través del modelo híbrido:
Un estudio de caso del sector de café-restaurante

Recibido: 15 de agosto del 2019

Aceptado: 25 de septiembre del 2019

Written by:

Taylan Budur²⁹

<https://orcid.org/0000-0001-8123-4404>

Khayal Mahsum Faraj³⁰

<https://orcid.org/0000-0003-0300-7040>

Lanya Ali Karim³¹

Abstract

The aim of this research was to benchmark operations strategies among café-restaurants. Hybrid model has been employed to propose benchmarking. SEM has been initially used to detect the market expectations from the customers. Obtained regression coefficients have been normalized and integrated with VIKOR method to benchmark the café-restaurants' operations strategies. This hybrid method is a pioneer one which detect the changes in the market from the customers and benchmark the alternatives using VIKOR method.

Keywords: Operations Strategy, Benchmarking, Café-Restaurant, VIKOR, MCDMA, Hybrid Method, Customer Satisfaction

Resumen

El objetivo de esta investigación fue comparar estrategias de operaciones entre cafeterías y restaurantes. El modelo híbrido se ha empleado para proponer benchmarking. SEM se ha utilizado inicialmente para detectar las expectativas del mercado de los clientes. Los coeficientes de regresión obtenidos se han normalizado e integrado con el método VIKOR para comparar las estrategias de operaciones de las cafeterías. Este método híbrido es pionero y detecta los cambios en el mercado por parte de los clientes y compara las alternativas con el método VIKOR.

Palabras clave: Estrategia de operaciones, Benchmarking, Café-Restaurante, VIKOR, MCDMA, Método híbrido, Satisfacción del cliente.

Introduction

Benchmarking is an instrument helps businesses to define quality and performance levels in the meaning of products, activities and processes against their competitors in the market (Allan, 1993). Further, companies can understand their competitors' activities (Shetty, 1993), recognize their position (Spendolini, 1992), define customer needs (Sedgwick, 1995), stimulate creativity (Sekhar, 2010) and create new

strategies according to market position through benchmarking (Demir and Aydinli, 2016).

Besides, service quality is a vital factor in café restaurants for long term financial performance. Obviously, managers of businesses should be aware of the importance of their actions and decisions to increase productivity (Budur and Demir, 2019a; Demir and Budur, 2019) of the internal customers (employees) to provide a

²⁹ Ishik University, Sulaimani, Kurdistan Region of Iraq.

³⁰ Ishik University, Sulaimani, Kurdistan Region of Iraq.

³¹ Ishik University, Sulaimani, Kurdistan Region of Iraq.

prolific process and positive effect on customers satisfaction.

Benchmarking have been studied by many authors using data envelopment analysis (Lee and Kim, 2014), TOPSIS (Singh, Grover, and Singh, 2017), fuzzy integral (Kazancoglu and Kazancoglu, 2013) VIKOR (Demir, 2019b). Besides, none of those models are able to estimate the changes in the market such as customer tastes and expectations. Hence, the current study is one of the pioneer researches in this field which integrates SEM with VIKOR. The reason why SEM is integrated with VIKOR is that through SEM, changing customers' expectations can be detected. However, VIKOR method is an effective model which minimizes the regret of the decision maker.

Further, this study evaluates the impacts of operational strategies on the customer satisfaction in the café restaurants in Sulaymaniyah. The operational strategies have been elaborated under two pillars such as structural and infrastructural elements. The idea derived from the study of Torlak et al. (2019), the scholars have used capacity-layout, design, location, hygiene as structural elements of the operations management, while human resource management, food quality, and ambience infrastructural elements of the field.

Furthermore, benchmarking methodology of the paper have been developed from the study of Torlak et al., (2019). Consequently, through survey questionnaire collected data evaluated through structural equations modelling and VIKOR analyses. Finally, some suggestions have been defined for the café restaurants managers in order to increase their ranks based on the customer evaluations.

Literature

Benchmarking

Benchmarking is a process that provides a continuous improvement for increasing the competitive performance of any firm in the meaning of business processes (Watson, 1993). Further, benchmarking is a consistent process of measuring products and services against the powerful competitors of the market (Shetty, 1993). Furthermore, Sekhar (2010) noted benefit of benchmarking for a company is that it offers many tangible and intangible factors. These benefits revealed as:

- a) Rather than re-invention, adaptation of others practices

- b) UpToDate for technological changes
- c) Formulation of strategic goals to improve organizational activities
- d) Encourage innovation
- e) Facilitates organizational learning

Moreover, benchmarking has different types to evaluate strong and weak points of the firms, these are namely; performance, process, strategic, competitive, functional, generic and internal types of benchmarking (Jabar et al. 2019).

Analytic hierarchy process

Analytic hierarchy process (AHP) is one of the measurement theories (Saaty, 2013), and decision-making processes that refers structuring multiple choices into a hierarchy model, and provides assessment of these criteria in comparison with alternatives to determine an overall ranking (Nikou 2011; Budur, 2018; Demir et al. 2019). Further, this method is a multi-criteria decision analysis technique that is used to elaborate the relative priorities by comparing alternatives in multilevel hierarchic structural bases (Saaty, 1990; Dyer 1990).

Main steps in the AHP analysis noted by Wang et al., (2007) as followed; organizing the problem hierarchically, pairwise compare of judgment matrices, defining local priorities, and ranking alternatives.

Service Quality in Café –Restaurants

Parasuraman et al., (1988) defined service quality as the customers positive evaluation between expectation and performance. According to their SERVQUAL model, service quality can be measured through five dimensions, which are: tangibles, reliability, responsiveness, assurance, and empathy (Aydinli and Demir, 2015; Budur et al., 2018). Besides, Rust and Oliver (1994) investigated service quality under three factors, which are: customer–employee interaction, service environment, and service outcome.

However, Bojanic & Drew Rosen (1994) revealed the difficulty of service quality measurement in restaurants because of lack of tangible variables. So that managers in restaurants should focus rather on food quality and service surroundings, which is in line with Parasuraman et al., (1988) finding that first service quality factors in restaurants are food taste and courtesy of the waiters and waitresses.

Capacity –Layout

Capacity-layout refers to well-structured service facilities, materials, furniture and layout (Bitner, 1992). Well-organized layout leads to a pleasant atmosphere in the restaurant and foster excellent dining experience for the customers (Heung and Gu, 2012). Size of café-restaurant, number of eating halls, space, and arrangements of equipment, service and storage areas will be positively associated with employee's competence and willingness for problem-solving ability, good manners like friendliness, and helpful behaviors (Zerella et al. 2017). Further, customers who have difficulty reaching to service areas, or who have to stand in lines for long periods of time, may have the negative perception about the restaurant.

Design

Chang (2000) asserted that designed of the eating hall significantly and positively related to customers quality perception and satisfaction. Ryu, Lee, & Kim (2012) noted physical environment in the restaurants has to be organized according to customer needs and must be updated according to market directions. Similarly, Pecotic et al., (2014) revealed that, 57% of the respondents of his study revealed that they were ready to pay more because of the customer-oriented design.

Location

Craig, 1984 noted that location should be in an acceptable distance for the customers. If the location is not in an economically acceptable field customers may not visit restaurants. Torlak et al. (2019) noted that a good location improves a company's competitive advantages by attracting more customers and found that location is positively associated with the eating time in the restaurant.

Hygiene

Hygiene is the cleanliness of equipment, food, staff and environment that customer face throughout their existence in the restaurant. Scholars noted that hygiene is positively correlated with customer satisfaction (Saglik et al., 2014). Yoo (2012) has investigated cleanliness perception of Western and Asian cultures. According to this study, hygiene is an important factor for both to evaluate the quality of the restaurant and an influential factor on their satisfaction. Besides, western culture gives more importance on restroom staff hygiene, while

Asian evaluate the total cleanliness of the restaurant.

Further, Torlak et al. (2019) noted that through hygiene trainings, employees helping behaviors, which refers to responsiveness should be positively affected to increase quality of the services in the restaurant.

Human Resources Management

Worsfold (1999) put forward, an effective management of human resources lead to significant positive results for the organization. In line with this, Rynes et al. (2002) noted that HRM practices are important factors to increase organizational effectiveness and financial performance of the company. Similarly, Koys (2003) found that HRM practices positively affects employee citizenship behaviors that in turn cause customer satisfaction through enhanced performance. But on the other hand, lack of HRM practices may have negative effects on customers quality perceptions about the restaurants (Wang et al., 2000).

Food Quality

Haghighi et al., (2012) revealed that freshness, cleanliness, and flavor of the food has a crucial impact on the customer satisfaction. Additionally, Bujisic et al. (2014) noted food quality, positively associated with reputation and customer behavioral intentions.

Ambiance

Ryu & Han, 2010 noted customer satisfaction can be increased through positive feelings of customers that affected restaurants color, lighting and music, which shapes the restaurants ambience. Further, Chen and Lee (2018) pointed out the positive relationship between ambience and re-visit intention. Likewise, Torlak et al., (2019) found that lighting, temperature, background music and odor of café-restaurant will enhance customers' good feelings and encourage them for re-visit.

Customer Satisfaction

Customer satisfaction defined as “a person's feelings of pleasure or disappointment resulting from an evaluation process comparing a product's perceived performance (or outcome) in relation to his or her expectations” (Kotler, 2000). Further, Torlak et al., (2019) noted that this pleasure perception result with his/her revisit and

loyalty behaviors for the related café-restaurant in the future.

Methodology

Sampling

The sample utilized for the study included 311 participants who were via random stratified sampling methodology selected from 16 highly reputed café restaurants' customers in Sulaymaniyah. The respondents were merely invited to complete a survey questionnaire which was distributed in the Kurdish language. Each question was explained, and answers were recorded. The research was conducted throughout various opening hours, with 400 participants responding to the questionnaire. However, 89 of answers were incomplete and inappropriate, thus being eliminated from the study. Further analysis has been conducted with the remaining data.

Measurement Variables

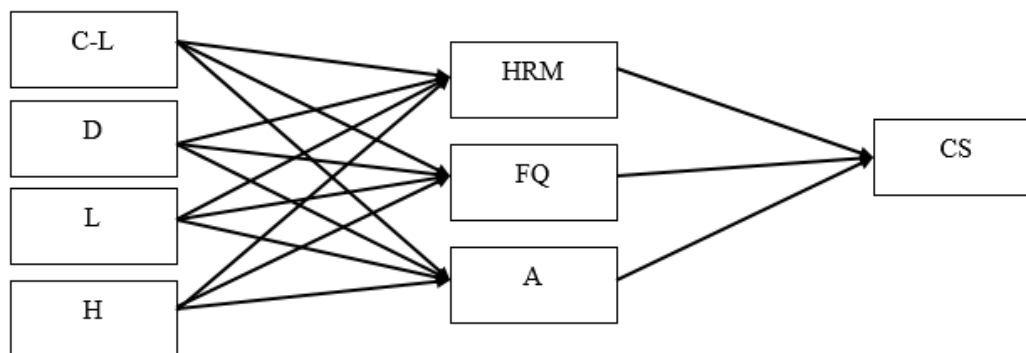
The questionnaire that was used in this research has been adopted from the study of Torlak, Demir and Budur (2019). There has been seven dimensions those represent structural (capacity-layout, design, location, hygiene) and infrastructural elements (human resources management, food quality, and ambience) of operations strategy. The impact of each dimension on customer satisfaction has been

tested via structural equations modeling after reliability analysis. Due to the survey questionnaire has already been validated, we didn't propose confirmatory and exploratory factor analysis for the second time. However, testing the reliability of each construct, it was observed that all the dimensions as capacity-layout (0.914), design (0.876), location (0.869), hygiene (0.894), human resources management (HRM) (0.918), food quality (0.901), ambience (0.886), and satisfaction (0.973) have been reliable based on the Cronbach's Alpha values. Answers of the questionnaire ranged from 1 (strongly disagree) to 5 (strongly agree) points of Likert-type scale.

Procedures

In order to benchmark structural and infrastructural elements of operations strategy in café-restaurants, initially structural equations modeling was employed to determine the importance weights of each dimension for the customer satisfaction. Next, we have normalized the weights which are total standardized weights of each dimension on customer satisfaction. However, ANOVA has been proposed to determine the perceived values of each dimension (capacity-layout, design...etc.) for each café-restaurants. Furthermore, VIKOR model has been used to select best café restaurants according to customers perceptions.

Figure 1. Model for obtaining the importance weights through SEM



Note: C-L: Capacity-Layout, D: Design, L: Location, H: Hygiene, HRM: Human Resources Management, FQ: Food Quality, A: Ambience, CS: Customer Satisfaction

Findings

Obtaining importance weights through structural equations modeling (SEM)

We have proposed structural equations modeling in order to indicate the importance weights of

each dimension for the customer satisfaction in café-restaurant service sector. To do this, we have tested the total impact of capacity-layout, design, location, hygiene, human resources management (HRM), ambience, and food quality on the customer satisfaction. Table 1 indicates details about the relations.

Table 1. Total effects of operational strategies on the customer satisfaction

	H	L	D	C-L	A	FQ	HRM	CS
A	.235***	.085	.391***	.148***	.000	.000	.000	.000
FQ	.359***	.096	.246***	.031	.000	.000	.000	.000
HRM	.612***	.120*	.190*	-.084	.000	.000	.000	.000
CS	.342***	.133*	.295***	.100*	.683***	.116*	.549***	.000

Note: C-L: Capacity-Layout, D: Design, L: Location, H: Hygiene, HRM: Human Resources Management, FQ: Food Quality, A: Ambience, CS: Customer Satisfaction, 3 asterisks: significant at 0.01, 1 asterisk: significant at 0.05, No asterisk: not significant relation

Given in the Table 1, it has been observed that ambience (A), human resources management (HRM), hygiene (H), design (D), location (L), food quality (FQ), and capacity-layout (C-L) had significant total effect on the customer satisfaction in café-restaurants. Further, total effect of each independent variable has been used for the normalization and integrated into the VIKOR method.

Normalization of the obtained weights

The standardized estimates of structural and infrastructural elements of operations strategy on customer satisfaction are the importance weights for the further analysis. Moreover, those estimates can be evaluated as the importance levels of each criteria in analytic hierarchy process results. The difference between AHP and SEM is that;

- Importance weights in AHP are indicated by the experts in the field. The main disadvantage in this case is that the experts might not be able to detect the changes in the market as precisely as the customers do.

- Importance weights in SEM are indicated by the customers' survey results. The main advantage in this case is that the model will automatically reflect the changes in the market and expectations of the customers which are the most important information for managers to conform their expectations.
- The difference is that analytic hierarchy process uses only inconsistency levels for model fit. Besides, the structural equation modeling having incremental and absolute model fit indexes which provides more accurate importance levels.

The sum of all importance levels must equal to one in order to determine the appropriate comparative importance of each criteria to one another. On the other hand, the results of structural equation modeling are not necessarily equal to one. For this reason, we need to normalize the standardized estimates by the formula below;

$$\frac{\text{Standardized estimates of each independent variable}}{\sum \text{Standardized estimates of each independent variable}}$$

Table 2. Normalization of the importance weights obtained through sem

Dependent		Independent	Not Standardized	Standardized
CS	<==	CL	0.100	0.045
CS	<==	D	0.295	0.132
CS	<==	L	0.133	0.059
CS	<==	H	0.342	0.153
CS	<==	HRM	0.136	0.061
CS	<==	FQ	0.683	0.305
CS	<==	A	0.549	0.245
Total			2.238	1.000

Given in the Table 2, not standardized estimates represent the raw estimates which have been derived from the structural equations modeling as importance weights. Further, the values have been standardized using formula above. For example;

Impact of capacity-layout (CL) on the customer satisfaction (CS) have been indicated as 0.1. Sum of each weight on the customer satisfaction has been 2.238. Further, based on the formula, weight of CL has been normalized as;

$$\frac{0.1}{2.218} = 0.045$$

As result, the standardized value of importance weight for CL becomes 0.045. Each weight has

been calculated using the same methodology. Finally, sum of all standardized weights has been 1. For the further analysis of multi-criteria decision-making, normalized values have been used.

VIKOR Method

After the process of values determination, VIKOR method has been applied to evaluate the operations strategies in Sulaymaniyah. The aim of this method is to define best café-restaurant in the sector gradually. This problem consists of seven operations strategies criterions with 16 alternatives (café-restaurants).

Table 3. Values of cafe-restaurants based on customers' evaluations

Operations Strategy	Café-Restaurant	N	Mean	Std. Deviation	S.W.	F*	F-	Xi
Capacity-Layout	Sandar	20	3.417	1.311	0.045	4.318	3.417	0.045
	Jolla	18	4.111	0.990	0.045	4.318	3.417	0.010
	Mokka More	20	4.000	1.020	0.045	4.318	3.417	0.016
	Primo	21	3.889	1.335	0.045	4.318	3.417	0.021
	White Plus	21	3.714	0.717	0.045	4.318	3.417	0.030
	Barbera	26	3.705	1.089	0.045	4.318	3.417	0.031
	Grand Millenium	22	4.318	0.738	0.045	4.318	3.417	0.000
	Xani Cafe	21	3.984	0.719	0.045	4.318	3.417	0.017
	Soho	15	3.933	1.163	0.045	4.318	3.417	0.019
	Titanic	24	3.639	1.137	0.045	4.318	3.417	0.034
	Tche Tche	19	3.544	1.177	0.045	4.318	3.417	0.039
	Roma	17	3.863	1.021	0.045	4.318	3.417	0.023
	Dawa	16	3.917	1.151	0.045	4.318	3.417	0.020
	Dario	15	3.533	1.037	0.045	4.318	3.417	0.039
	High Crest	18	3.463	1.451	0.045	4.318	3.417	0.043
Co-Zones	41	3.837	1.060	0.045	4.318	3.417	0.024	
Design	Sandar	20	3.230	0.878	0.132	4.255	3.230	0.132
	Jolla	18	3.922	0.792	0.132	4.255	3.230	0.043
	Mokka More	20	3.750	1.017	0.132	4.255	3.230	0.065
	Primo	21	3.962	0.979	0.132	4.255	3.230	0.038

Location	White Plus	21	3.819	0.732	0.132	4.255	3.230	0.056
	Barbera	26	3.662	1.064	0.132	4.255	3.230	0.076
	Grand Millenium	22	4.255	0.639	0.132	4.255	3.230	0.000
	Xani Cafe	21	4.067	0.621	0.132	4.255	3.230	0.024
	Soho	15	3.947	0.873	0.132	4.255	3.230	0.040
	Titanic	24	3.583	1.037	0.132	4.255	3.230	0.086
	Tche Tche	19	3.263	0.800	0.132	4.255	3.230	0.128
	Roma	17	3.941	0.827	0.132	4.255	3.230	0.040
	Dawa	16	4.038	0.991	0.132	4.255	3.230	0.028
	Dario	15	3.627	0.851	0.132	4.255	3.230	0.081
	High Crest	18	3.256	1.168	0.132	4.255	3.230	0.129
	Co-Zones	41	4.024	1.061	0.132	4.255	3.230	0.030
	Sandar	20	3.600	0.902	0.059	4.556	3.509	0.054
	Jolla	18	4.315	0.566	0.059	4.556	3.509	0.014
	Mokka More	20	4.000	1.076	0.059	4.556	3.509	0.031
	Primo	21	4.556	0.755	0.059	4.556	3.509	0.000
	White Plus	21	4.286	0.608	0.059	4.556	3.509	0.015
	Barbera	26	3.974	0.805	0.059	4.556	3.509	0.033
	Grand Millenium	22	4.545	0.587	0.059	4.556	3.509	0.001
	Hygiene	Xani Cafe	21	4.317	0.619	0.059	4.556	3.509
Soho		15	3.800	1.153	0.059	4.556	3.509	0.043
Titanic		24	3.833	1.341	0.059	4.556	3.509	0.041
Tche Tche		19	3.509	1.135	0.059	4.556	3.509	0.059
Roma		17	4.098	0.537	0.059	4.556	3.509	0.026
Dawa		16	4.063	0.888	0.059	4.556	3.509	0.028
Dario		15	3.933	1.078	0.059	4.556	3.509	0.035
High Crest		18	3.667	1.314	0.059	4.556	3.509	0.050
Co-Zones		41	3.959	1.207	0.059	4.556	3.509	0.034
Sandar		20	3.863	0.745	0.153	4.655	3.403	0.097
Jolla		18	4.417	0.522	0.153	4.655	3.403	0.029
Mokka More		20	4.175	0.960	0.153	4.655	3.403	0.059
Primo		21	4.655	0.678	0.153	4.655	3.403	0.000
White Plus		21	4.095	0.875	0.153	4.655	3.403	0.068
Barbera		26	4.010	0.907	0.153	4.655	3.403	0.079
Grand Millenium		22	4.341	0.554	0.153	4.655	3.403	0.038
Xani Cafe		21	4.107	0.600	0.153	4.655	3.403	0.067
Soho		15	4.400	0.611	0.153	4.655	3.403	0.031
Titanic		24	3.708	1.222	0.153	4.655	3.403	0.116
HRM		Tche Tche	19	3.908	0.673	0.153	4.655	3.403
	Roma	17	4.324	0.474	0.153	4.655	3.403	0.040
	Dawa	16	4.109	0.866	0.153	4.655	3.403	0.067
	Dario	15	4.150	1.072	0.153	4.655	3.403	0.062
	High Crest	18	3.403	1.463	0.153	4.655	3.403	0.153
	Co-Zones	41	3.951	1.031	0.153	4.655	3.403	0.086
	Sandar	20	3.733	0.716	0.061	4.603	3.685	0.058
	Jolla	18	4.343	0.437	0.061	4.603	3.685	0.017
	Mokka More	20	4.175	1.048	0.061	4.603	3.685	0.028
	Primo	21	4.603	0.659	0.061	4.603	3.685	0.000
	White Plus	21	4.310	0.751	0.061	4.603	3.685	0.020
	Barbera	26	4.071	0.866	0.061	4.603	3.685	0.035
	Grand Millenium	22	4.371	0.628	0.061	4.603	3.685	0.015
	Xani Cafe	21	4.246	0.562	0.061	4.603	3.685	0.024
	Soho	15	4.033	0.864	0.061	4.603	3.685	0.038
	Titanic	24	3.819	1.169	0.061	4.603	3.685	0.052
	Tche Tche	19	3.860	0.688	0.061	4.603	3.685	0.049
	Roma	17	4.304	0.508	0.061	4.603	3.685	0.020
	Dawa	16	4.271	0.755	0.061	4.603	3.685	0.022
	Dario	15	4.211	0.878	0.061	4.603	3.685	0.026
High Crest	18	3.685	1.287	0.061	4.603	3.685	0.061	

Food-Quality	Co-Zones	41	3.923	1.047	0.061	4.603	3.685	0.045
	Sandar	20	3.750	0.851	0.305	4.452	3.472	0.219
	Jolla	18	4.361	0.629	0.305	4.452	3.472	0.028
	Mokka More	20	3.967	1.015	0.305	4.452	3.472	0.151
	Primo	21	4.452	0.725	0.305	4.452	3.472	0.000
	White Plus	21	4.024	0.698	0.305	4.452	3.472	0.133
	Barbera	26	3.987	0.721	0.305	4.452	3.472	0.145
	Grand Millenium	22	4.447	0.758	0.305	4.452	3.472	0.002
	Xani Cafe	21	4.302	0.718	0.305	4.452	3.472	0.047
	Soho	15	4.000	0.964	0.305	4.452	3.472	0.141
	Titanic	24	3.785	1.127	0.305	4.452	3.472	0.208
	Tche Tche	19	3.816	0.909	0.305	4.452	3.472	0.198
	Roma	17	4.127	0.605	0.305	4.452	3.472	0.101
	Dawa	16	4.031	0.848	0.305	4.452	3.472	0.131
	Dario	15	3.878	0.860	0.305	4.452	3.472	0.179
	High Crest	18	3.472	1.340	0.305	4.452	3.472	0.305
Ambience	Co-Zones	41	3.720	0.804	0.305	4.452	3.472	0.228
	Sandar	20	3.150	1.021	0.245	4.536	3.150	0.245
	Jolla	18	3.556	1.220	0.245	4.536	3.150	0.173
	Mokka More	20	4.188	0.884	0.245	4.536	3.150	0.062
	Primo	21	4.536	0.788	0.245	4.536	3.150	0.000
	White Plus	21	4.095	0.812	0.245	4.536	3.150	0.078
	Barbera	26	3.962	0.836	0.245	4.536	3.150	0.102
	Grand Millenium	22	4.455	0.730	0.245	4.536	3.150	0.014
	Xani Cafe	21	4.429	0.671	0.245	4.536	3.150	0.019
	Soho	15	3.850	0.812	0.245	4.536	3.150	0.121
	Titanic	24	3.885	0.958	0.245	4.536	3.150	0.115
	Tche Tche	19	3.342	0.891	0.245	4.536	3.150	0.211
	Roma	17	3.985	0.831	0.245	4.536	3.150	0.097
	Dawa	16	4.109	0.962	0.245	4.536	3.150	0.075
	Dario	15	3.717	1.026	0.245	4.536	3.150	0.145
	High Crest	18	3.500	1.207	0.245	4.536	3.150	0.183
Co-Zones	41	3.841	0.985	0.245	4.536	3.150	0.123	

*** N: number of participants from the concerning café-restaurant; S.W.: standardized weight of the concerning criteria; F*: maximum value obtained at concerning criteria among café-restaurants; F⁻: minimum value obtained at concerning criteria among café-restaurants; X_i: minimization of the average sum of the individual regrets per café-restaurant

Table 3 represents customers evaluation about the operations strategies of each café-restaurant. The number of participants for each café-restaurant varies. Secondly, table shows the standardized weights (S.W.) which have been obtained through structural equations modeling (SEM). X_i in the table represents the value of regret only from that criteria in case the concerning café-restaurant is selected. The X_i values have been derived from;

$$X_i = (S.W. \times (F^* - \text{Mean})) / (F^* - F^-)$$

For example, capacity-layout of Sandar café-restaurant have been evaluated by 20 customers as 3.417. This is the mean value of that café-restaurant. Besides, the maximum value that the customers evaluated the capacity-layout of the café-restaurants were 4.318 (Grand Millenium) while the minimum was 3.417 (Sandar). As the S.W. which have been obtained from the SEM was 0.045, hence applying the formula above, regret value of Sandar café-restaurant becomes 0.045. Regret value (X_i) of each café-restaurant have been calculated in the same way. Please see table 3 for the further details.

Table 4. Benchmarking results derived from VIKOR model

Café-Restaurant	Si	Rj	Sj-	Sj+	Rj-	Rj+	V	Qj	Rank
Primo	0.059	0.038	0.924	0.059	0.305	0.038	0.500	0.000	1
Grand Millennium	0.070	0.038	0.924	0.059	0.305	0.038	0.500	0.008	2
Xani Cafe	0.211	0.067	0.924	0.059	0.305	0.038	0.500	0.142	3
Roma	0.348	0.101	0.924	0.059	0.305	0.038	0.500	0.286	4
Dawa	0.371	0.131	0.924	0.059	0.305	0.038	0.500	0.355	5
White Plus	0.401	0.133	0.924	0.059	0.305	0.038	0.500	0.376	6
Jolla	0.315	0.173	0.924	0.059	0.305	0.038	0.500	0.402	7
Soho	0.432	0.141	0.924	0.059	0.305	0.038	0.500	0.409	8
Mokka More	0.412	0.151	0.924	0.059	0.305	0.038	0.500	0.416	9
Barbera	0.500	0.145	0.924	0.059	0.305	0.038	0.500	0.455	10
Dario	0.566	0.179	0.924	0.059	0.305	0.038	0.500	0.557	11
Co-Zones	0.569	0.228	0.924	0.059	0.305	0.038	0.500	0.651	12
Titanic	0.652	0.208	0.924	0.059	0.305	0.038	0.500	0.661	13
Tche Tche	0.775	0.211	0.924	0.059	0.305	0.038	0.500	0.738	14
Sandar	0.849	0.245	0.924	0.059	0.305	0.038	0.500	0.845	15
High Crest	0.924	0.305	0.924	0.059	0.305	0.038	0.500	1.000	16

Given in the Table 4, Qj represents closeness to the ideal solution based on the all alternatives together. It is not necessarily to be the absolute ideal, but competitively with the other alternatives in the same market. Results of global utility regret (Sj) and (Rj) values show consistency with the maximum utility (Qj) that "Primo" is the café-restaurant which manages the operations strategies better than the rivals. However, Grand Millennium can be estimated as equal with the Primo as the Qj value is very close to zero. Besides, Sandar, High Crest, and Tche

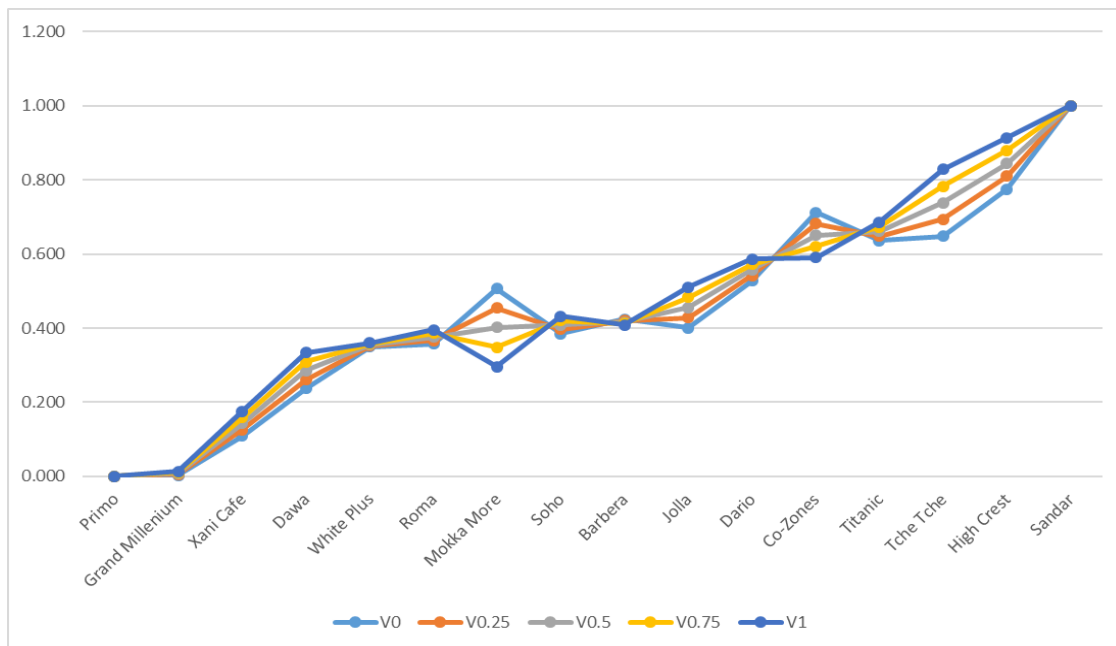
Tche were the café-restaurants which apply those strategies less efficiently than the competitors.

Further, the sensitivity analysis has been conducted through increasing and decreasing the V coefficient. As standard, initially V has been estimated as 0.5. The results in the Table 4 have been derived based on this value. Besides, we have tested the results based on V coefficient 0, 0.25, 0.5, 0.75, and 1. The Table 5 shows the details.

Table 5. Sensitivity analysis results

Café-Restaurant	V0	V0.25	V0.5	V0.75	V1
Primo	0.000	0.000	0.000	0.000	0.000
Grand Millennium	0.002	0.005	0.008	0.010	0.013
Xani Cafe	0.109	0.126	0.142	0.159	0.175
Dawa	0.237	0.261	0.286	0.310	0.334
White Plus	0.349	0.352	0.355	0.358	0.361
Roma	0.358	0.367	0.376	0.386	0.395
Mokka More	0.507	0.454	0.402	0.349	0.296
Soho	0.386	0.397	0.409	0.420	0.432
Barbera	0.424	0.420	0.416	0.412	0.408
Jolla	0.401	0.428	0.455	0.483	0.510
Dario	0.528	0.543	0.557	0.572	0.587
Co-Zones	0.712	0.682	0.651	0.621	0.590
Titanic	0.636	0.648	0.661	0.673	0.685
Tche Tche	0.648	0.693	0.738	0.783	0.828
High Crest	0.776	0.810	0.845	0.879	0.914
Sandar	1.000	1.000	1.000	1.000	1.000

Figure 2 Sensitivity analysis results



Given in the Table 5, by all V values, Primo café-restaurant becomes the highest ranked among all other rivals where the Grand Millennium keeps very close to Primo at each V value. Secondly, it has been observed that as the V coefficient value increases, Qj values of the café-restaurant also increased. Besides, it didn't affect the rank of the café-restaurants at most cases. Therefore, it can be concluded that the ranks of the café-restaurants are calculated appropriately.

Conclusions & Suggestions

The aim of this paper was to benchmark the efficiency of operations strategies in the café-restaurants and test the impact of them on the customer satisfaction. It has been observed that operations strategies have explained 72 percent of the variance on the customer satisfaction. Hence, they are very important pillars to increase the customer satisfaction in this sector. Although all of the determinants of operations strategies have been important for the customer satisfaction, mainly food quality (0.683) and ambience (0.549) have been prominent dimensions which have been more important than other dimensions.

It has been observed that food quality of the café-restaurants is the most important element of operations strategies which impact the customer satisfaction more than any other dimension. Due to the prior antecedents of the food quality were hygiene (0.43), design (0.27), location (0.12), and capacity-layout (0.05) have been indicators respectively. When the café-restaurants have been ranked from the food quality point of view, Primo and Grand Millennium were the better than

other café-restaurants. Secondly, Xani Café and Jolla were also good performing café-restaurants after Primo and Grand Millennium. Besides, High Crest, Co-Zones, and Sandar have obtained least evaluation marks from the customers. Therefore, managers should;

- Increase the hygiene level and sensibility of the café-restaurants
- Design of the café restaurants should be re-planned and developed

As the ambience is the second most important element that managers of café-restaurant should care about the antecedents of that dimension, become preliminarily important. When the antecedents of the ambience elaborated, it has been seen that design (0.38), hygiene (0.25), capacity-layout (0.19), and location (0.1) of café-restaurant play important roles respectively.

When the design dimension has been elaborated based on the café-restaurants, it can be observed that Sandar and High Crest has the weaker design strategy than the competitors while Xani, Grand Millennium, and Dawa café-restaurants had the best design strategies. Moreover, it has been observed that the average of design among those

café-restaurants based on the customer evaluations were 3.772. Besides, Sandar (3.230), High Crest (3.256), Tche Tche (3.263), Titanic (3.583), and Dario (3.627) have been below that average and need further developments in their design of café-restaurants so that they can improve their perception of ambience and consequently satisfaction of the customers. To do this, the managers should;

- Redesign the pictures/paintings on the wall to be more beautiful
- Design flowers (may be increase the variety and quantity) to smell better
- Colors of the café should be redesigned based on the pleasures of the target customers
- Tables, chairs, and decors can be redesigned based on the pleasures of the target customers.

Secondly important element in the café-restaurants have been human resources management. Evaluating the competitors, it has been observed that Primo, Grand Millennium, Jolla, White Plus, Roma, Dawa, and Xani were the café-restaurants which have good human resources management which satisfy the customers' demands. Besides, High Crest, Sandar, Titanic, and Tche Tche have been less evaluated than the competitors. However, those café-restaurants have been below the average. Therefore, they should;

- Train staff to be more friendly, polite, and helpful with the customers
- Train staff to meet customers warmly and professionally (not unceremonious)
- Train staff to response the orders and complaints urgently and inform the customers back
- Train staff about knowledge of the variety and quality of the beverages and foods
- Wear them professionally, nicely, aesthetics, and ironed

Hygiene was one of the most important elements which impacts the ambience, food quality, and the human resources management. Therefore, elaboration of the firms in this manner would be important. The evaluation results obtained from the customers have shown that High Crest and Titanic have been the well below the standard of evaluations while Primo, Jolla, and Soho had the competitive advantage in this field. As the hygiene perceptions of the customers impact ambience, human resources management, and

food quality, the café-restaurant managers should;

- Train staff clean their hands, faces, be shaved...etc. and seem very clean to the customers every time
- Toilets be cleaned every time
- Plates, glasses, forks, tables, etc. be cleaned properly every time
- Ground, windows, chairs...etc. cleaned properly every time

It has been observed that food quality (0.683), ambience (0.549) have been the leading operations strategies in café-restaurants which impact the customer satisfaction mostly. Furthermore, it has been observed that food quality has been mainly impacted by hygiene (0.43) and design (0.27).

As every research, this study also contains some limitations. Initially, the study is limited with Iraq and cannot be generalized to other countries. Secondly, the number of café-restaurants have been limited due to the willingness of the customers and managers to participate in the study. The further researches can be studied in various countries and the model can be tested in different sectors.

Reference

- Allan, F. C. (1993). Practical Aspects for Information Professionals. *Special libraries*, 84, 123-123.
- Aydinli, C., & Demir, A. (2015). Impact of non-technical dimensions of service quality on the satisfaction, loyalty, and the willingness to pay more: a cross-national research on GSM operators. *International Journal of Economics, Commerce and Management*, 3(11), 1-16.
- Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of marketing*, 56(2), 57-71.
- Bojanic, D. C., & Drew Rosen, L. (1994). Measuring service quality in restaurants: an application of the SERVQUAL instrument. *Hospitality Research Journal*, 18(1), 3-14.
- Budur, T. & Demir, A. (2019a). Leadership Effects on Employee Perception about CSR in Kurdistan Region of Iraq. *International Journal of Social Sciences & Educational Studies*, 5(4), 184-192.
- Budur, T. B. (2018). Analytic Hierarchy Process to Evaluate Corporate Image, Trust, and Switching Cost of GSM Operators: A Case of Kurdistan Region of Iraq. *International Journal of Social Sciences & Educational Studies*, 5(2), 241-250.

- Budur, T., Rashid, C. A., & Poturak, M. (2018). Students perceptions on university selection, decision making process: A case study in Kurdistan Region of Iraq. *International Journal of Social Sciences & Educational Studies*, 5(1), 133-144.
- Bujisic, M., Hutchinson, J., & Parsa, H. G. (2014). The effects of restaurant quality attributes on customer behavioral intentions. *International Journal of Contemporary Hospitality Management*, 26(8), 1270-1291.
- Chang, K. (2000). The impact of perceived physical environments on customers' satisfaction and return intentions. *Journal of Professional Services Marketing*, 21(2), 75-85
- Chen, Y.C.D. and Lee, C.S. (2018), "Is it the staff or is it the food? How the attire of restaurant employees affects customer judgments of food quality", *British Food Journal*, Vol. 120 No. 6, pp. 1223-1235.
- Craig, C.S. (1984), "Models of the retail location process: a review", *Journal of Retailing*, Vol. 60 No. 1, pp. 5-36.
- Demir, A. (2019a). A Benchmarking of Service Quality in Telecommunication Services: Case Study in Kurdistan Region of Iraq. *International Journal of Social Sciences and Educational Studies*, 5(3), 216-231.
- Demir, A. (2019b). THE IMPACT OF STRATEGIC OPERATIONS MANAGEMENT DECISIONS ON SHOPPERS' WELLBEING. *Asian Academy of Management Journal*, 24(1).
- Demir, A. & Budur, T. (2019). Roles of Leadership Styles in Corporate Social Responsibility to Non- Governmental Organizations (NGOs). *International Journal of Social Sciences & Educational Studies*, 5(4), 174-183.
- Demir, A., & Aydinli, C. (2016). Exploring the Quality Dimensions of Mobile Instant Messaging Applications and Effects of Them on Customer Satisfaction. *International Journal of Computer Theory and Applications*, 9(22), 1-15.
- Dyer, J. S. (1990). Remarks on the analytic hierarchy process. *Management science*, 36(3), 249-258.
- Haghighi, M., Dorosti, A., Rahnama, A., & Hoseinpour, A. (2012). Evaluation of Factors Affecting Customer Loyalty in the Restaurant Industry. *African Journal of Business Management*, 6(14), 5039-5046.
- Heung, V.C. and Gu, T. (2012), "Influence of restaurant atmospherics on patron satisfaction and behavioral intentions", *International Journal of Hospitality Management*, Vol. 31 No. 4, pp. 1167-1177.
- Jabar, a., Kamal, s., Kamal, t., & Top, c. (2019). Benchmarking hotels: applying analytic hierarchy process.
- KAZANÇOĞLU, Y., & KAZANÇOĞLU, İ. (2013). Benchmarking service quality performance of airlines in Turkey. *Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 8(1).
- Kotler, P., 2000, *Marketing Management*. 10th ed., New Jersey, Prentice-Hall.
- Koys, D. J. (2003). How the achievement of human-resources goals drives restaurant performance. *Cornell Hotel and Restaurant Administration Quarterly*, 44(1), 17-24.
- Lee, H., & Kim, C. (2014). Benchmarking of service quality with data envelopment analysis. *Expert Systems with Applications*, 41(8), 3761-3768.
- Nikou, S., Mezei, J., & Bouwman, H. (2011, June). Analytic Hierarchy Process (AHP) Approach for Selecting Mobile Service Category (Consumers' Preferences). In 2011 10th International Conference on Mobile Business (pp. 119-128). IEEE.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. *Journal of retailing*, 64(1), 12.
- Pecotić, M., Bazdin, V., & Samardžija, J. (2014). Interior design in restaurants as a factor influencing customer satisfaction. *RIThink*, 4, 10-14.
- Rust, R. T., & Oliver, R. W. (1994). The death of advertising. *Journal of Advertising*, 23(4), 71-77.
- Rynes, S.L., Colbert, A.E., Brown, K.G., 2002. HR professionals' beliefs about effective HR practices: correspondence between research and practice. *HR Manag.* 41, 149-174 (org/10.1002/hrm.10029).
- Ryu, K., & Han, H. (2010). Influence of the quality of food, service, and physical environment on customer satisfaction and behavioral intention in quick-casual restaurants: Moderating role of perceived price. *Journal of Hospitality & Tourism Research*, 34(3), 310-329.
- Ryu, K., Lee, H.R. and Gon Kim, W. (2012), "The influence of the quality of the physical environment, food, and service on restaurant image, customer perceived value, customer satisfaction, and behavioral intentions", *International Journal of Contemporary Hospitality Management*, Vol. 24 No. 2, pp. 200-223.
- Saaty, T. L. (1990). An exposition of the AHP in reply to the paper "remarks on the analytic hierarchy process". *Management science*, 36(3), 259-268.
- Saaty, T. L. (2013). *Analytic network process* (pp. 64-72). Springer US.
- Saglik, E., Gulluce, A., Kaya, U., & Ozhan, C. (2014). Service quality and customer satisfaction relationship: A research in Erzurum Ataturk

- university refectory. *American International Journal of Contemporary Research*, 4(1), 100-117.
- Sedgwick, S. (1995). Benchmarking and best practice: Promise and performance. *Australian Journal of Public Administration*, 54(3), 401-407.
- Sekhar, S. C. (2010). Full Length Research Paper. *African Journal of Business Management*, 4(6), 882-885.
- Shetty, Y. K. (1993). Aiming high: competitive benchmarking for superior performance. *Long Range Planning*, 26(1), 39-44.
- Singh, B., Grover, S., & Singh, V. (2017). An empirical study of benchmarking evaluation using MCDM in service industries. *Managerial Auditing Journal*, 32(2), 111-147.
- Spendolini, M. J., & Spendolini, M. J. (1992). *The benchmarking book* (Vol. 4). New York, NY: Amacom.
- Torlak, N. G., Demir, A., & Budur, T. (2019). Impact of operations management strategies on customer satisfaction and behavioral intentions at café-restaurants. *International Journal of Productivity and Performance Management*.
- Wang, L., Chu, J., & Wu, J. (2007). Selection of optimum maintenance strategies based on a fuzzy analytic hierarchy process. *International journal of production economics*, 107(1), 151-163.
- Watson, G. H. (1993). How process benchmarking supports corporate strategy. *Planning Review*, 21(1), 12-15.
- Worsfold, P. (1999). HRM, performance, commitment and service quality in the hotel industry. *International Journal of Contemporary Hospitality Management*, 11(7), 340-348.
- Yoo, S. A. (2012). Customer perceptions of restaurant cleanliness: A cross cultural study (Doctoral dissertation, Virginia Tech).
- Zerella, S., von Treuer, K., & Albrecht, S. L. (2017). The influence of office layout features on employee perception of organizational culture. *Journal of Environmental Psychology*, 54, 1-10.