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EVALUATION OF ENTERPRISES' USE OF WEBSITES: THE CASE OF TURKEY

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Abstract

Websites are the reflections of the enterprises as being a key success factor in terms of competition and exchanging information. This research aims to evaluate the website usage of 11 enterprises based on 7 criteria collected from the Turkish Statistical Institute (TUIK). For this reason, WASPAS and TOPSIS, which are among the Multi-Criteria Decision Making Methods, were used to evaluate the performance of the enterprises. As a result of the analysis, the most effective enterprise for the last 4 years is the "accommodation and food service activities", while the "professional, scientific and support activities" enterprise is the last in 2020 ranking. These analysis results help to provide a more comprehensive understanding of website use in Turkey. The findings and conclusion address notable implications for academics and practitioners.

Keywords: *Multi-Criteria Decision Making, Website Usage, Strategic Management, WASPAS, TOPSIS.*

İŞLETMELERİN WEBSİTE KULLANIMININ DEĞERLENDİRİLMESİ: TÜRKİYE ÖRNEĞİ

Özet

Web siteleri, rekabet ve bilgi alışverişi açısından önemli bir başarı faktörü olarak işletmelerin yansımalarıdır. Bu araştırma, Türkiye İstatistik Kurumu'ndan (TÜİK) toplanan 7 kriter üzerinden 11 işletmenin web sitesi kullanımlarını değerlendirmeyi amaçlamaktadır. Bu nedenle işletmelerin performanslarını değerlendirmek amacıyla Çok Kriterli Karar Verme Yöntemlerinden WASPAS ve TOPSIS kullanılmıştır. Analiz sonucunda, son 4 yılın en etkin işletmeleri "konaklama ve yemek hizmeti faaliyetleri" olurken, "Mesleki, bilimsel ve teknik faaliyetleri" 2020 sıralamasında son sırada yer almaktadır. Bu analiz sonuçları, Türkiye'deki web sitesi kullanımının daha kapsamlı bir şekilde anlaşılmasına yardımcı olmaktadır. Bulgularda, akademisyenler ve uygulayıcılar için dikkate değer çıkarımlar ele almaktadır.

Anahtar Kelimeler: *Çok Kriterli Karar Verme, Web sitesi kullanımı, Stratejik Yönetim, WASPAS, TOPSIS.*

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1. Introduction

There has been a massive change since the development of internet, yet the information technology is still evolving today. The expansion of internet has introduced new economy paradigm that can be framed as the use of internet in various businesses witnessing the rapid development of current technological developments throughout the world. Businesses were supported by the increase in mobile phone and internet usage, increasing communication and becoming a shopping environment for groups in the business world. With the rapid development of the industry, competition has increased and products and services have become increasingly easier to find faster and more affordable for the consumers.

The invasion of internet usage around the world eased the consumers' gathering information and developments concurrently. Consumers desire and increased use of existing technology in their transactions opened a new door for various numbers of buyers and sellers both parties meeting the needs and expectations over the internet. Hence, creation of any existing information systems and online strategies meant a path to gain competitive advantage for businesses.

This study aims to analyze the website usage of some enterprises as designed of a virtual space to share information among users to provide services via their websites (social media applications are excluded) by using MCDM. By exploring the services given through their websites, the authors set criteria. The analysis of given criteria and their relevance to 11 sector enterprises reveals some managerial implications such as; the more information given in the website would show the characteristics of the initiative, also outlines that the designing websites or mobile applications are expected to be used in communicating with all stakeholders and competing with the rivals.

2. Literature Review

With the emergence and widespread use of the internet in the business world as in every field, companies have the opportunity to communicate with all social stakeholders, especially with their customers, by creating their websites on the internet. According to Poulter et al., (1999), a website can be defined as a collection of pages that are generally related to each other and placed on the same server. Especially since the early 1990s, the World Wide Web has started to spread and the interest in websites has increased accordingly. The Web was developed in 1980 by Tim Berners-Lee in a physics laboratory in Switzerland. The Web, which was used as a library by physicists, has now become an international market for companies (Sever, 2000).

The global competition formed the increase in the effectiveness of websites in all initiatives in various sectors. It has become increasingly common for companies to use their websites, especially for communication. According to Berthon et al., (1996); Web sites are a new form of media with features such as users' ability to access easily, relatively cheap compared to other media tools, global accessibility, and interaction when necessary (Başfırıncı, 2008). Akar (2006) emphasizes that websites have a function that enables companies to differentiate from their competitors and add speed and efficiency to marketing activities (Çiçek et al., 2010). At this point, it is especially remarkable that it gains efficiency.

There are numerous researches exploring the effects of information and communication technology usage in the concurrent literature. Rather than showing the positive contribution in the relationship with consumers or being a critical advantage in completion, the research is mainly focusing the antecedents of this contribution. Perceived usefulness, electronic Word of Mouth, credibility, trust, repurchase intention are primary variables subjected to ICT research (Cheung et al, 2008; Sicilia & Ruiz, 2010; Matute et al., 2016). Many of the mentioned variables are based on Technology Acceptance Model (TAM), proposed by Davis (1986) and developed via further research of Venkates and Davis 2000 research and Vanketesh 2003, 2008 and 2013. Hence perceived ease of use and perceived usefulness have been two main drivers in the ICT usage literature. Furthermore, visual appeal has also been explores as the predictor of trust and ease of use (Cyr, 2008; Vance et al.,2008, Pengnate & Sarathy, 2017).

In terms of competing in the sector, collaborative relations with customers and suppliers are undeniably important. Customers and suppliers would like to develop a relationship through the variables of TAM and Service Quality model forming consumer's post transaction general trust model in B2C e-business (Lou & Ma, 2013). Using websites are bridges of value creation for enterprises as such other various key relation variables including familiarity, perceived safety, perceived reputation, product quality and service quality are to be in questioned. Therefore, in guidance with previous research, it will not be wrong that the criteria are very much aligned with the variables searched in ICT research (Table 1.)

Table 1. The Criteria of Information and Communication Technology (ICT) Usage in Enterprises

C1	Enterprises having websites
C2	Description of goods and services
C3	Online ordering or reservation or booking
C4	Possibility for visitors to customize or design online goods and services
C5	Tracking or status of orders placed
C6	Personalized content in the website for regular/recurrent visitors
C7	Links or references to the enterprise's social media profiles

Source: TURKSTAT, Survey on Information and Communication Technology Usage in Enterprises, 2016-2020.

Regarding the main figures of the ICT usage of enterprises 2020 survey, it can be seen that the number of the website ownership rate is 53.7% (startups with 10 or more employees), 89.2% (+250 employees) and 74.1% (50-249 employees) which refering that in Turkey the website usage is still in the growing period. Although the concurrent status is far beyond the desired, in year 2019, 77.1% of startups with 10 or more e-sales employees used their own websites or mobile applications, while 55.7% used online stores and marketplaces as e-sales platforms, where different startups can sell (TUIK, 2020). Additionally the research literature in Turkey supporting that the criteria is worth to examine considering that evaluations are done within one sector or company based, such as; use of corporate websites in the e-recruitment process (Öksüz, 2011), the effectiveness of hotel websites in Turkey (Karabağ et al., 2010), examining the effective use of marketing communication on the websites of food and beverage businesses (Alyakut, 2020), evaluation of hospitality websites (Ateş & Boz, 2015), evaluation of websites of Turkish airline companies (Güneş et al., 2013), a comparative assessment of the websites of gastronomic tourism businesses (Uluçay, 2017), examining the tendency of businesses to use websites in their marketing activities (Tan et al., 2004), evaluation of websites of local businesses operating in Sivas province (İnce et al., 2016), evaluation of public accountants on their websites in Turkey (Yıldız & Karaca, 2008).

According to the examined literature, seeing that the determinants of website usage and some facilities of enterprises were evaluated, the authors realized that those evaluations were generally carried out through content analysis (See Table 2.). Apart from the ICT usage in enterprises, there is a lack of research utilizing MCDM methods in evaluating the effectiveness of website usage or a research evaluating more than one enterprise comparing among others (not sector or enterprise specific).

The contribution of this study is to evaluate website usage through its facilities of 11 enterprises to determine the most effective enterprises in terms of website usage with WASPAS and TOPSIS methods which are among the MCDM methods. This will allow researchers and managers to understand the construct of their websites in according with the variables; therefore in terms of relations with consumers and suppliers, they would model and use those techniques as a managerial tool for further assessments.

Table 2. MCDM Literature Review

Research with WASPAS Technique	
Parametric optimization of the machining process	(Zavadskas et al., 2015)
Revealing the WASPAS-G method used with gray values in the example of contractor selection	(Zavadskas et al., 2015)
Green supplier selection	(Keshavarz Ghorabaee et al., 2016)
Personnel selection	(Karabasevic et al., 2016), (Urosevic et al., 2017)
Deep water port selection	(Bagočius et al., 2013)
Ecological-economic assessment of modernization of multi-household buildings	(Staniūnas et al., 2013)
Assessment of alternative sites for waste incineration plant construction	(Zavadskas et al., 2015)
Time and attendance software system selection of a private hospital	(Tuş & Aytaç Adalı, 2019)
Selection of the best shopping center location in Vilnius with Fuzzy AHP and Fuzzy WASPAS methods	(Turskis et al., 2015)
Retail store performance measurement	(Ilbahar & Kahraman, 2018)
Evaluation of the negative effects of risks on the road construction project	(Badalpur & Nurbakhsh, 2019)
Electric vehicle charging station site selection	(Ren et al., 2019)
Choosing a garage place for housing	(Bausys & Juodagalviene, 2017)
Choosing the optimal indoor environment	(Zavadskas et al., 2016)
Selection of the most suitable provider for a textile business operating in Denizli province	(Yurdoğlu & Kundakçı, 2017)
Performance analysis of public banks	(Ural et al., 2018)
Ranking of the Provinces in Turkey by Livability Criteria	(Özbek, 2019)

Table 2. MCDM Literature Review (cont.)

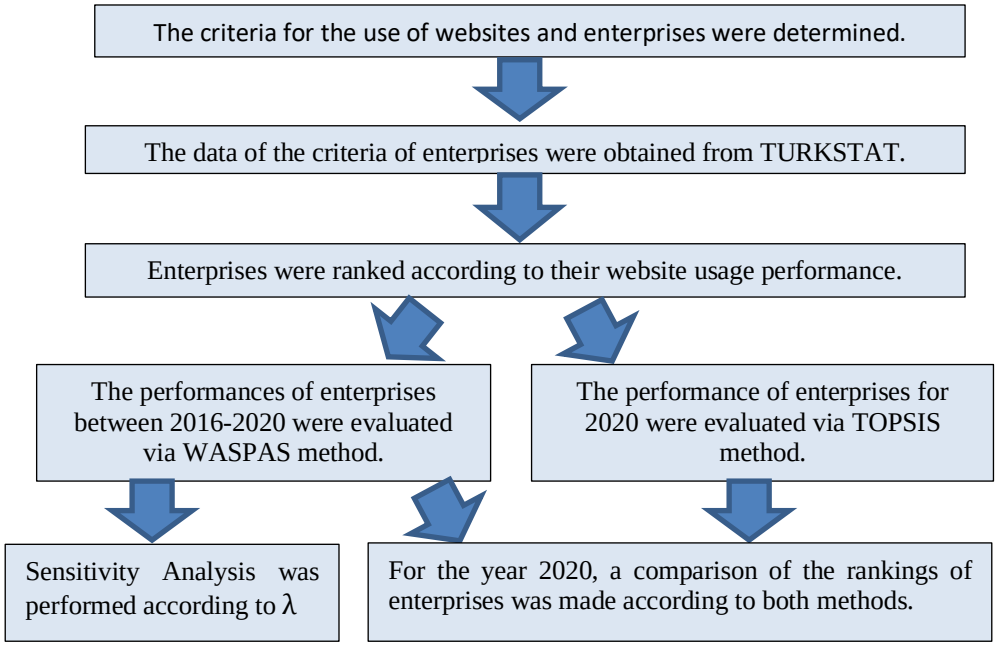
Research with WASPAS Technique	
Selection of appropriate renewable energy sources for Turkey	(Karaca & Ulutaş, 2018)
Evaluation of financial performance of companies listed on Borsa İstanbul AŞ Electricity index (XELKT)	(Orçun, 2019)
Research with TOPSIS Technique	
Evaluation of player performances	(Karaatlı et al., 2014)
Evaluation of ADIM universities	(Ömürbek et al., 2014)
Financial performance analysis	(Uygurtürk & Korkmaz, 2012)
Supplier selection	(Boran et al., 2009), (Supçiller & Çapraz, 2011)
Enterprise project management software selection	(Ömürbek et al., 2015)
Coal mines safety assessment	(Li et al., 2011)
Evaluating the performance of global retail actors during the crisis period	(Özgüven, 2011)
Evaluation of the competitive advantages of shopping websites	(Sun & Lin, 2009)
Web service selection	(Lo et al., 2010)
Machine selection	(Athawale & Chakraborty, 2010)
Information system selection	(Huang, 2008)
Evaluation of websites of virtual stores	(Dündar et al., 2007)
Selection of computer integrated manufacturing technologies	(İç, 2012)
Assessment of Chinese hi-tech industry's urban competitiveness	(Wang & Wang, 2014)
Sorting renewable energy supply systems	(Şengül et al.., 2015)

Human resources manager selection	(Kusumawardani & Agintiara, 2015)
Establishment location selection	(Tırmıkçıoğlu Çınar, 2010)
Performance analysis of insurance companies	(Perçin & Sönmez, 2018)
The evaluation of quality of life in cities located in Turkey	(Ayyıldız & Demirci, 2018)
Evaluation of academic research projects	(Arıbaş & Özcan, 2016)
Research with both WASPAS and TOPSIS Techniques	
Car-sharing station selection	(Deveci et al., 2018)
Solving the problems of daylighting and tradition continuity in a reconstructed vernacular building	(Šiožinytė & Antuchevičienė, 2013)
Water-level fluctuation (WLF) of Panchet dam in India and assessment of its human risk	(Bid & Siddique, 2019)
Flexible-green supplier selection	(Xiong et al., 2020)
Fiber selection aimed at strengthening asphalt concrete mixes	(Slebi-Acevedo et al., 2019)

3. Methodology

In the study, it was aimed to evaluate the website usage of 11 enterprises and to determine the most effective enterprise, those are *Manufacturing (A), Electricity, gas and steam, water supply, sewerage and waste management (B), Construction (C), Wholesale and retail trade; repair of motor vehicles and motorcycles (D), Transportation and storage (E), Accommodation and food service activities (F), Information and communication (G), Real estate activities (H), Professional, scientific and support activities (I), Administrative and support activities (J), Attempts to repair computers and communication equipment (K). The enterprises* are evaluated through six criteria as; Enterprises having websites, Description of goods and services, Online ordering or reservation or booking, Possibility for visitors to customise or design online goods and services, Tracking or status of orders placed, Personalised content in the website for regular/recurrent visitors and Links or references to the enterprise's social media profiles. In the evaluation process, the relevant data of the enterprises between 2016-2020 gathered from Turkey Statistics Institute (TURKSTAT) was used. WASPAS and TOPSIS methods were used in the evaluation. Enterprises were evaluated separately for each year using the WASPAS method. In addition to these evaluations, an evaluation was made for 2020 with the TOPSIS method. The flow chart of the study is given in Figure 1.

Figure 1. The flow chart of the study



3.1. WASPAS Method

The WASPAS (Weighted Aggregated Sum Product Assessment) method was introduced by Zavadskas, Turskis and Antucheviciene in 2012 (Keshavarz Ghorabaee et al., 2017). WASPAS is a method developed by integrating the Weighted Sum Model (WSM-Weighted Sum Model) and the Weighted Product Model (WPM), which are among the multi-criteria decision-making models (Chakraborty et. al., 2015). The purpose of the WASPAS method is to ensure that alternatives are evaluated and ranked with a higher level of reliability (Mishra ve Rani, 2018: 1049).

The steps of the WASPAS method are given below (Chakraborty & Zavadskas, 2014; Zavadskas et al., 2012):

Step 1: Creating the Decision Matrix

In the first step of the method, a decision matrix represented by X consisting of x_{ij} values is created.

$$X = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \dots & \dots & \dots & \dots \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix} \quad (1)$$

Here;

m: number of alternatives
n: number of evaluation criteria
x_{ij}: j. according to the criteria i. the value of the alternative

Step 2: Normalizing the Decision Matrix

The linear normalization process is applied to the values that have the decision matrix. The normalization process is carried out with the help of Equation (2) for benefit criteria and Equation (3) for cost side criteria.

$$\bar{x}_{ij} = \frac{x_{ij}}{max_i x_{ij}} \quad (2)$$

$$\bar{x}_{ij} = \frac{min_i x_{ij}}{x_{ij}} \quad (3)$$

Step 3: Based on the Weighted Sum Method (WSM) i. Calculating the Total Relative Importance of the Alternative

According to the Weighted Sum Method (WSM) i. The total relative importance of the alternative ($Q_i^{(1)}$) is calculated with the help of Equation (4).

$$Q_i^{(1)} = \sum_{j=1}^{n} \bar{x}_{ij} w_j \quad (4)$$

w_j: j. relative importance value of criterion

Step 4: Based on Weighted Product Method (WPM) i. Calculating the Total Relative Importance of the Alternative

According to the weighted product method (WPM) i. The total relative importance of the alternative ($Q_i^{(2)}$) is calculated with the help of Equation (5).

$$Q_i^{(2)} = \prod_{j=1}^{n} (\bar{x}_{ij})^{w_j} \quad (5)$$

Step 5: Calculation of Weighted Common General Criteria Value of Weighted Sum and Weighted Product Methods

The values obtained from the Weighted Sum and Weighted Product Methods are integrated with equal weight. The common general criterion value is calculated with the help of Equation (6).

$$Q_i = 0{,}5Q_i^{(1)} + 0{,}5Q_i^{(2)} = 0{,}5\sum_{j=1}^{n}\bar{x}_{ij}w_j + 0{,}5\prod_{j=1}^{n}(\bar{x}_{ij})^{w_j} \qquad (6)$$

Step 6: Calculating the General Total Relative Importance of Alternatives

The total relative importance of alternatives should be determined in order to increase the accuracy and efficiency of alternative rankings in the decision-making process. In determining the total relative importance of the alternatives, the formula given in Equation (7) is used.

$$Q_i = \lambda Q_i^{(1)} + (1-\lambda)Q_i^{(2)} = \lambda\sum_{j=1}^{n}\bar{x}_{ij}w_j + (1-\lambda)\prod_{j=1}^{n}(\bar{x}_{ij})^{w_j} \qquad (7)$$

Alternatives are listed according to their Q_i values. The alternative with the highest Q_i value is determined as the best alternative. λ value takes a value between 0 and 1. WASPAS method transforms into weighted product method when λ value is 0, and weighted sum method when λ value is 1.

4. Findings

In this study, the use of website effectiveness of enterprises in Turkey between the years 2016-2020 with WASPAS evaluation method using the TURKSTAT data is made. Only the findings of the solution steps for the year 2020 of the evaluation made with WASPAS are presented. In the evaluation of other years, the solution steps made in 2020 were used. Table 3 shows the decision matrix for 2020.

Table 3. Decision Matrix

Enterprises	C1	C2	C3	C4	C5	C6	C7
A	59,4	99,3	7,2	10,1	6,6	14,4	47,4
B	73,0	99,1	2,4	2,9	2,0	18,5	41,5
C	40,0	97,5	4,8	9,7	4,2	18,1	49,6
D	53,9	98,6	18,4	13,0	17,4	20,0	55,6
E	39,8	96,5	9,7	11,5	9,6	22,9	54,7
F	54,4	99,6	29,9	20,7	22,5	21,7	68,0
G	87,5	97,8	10,9	11,5	7,9	18,9	72,0
H	58,6	95,7	6,3	13,0	4,3	13,8	65,2
I	70,7	98,6	1,6	6,7	1,4	9,9	45,8
J	45,9	99,2	13,4	14,8	11,7	16,5	59,8
K	77,7	100,0	10,7	8,9	10,7	12,5	51,7
Criteria Characteristic	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit	Benefit

For the WASPAS method, first of all, these criteria considered in benefit type are normalized separately with Equation (2). The results of these operations are given in Table 4 as a normalized decision matrix.

Table 4. Normalized Decision Matrix

Enterprises	C1	C2	C3	C4	C5	C6	C7
A	0,679	0,993	0,242	0,487	0,292	0,628	0,658
B	0,835	0,991	0,079	0,142	0,090	0,811	0,576
C	0,457	0,975	0,159	0,467	0,185	0,791	0,688
D	0,616	0,986	0,615	0,627	0,771	0,877	0,771
E	0,455	0,965	0,324	0,557	0,426	1,000	0,760
F	0,622	0,996	1,000	1,000	1,000	0,947	0,943

Table 4. Normalized Decision Matrix (cont.)

Enterprises	C1	C2	C3	C4	C5	C6	C7
G	1,000	0,978	0,365	0,554	0,350	0,828	1,000
H	0,670	0,957	0,211	0,626	0,189	0,605	0,904
I	0,808	0,986	0,053	0,323	0,064	0,433	0,636
J	0,525	0,992	0,446	0,716	0,519	0,723	0,830
K	0,888	1,000	0,359	0,429	0,476	0,545	0,717
Criteria Weights	0,143	0,143	0,143	0,143	0,143	0,143	0,143

Total relative importance of the alternatives was calculated separately with WSM and WPM methods and Equation (4) and Equation (5). During these calculations, criteria weights were taken equal (1/7 = 0.143). The final total relative importance of each alternative was calculated with Equation (6) and given in Table 5. In addition, the sensitivity was followed by λ values between 0-1. No change was observed in the rankings.

Table 5. Final total relative importance of each enterprise

Enterprises	$Q^{(1)}$	$Q^{(2)}$	$Q^{(0,5-0,5)}$	$Q^{(0,1-0,9)}$	$Q^{(0,2-0,8)}$	$Q^{(0,3-0,7)}$	$Q^{(0,4-0,6)}$	$Q^{(0,6-0,4)}$	$Q^{(0,7-0,3)}$	$Q^{(0,8-0,2)}$	$Q^{(0,9-0,1)}$
A	0,569	0,515	0,542	0,520	0,526	0,531	0,536	0,547	0,553	0,558	0,563
B	0,503	0,326	0,415	0,344	0,361	0,379	0,397	0,432	0,450	0,468	0,486
C	0,532	0,443	0,487	0,452	0,461	0,469	0,478	0,496	0,505	0,514	0,523
D	0,752	0,741	0,746	0,742	0,743	0,744	0,745	0,747	0,749	0,750	0,751
E	0,641	0,593	0,617	0,597	0,602	0,607	0,612	0,622	0,627	0,631	0,636
F	0,930	0,919	0,924	0,920	0,921	0,922	0,923	0,925	0,927	0,928	0,929
G	0,725	0,665	0,695	0,671	0,677	0,683	0,689	0,701	0,707	0,713	0,719
H	0,595	0,508	0,551	0,517	0,526	0,534	0,543	0,560	0,569	0,577	0,586
I	0,472	0,304	0,388	0,321	0,337	0,354	0,371	0,405	0,421	0,438	0,455
J	0,679	0,655	0,667	0,658	0,660	0,662	0,665	0,669	0,672	0,674	0,676
K	0,631	0,592	0,611	0,596	0,600	0,603	0,607	0,615	0,619	0,623	0,627

Looking at the rankings at Table 6, some enterprises have not changed over the years, and some have also varied. The Accommodation and food service activities (F) enterprise has been ranked first for the last 4 years, however, was second in 2016. Wholesale and retail trade; the repair of motor vehicles and motorcycles (D) enterprise ranked fourth for the first three years, and ranked third and second in the following years. The Information and communication (G) enterprise ranked third for 3 years and

second for 2 years. The Administrative and support activities (J) enterprise ranked fourth in 2020, but its order varied in other years. The ordering of Transportation and storage (E), Attempts to repair computers and communication equipment (K), Real estate activities (H), Manufacturing (A), Construction (C) enterprises have also varied over the years. The enterprise of electricity, gas and steam, water supply, sewerage and waste management (B) ranked tenth in recent years. Although the Professional, scientific and support activities (I) enterprise took the last place in 2020, it was ranked ninth and eighth in previous years.

Table 6. Ranking of Enterprises between 2016-2020

Enterprises	Q(2016)	Rank	Q(2017)	Rank	Q(2018)	Rank	Q(2019)	Rank	Q(2020)	Rank
A	0,56704	7	0,586085	6	0,57901	7	0,586357	7	0,541842	8
B	0,406225	10	0,40026	11	0,477894	10	0,480175	10	0,414635	10
C	0,472291	8	0,48792	10	0,445841	11	0,459356	11	0,48724	9
D	0,677382	4	0,692836	4	0,67816	4	0,697129	3	0,746285	2
E	0,604603	6	0,532032	7	0,649386	5	0,504398	9	0,616851	5
F	0,873407	2	0,912394	1	0,938384	1	0,890373	1	0,924398	1
G	0,771767	3	0,770465	3	0,776931	2	0,707735	2	0,694819	3
H	0,401183	11	0,503664	9	0,516831	8	0,663631	5	0,551467	7
I	0,468746	9	0,508125	8	0,480625	9	0,562467	8	0,387741	11
J	0,638984	5	0,683472	5	0,646135	6	0,656072	6	0,667071	4
K	0,894478	1	0,825206	2	0,725758	3	0,675439	4	0,611168	6

The radar representation of the rankings of the undertakings under consideration between the years 2016-2020 is given in Figure 2. Here, changes in the rankings of enterprises are better observed.

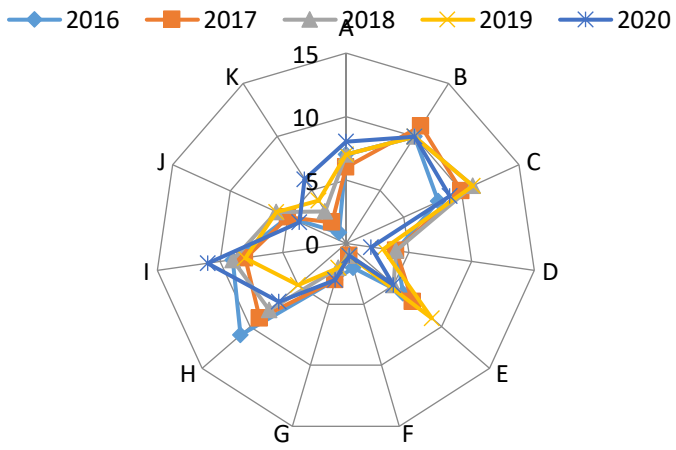


Figure 2. The radar representation of the rankings of the undertakings under consideration between the years 2016-2020.

In addition to the WASPAS evaluations made between 2016-2020, an evaluation was made with the TOPSIS method for 2020. In this way, the sensitivity of the sequences was examined by two different methods. These rankings are given in table 7.

Table 7. WASPAS-TOPSIS assessment results for 2020

Enterprises	Q(2020)	Rank	TOPSIS (2020)	Rank
A	0,542	8	0,358	8
B	0,415	10	0,313	10
C	0,487	9	0,352	9
D	0,746	2	0,619	2
E	0,617	5	0,449	4
F	0,924	1	0,853	1
G	0,695	3	0,448	5
H	0,551	7	0,379	7
I	0,388	11	0,293	11
J	0,667	4	0,501	3
K	0,611	6	0,397	5

Looking at Table 7, it is seen that there is a very strong similarity between the results. Except for the E, G and J enterprises, there was no change in the rankings. The first place is The Accommodation and food service activities (F) enterprise, and the last is the Professional, scientific and support activities (I) enterprises. As a result, it can be said that the WASPAS method gives quite consistent results with the TOPSIS method.

5. Conclusions & Recommendations

This study aims to analyze the website usage of some enterprises as designed of a virtual space to share information among users to provide services via their websites by using WASPAS method. For this aim, seven criteria whose weights are accepted as equal were considered and eleven enterprises were evaluated between 2016-2020. In the last stage, the results obtained with the WASPAS method in 2020 were compared with the TOPSIS method and sensitivity analysis was performed.

As a result of the analysis, the most effective enterprise for the last 4 years was found as "The Accommodation and food service activities (F), Wholesale and retail trade; the repair of motor vehicles and motorcycles (D) enterprise ranked fourth for the first three years, and ranked third and second in the following years. The Information and communication (G) enterprise ranked third for 3 years and second for 2 years. The Administrative and support activities (J) enterprise ranked fourth in 2020, but its order varied in other years. The ordering of Transportation and storage (E), Attempts to repair computers and communication equipment (K), Real estate activities (H), Manufacturing (A), Construction (C) enterprises have also varied over the years. The enterprise of electricity, gas and steam, water supply, sewerage and waste management (B) ranked tenth in recent years. Although the Professional, scientific and support activities (I) enterprise took the last place in 2020, it was ranked ninth and eighth in previous years.

Accomodation and food services (F) ranking as the first criteria is an expected finding. There are various reasons to explain; first of all both components, accomodation and food services are two primary vital needs of human being. Second, the widespread use of internet, websites and B2C is an increase since 2016 up to recent. Embedded with this situation, especially in accomodation, the quality of websites, benefits of online shopping such as discounted reservations and use of high-quality websites etc., stimulating customers' purchase intention. In accordance, food services through online type of e-commerce increased the information quantity, solved the trust issues and built credibility for the enterprises in this very sector. Hence, the rankings of 2020 can be attributed to COVID-19 Pandemic related compulsory adoptation of web-site based purchasing, the previous years' ranking reveals that the success is not solely pandemic related, but to increase number of online transactions. Hence the relationship with the customer provided via ICT usage, the following enterprises such as Wholesale, retail trade (D) and information and communication (G) enterprises ranked as second and third, as they were expected. On the contrary, Professional, scientific and support activities (I) ranked as the last by observing the decrease in the previous years. In this criteria, there are multiple non homogenous sub dimensions from legal and accounting activities, consultancy activities to provision of professional, scientific and technical services of which are on the development stage in the country. Another reason can be, a various number of activities of legal and accounting side are done via e-government platform. However, the requirement of high degree of training, specialised knowledge and skills are expected to be higher in the following years.

Today, managers, decision and policy-makers are aware of a new of doing business on not only websites but also on social media which is out of the scope of this research. In strategic point of view, online platforms are new business tools for managers to achieve a positive reputation and competitive advantage. In this way, enterprises can establish a desired communication and business relationship with all the stakeholders.

This study is recommended in terms of seeing the web-site usage activities of the enterprises and increasing the effectiveness of the inactive ones.

6. Limitations & Scope of the Research

The study has been successfully demonstrated within the scope of some limitations. Firstly, this study was examined in terms of the stated enterprises, future research should consider examining different platforms and different enterprises. In addition, data between the years 2016-2020 were used and only seven criteria were considered, the criteria would change if the unit of analysis changes e.g. to social media usage. While evaluating the enterprises mentioned in the study, all criteria were used equally. Besides, a hybrid methodology can be used in order to gain deeper perspectives of managers and other stakeholders in the very same context.

This study makes an important contribution to managers any decision-makers related with the context. It also provides information to enterprises about the importance of website usage efficiency. In future research, by increasing the number of these criteria, the study can be developed using different MCDM methods. In addition, criteria are not taken in equal weight, and criteria can be weighted by different methods. Comparisons with practices in different countries can be made. The results have theoretical and practical implications for those interested in e-commerce, online shopping, ICT usage and for those who wish to benefit from similar contexts.

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