WHICH YOUTUBER SHOULD BE FOLLOWED? A COMPARISON BASED DELPHI-AHP-TOPSIS

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Abstract

With the development of technology, education activities also get their share from the rapid transformation. With social media platforms, it is now possible to access information from anywhere at any time. While the accuracy of every information in the virtual world is discussed, information provided on platforms such as YouTube also gives some results related to the channel that transmits the information. Many videos are shared on YouTube in various fields (education, music, sports, comedy etc.). Education-based YouTube channels are also highly preferred among these channels. This study aims to identify and prioritize possible alternatives to identify how YouTube-based users decide on the YouTubers (Youtube channel owner) that they select and in order to be constantly improved. Comparison is divided into 3 stages with a Delphi-AHP-TOPSIS based methodology. The first stage is the Delphi Method, where basic performance factors and sub-factors are defined and synthesized. The second stage is the use of AHP method to obtain the general weight index of the main factors and sub-factors. The third stage is the ranking of possible alternatives between TOPSIS technique and 10 YouTubers for continuous improvement of YouTube channels. As a result of the analyzes, the most important criteria in choosing YouTuber were tried to be determined and ideal solutions were presented in decision making.

Key words: YouTube, YouTuber, Multiple-Criteria Decision Making, Analytic Hierarchy Process

JEL Code: C50, D70, D81

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Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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1. Introduction

YouTube is a technological portal known for leading the most important functions of people, such as news and information. On the other hand, after the YouTuber concept was introduced and started to be discussed globally, the perspectives on the YouTube platform have changed. YouTube has now become a globally used and preferred platform where people can not only receive news, but have fun, explore what they are curious about, learn, practice, read, listen, and provide unimaginable activities. This rise of the YouTube platform has led to the emergence of new professions. The most important job is to be a YouTuber. It is the name given to people who open a channel on the Youtube platform and post their own videos. These videos are usually the result of your own individual efforts. Some of them produce brand new ingredients, while others promote existing products. As this platform gains a global power, it gets instant interaction. Thanks to this rapid interaction, the YouTuber profession provides these people with two important gains, both financial and recognition (being a phenomenon). There are hundreds of channel owners on the platform. YouTubers who publish education-based lessons and teachings on YouTube, especially in the field of education, have become very popular in recent years. Educators who produce their own content can easily open their channels and broadcast their trainings on the platform. However, such a problem may occur here. Is every YouTuber the same or which one gives better lessons and teachings? Investigating the causes of these questions constitutes the problem statement of this study. In order to decide this, it is necessary to determine how people who choose to take courses on YouTube choose YouTubers based on what criteria. The purpose of this study is to determine how users trained on the YouTube platform decide on the YouTubers they choose. First, a questionnaire including various questions was prepared and feedback was received from users. Subsequently, the basic criteria were determined and the Analytical Hierarchy Process (AHP) method, one of the Multi-Criteria Decision Making (MCDM) techniques, was applied. As a result, we tried to determine which criteria the users who prefer to take lessons on Youtube pay attention to when choosing YouTubers. In the first part of this study, general information about YouTube and YouTuber profession is given. In the part section, AHP method is explained. In the third part, the application of the study is included. In the last part, the results and recommendations are included.

2. YouTube Platform and YouTuber

Internet is an important requirement for modern life as much as air and water today (Selwyn, 2014). The Internet is one of the important needs of individuals from childhood to death. With the Internet, technological developments have been reached from different sources in a short time and diversification of distance education environments has been provided (Görü, 2011). Thanks to today's technology and internet, online education, communication, electronic library access, student communication and educational videos on social networking sites are easily accessible (Alp and Kaleci, 2018).

Another benefit of the internet is creating virtual environments. Virtual environments have been established to support live teaching and synchronous formats and to follow up on feedback. In virtual environments, lessons can be listened, text and voice can interact, and video and visual presentations can be presented. In addition, academic journals can be followed in virtual environments and the most up-to-date information in their field can be easily learned. Social media platforms take the lead in revealing all these benefits. Among these, YouTube platform is the most preferred social media and video sharing sites (Selwyn, 2014). Having met the world in 2005 in a Silicon Valley basement, YouTube has become one of the most recognized platforms for video sharing and distribution. According to the statistics of 2014, it was announced that YouTube uploaded 400 hours of content every minute and reached more than 1 billion users (Edwards, 2018).

It provides information about why the YouTube site was established in the "About Us" content during its establishment. While the main slogan of the YouTube site was like "Your Digital Video Repository" in the beginning period, the new slogan was recorded as "Broadcast Yourself" since the site got more follow-up and became popular all over the world (Burgess and Green, 2010). The change of this slogan shows common features with the portal, which was originally designed to provide services like an online video library, then progressed with social networking qualities and gained its current form. As it is today, the YouTube platform is a Web 2.0 based application that is basically under the control of the user, YouTuber (Çomu and Binark 2012). You can list the founding motto of YouTube partners as follows (Burgess and Green, 2010).

- Show your favorite videos to the world.
- Take videos of your dog, cat and other pet.
- Blog videos you take with a digital camera or mobile phone.
- Show your videos safely and privately to your friends and family around the world, and much, much more!

YouTube is the second most visited website in the world, after Google and before Facebook. It is also the most popular social media platform in the USA, which is used by 73% of American adults with its establishment in America. Social media platforms can be characterized as internet applications that allow users to create and modify content with others. All of them have their own unique architecture, norms and culture. Among these, social networking sites, and especially Facebook, are the most popular and most studied sites. Social networking sites (SNS) are shaped by users creating personal profiles and using the platform to interact with real-life friends or to meet new people (Khan, 2017).

YouTube has all the social networking functions and is categorized as a content community within the best social media sites. Social networking sites focus more on relationships among users, while YouTube focuses on viewing content. Like the example of social networking sites, YouTube's success comes with the development of addictive behaviors to the website. Regarding SNS, social network

Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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functions seem to reinforce online addiction behaviors with the pleasure they bring to users (Kaplan and Haenlein, 2010).

YouTubers are the people who manage a YouTube channel, identify their content originally and publish original videos with that content. YouTubers often connect with their audience by creating intimate experiences through conversations about personal or sensitive themes. In this way, they can engage with followers and, as a result, establish communities (Arnold, 2017). A research by Google explains the importance of YouTubers, who have become one of the most important professions in the world today, with answers to the question "why are YouTube stars more effective than traditional celebrities?" YouTuber followers claim that YouTubers define brand trends and perceptions and that the sales of the products recommended by YouTubers have increased. Because digital influencers play an important role in determining the tastes and preferences of their audiences, many brands know digital influencers as a means of communicating information about their products and services by finding the opportunity to connect with their target audience (O'Neil-Hart and Blumenstein, 2016).

When the subject of this study was investigated in the literature review, no similar study was found. In addition, general studies on YouTubers in the academic field are very limited. Some studies can be defined as follows;

- Features of YouTube users (Borghol et al., 2012; Chapple and Cownie 2017).
- The importance of YouTubers for brands (Ferchaud et al., 2017; Haridakis & Hanson 2009).
- Main content produced by YouTubers (Holland 2016; Jerslev 2016; Lee and Watkins 2016).
- Motivation of YouTubers to watch their videos (Mir and Rehman 2013; Molyneaux et al., 2008).
- Reliability of YouTubers and the effects of brand trust on purchasing (Simonsen 2011; Smith 2016; Yüksel 2016).
- Reasons for watching YouTuber videos (Zhou et al., 2016; Oya et al., 2018).
- The effects of YouTuber-Brand collaboration videos on people and the factors affecting the attitudes and intentions of YouTube users (Mutlu, 2017; Çiçek, 2018).
- The effect of YouTubers on youth in the sociology of consumption and the importance of YouTube and YouTubers in product development in new media (Bozdağ et al., 2019; Yıldırım, 2018).

The Delphi AHP TOPSIS methodology can also be examined in detail (Joshi et al., 2011; Sekhar et al., 2015; Asghari et al., 2017; Emovon, 2016, Sultana et al., 2015).

3. Methodology

There are thousands of videos from every category on the YouTube platform. Education, which has an important place among these categories, is a section that people frequently benefit from. People may have a hard time selecting

the best quality trainers, as each instructor can open a YouTube channel and provide training. Each instructor has his own narration style, video quality, course environment. Based on this, the main purpose of this study is to choose the best YouTuber that exists on the basis of education on YouTube. Since the basis of this study is Delphi AHP TOPSIS method, Delphi method, which is the first stage of the model to be established, has been explained. With this stage, the basic structure of the methodology was created and AHP and TOPSIS methods were defined.

Delphi Method

Delphi research method is a flexible research technique. It is an information system that works continually iteratively in order to identify new concepts. It is an repetitive process that aims to collect and change the decisions of experts using the brainstorming technique for various problems, opportunities, solutions and predictions using a series of data collection, analysis techniques. With this method, various tools are used for data collection. Surveys and interviews are used as the most basic tools of the Delphi method (Skulmoski et al., 2007). The basic iterative structure of the Delphi method is as follows;

Figure 1. Delphi structure
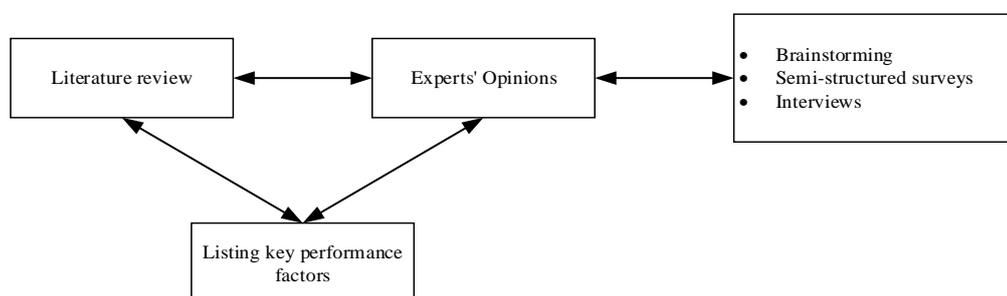
Source: (Skulmoski et al., 2007)

This technique has three main features;

1)   Anonymity
2)   Controlled Feedback
3)   Statistical group responses

The first is the feature that occurs in face-to-face relationships within the group, that it can reduce the effects of individuals on others, in Delphi, people are never confronted; is feature. The third feature provides the possibility of objectively representing the responses of each panel member by statistical processing (Fish et al., 1996).

Although the application varies according to the state of the researcher and the research, it has three main stages: In the first stage, the researcher first

Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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determines the questions related to the subject he wants to examine and sends them in the form of open-ended questions to the members of the Delphi panel. Panel members answer these questions and send them back to the researcher (Dalkey and Helmer, 1963).

After this process is completed, the researcher organizes short sentences according to the type and shape of the tool to be used in the second stage. Thus, the first steps of the second phase are taken. The Likert type vehicle prepared is sent to the same panel members, after the members complete their answering process, they send their Delphi questionnaires back. The data obtained at this stage are subjected to a series of statistical processes, the statistics obtained constitute the data of the vehicle to be used in the third stage. Statistical data aims to inform each panel member about the responses of other members. The third stage is the collection of this prepared tool after being answered by the panel members. If the researcher wishes, one or more steps may continue. In addition, the researcher can skip the first stage under appropriate conditions and create the second stage Delphi tool directly by using the literature and experts.

Ahp

In the first stage, the basic factors are determined with the Delphi method, and then the AHP method is applied to determine how much these factors affect the purpose. The main problem of decision making is to choose the best from a range of competing alternatives evaluated under conflicting criteria. (Saaty, 1986). The AHP method has three main principles. These are defined as decomposition, comparative judgments, synthesis of priorities. These basic principles show how the method should work. First, the parts of the decision problem are hierarchically structured. Secondly, comparative decisions are defined as the relative importance of the elements in this structure. This scale provides comparison of alternatives on the basis of certain criteria such as 1-3-5-7-9. Finally, the synthesis of priorities is the determination of priorities for the purpose of solving the problem (Saaty, 2000).

Saaty (1988) can be examined to get more detailed information about this procedure. The basic structure of the AHP method can be shown as in Figure 2.

The three basic principles of the AHP method can be described in detail as follows (Saaty, 1988).

- **Setting up the hierarchy;** A decision problem that focuses on measuring the benefits of a general goal or focus is structured using a hierarchy and decomposed into its constituent parts (sub-goals, qualities, criteria, alternatives, etc.).
- **Priority regulation;** The relative "priority" given to each item in the hierarchy is determined by comparing the contribution of each item in terms of criteria (or items) where a lower level of causal relationship exists.

Figure 2. The basic structure of AHP

Evaluation of enterprise X against A, B, C competitors
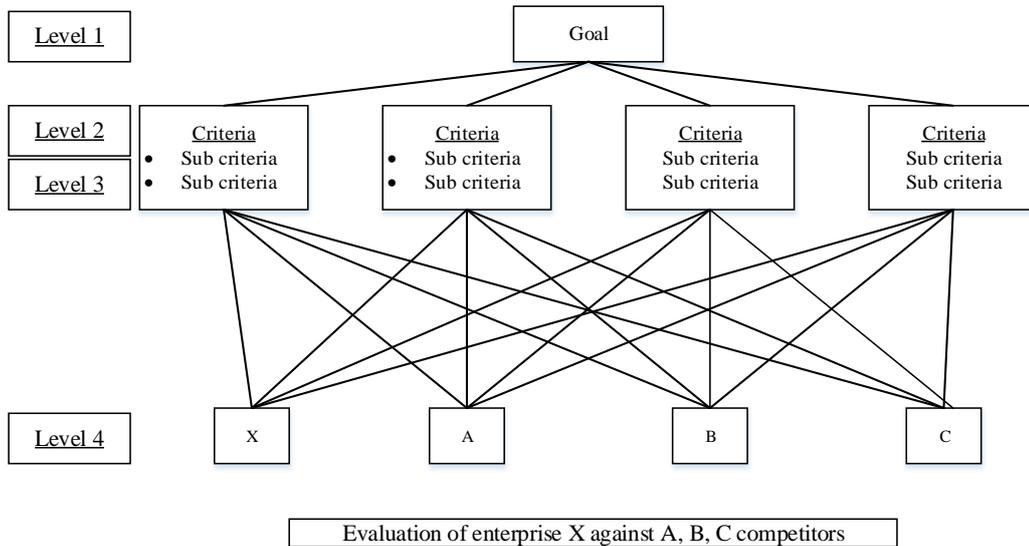
Source: (Saaty, 1988).

Normally, relative priorities (or "weight") are given by the correct eigenvector (W), which corresponds to the highest eigenvalue (λ_{max}) value as shown in Equation 1. The double comparison matrix (Table 1) is represented by the letter A. The standard element $P_c(a_i a_l)$, this determines the intensity of the line element (a_i) over the column element (a_l) (in terms of contribution to a specific criterion C) (Bodin and Gass, 2003).

Table 1. Binary comparison of elements in the AHP

C	a_1	. . .	a_l	. . .	a_n
a_1	1				
$\vdots$		[1]			
a_i			$Pc(a_i, a_l)$		
$\vdots$				[1]	
a_n					1

Source: (Bodin and Gass, 2003)

$$A \cdot W = \lambda_{max} \cdot W \qquad (1)$$

Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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If the pairwise comparisons are completely consistent, the matrix *A* has degrees 1 and $\lambda_{max} = n$. In this case, the weight can be obtained by normalizing any of the rows or columns of *A*. The procedure described above is repeated for all subsystems in the hierarchy. To synthesize various priority vectors, these vectors are weighted and synthesized with the global priorities of the main criteria (Herath, 2004).

▪ **Consistency Control;** in each binary comparison matrix (see Table 1), a series of comparisons may be more than necessary. In fact, in the case of complete consistency, the relationship includes, as in Equation 2 (Forman, 1998).

$$P_c(a_i a_j) = P_c(a_i a_k)\, P_c(a_k a_j) \quad \forall i, j, k. \tag{2}$$

When the pairwise comparison matrices are completely consistent, the priority (or weight) vector is given by the correct eigenvector (*W*) corresponding to the highest eigenvalue λ_{max}. In this case, it is equal to the number of elements compared (*n*). If the inconsistency of the double comparison matrices is limited (λ_{max}), it deviates slightly from n. This deviation ($\lambda_{max} - n$) is used as a measure for inconsistency. This measure is divided by $n - 1$. This gives the average of other eigenvectors. Therefore, the "consistency index" (Consistency Index - CI) is defined in Formula 3.

$$CI = \frac{\lambda_{max} - n}{n - 1} \tag{3}$$

The final consistency ratio (CR), which can conclude whether the evaluations are sufficiently consistent, is calculated as the ratio of the Consistency Ratio (CI) and the Random Consistency Index (CI*) as specified in Formula 4. Random Consistency Indexes (CIs given in Table 2) correspond to the degree of consistency that occurs automatically when completed in random mutual matrices with values on the scale of 1-9 (Saaty, 1988).

$$CR = \frac{CI}{CI^*} \tag{4}$$

Table 2. Random consistency indices (CI)

r	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CI*	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

Source: (Saaty, 1988)

Saaty (1982) argued that the discrepancy should not be more than 10% (CR ≤ 0.10). Moreover, a level of inconsistency higher than 10% indicated that the consistency of binary comparisons was insufficient.

CR (CRH) for the entire hierarchy is determined based on the CI and CI*s for each pair of comparison matrices.

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Topsis Method

TOPSIS is an approach used to deal with specific and complex systems, which are related to making a preferred choice among various alternatives and to compare the options considered. TOPSIS is based on a simple and intuitive concept; The method provides consistent and systematic criteria based on choosing the best alternative with the shortest distance from the positive ideal solution and the farthest distance from the negative ideal solution. The positive ideal solution is the solution with the highest benefit and lowest cost of all alternatives, the negative ideal solution with the lowest benefit and the highest cost. The alternatives are then sorted by relative proximity to ideal solutions. The aim is to find the preferred order of various healing alternatives that are closest to the positive ideal solution and farthest from the negative ideal solution (Gümüş, 2009; Hsieh et al., 2006). The model of the TOPSIS method applied in this study can be shown with Equation 5 as follows;

Table 3. Ideal solution matrix of TOPSIS approach   (5)

	R_1	R_2	R_3	..	R_n		R $\{R_i\ i = 1, 2,. . ., n\}$ = Business requirements set
Weight	w_1	w_2	w_3	..	w_n		A $\{A_r,\ r = 1, 2,. . ., m\}$ = Various alternatives for improvement
A_1	f_{11}	f_{12}	f_{13}	..	f_{1n}	P_1	
A_2	f_{21}	f_{22}	f_{23}		f_{2n}	P_2	
:	:	:	:	:	:	:	$w_n\{i = 1, 2,. . ., n)$ = *Normalized weight for R*
A_m	f_{m1}	f_{m2}	f_{m3}	..	f_{mn}	P_m	P $\{1,2,…\ m)$ = Order preference of alternatives. f_{ij} = values obtained

Source: (Saaty, 1988)

4. Implementation of YouTuber Selection

Delphi-AHP-TOPSIS methodology has been applied in the selection of YouTuber and the continuous improvement of YouTube channels. The Delphi technique, which is the first stage of the study, was run and the criteria taken into consideration in choosing YouTuber were obtained. The iterative process of reaching the best result, which is the most important feature of Delphi technique, has been meticulously processed.

Determination of Main and Sub Criteria with Delphi Process

Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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Delphi technique played an important role in forming the main backbone of the study. First of all, a basic group of respondents (-people who are constantly trained from YouTubers - hereinafter referred to as the Brain Team) was created, which watched experts and continuing education and entertainment videos about YouTube and YouTuber. The first condition in the realization of the Delphi technique was that for every brain team member selected to the group, the member follows at least 10 educational channels on YouTube and also entertainment channels. All of our selected brain team members had subscriptions to various educational channels with more than 10 channels. Apart from this, no gender criteria were taken into consideration in the selection of members of the brain team.

The formed brain team helped to obtain factors regarding the criteria that are important in the selection of education channels and YouTubers. Then, the main factors and sub-factors were determined by the authors, and the members of the brain team were asked to provide feedback on this arrangement. The final version of the main criteria and sub-criteria were accepted by all members of the brain team and question forms were prepared.

Then, each member of the brain team was asked to evaluate the training channels they followed. This evaluation is a different evaluation except for the filling of AHP forms. TOPSIS basic data set has been created for using the method in YouTuber selection. The important point here is that they follow the same YouTuber and watch active training videos. The data set created for 10 YouTubers was used in the study and their names were not given in this study since no permission was obtained from the 10 YouTubers selected. The YouTuber selection criteria agreed in the group study are stated as follows.

Table 4. Criteria considered in YouTuber selection

Subscribers	Systematic and planned program
Corporate identity	New content
Number of likes	Dominate the subject
Positive comments received	Positive reviews
Recommendations and references	Be famous
Duration of the course	Video quality
Correct use of grammar	Giving the courses electronically
Fluent and lean lesson	No unnecessary conversations
Voice tone	-

Source: Author's calculations

These criteria groups were also divided into three main criteria groups and made compatible with the AHP model. This grouping is done as follows;

Figure 3. Identified main and sub criteria
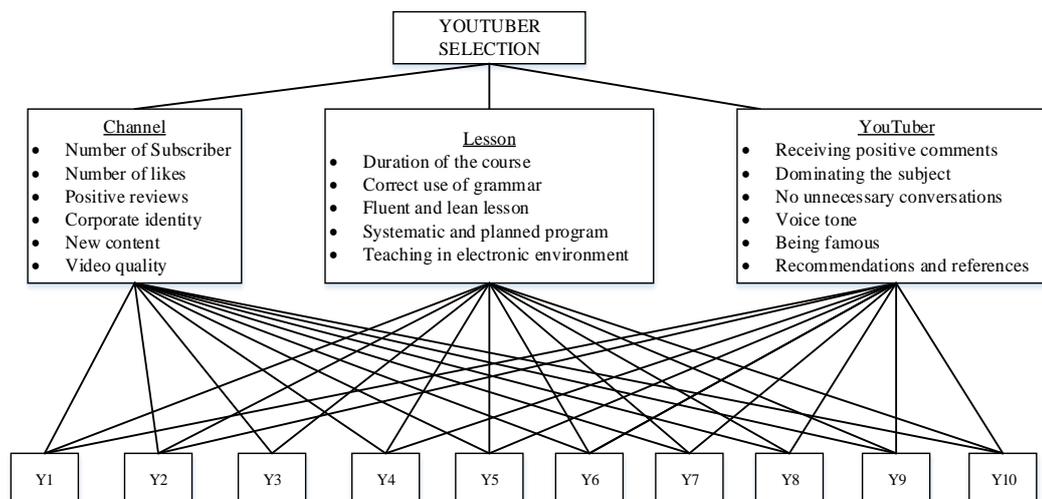
Source: Author's calculations

Model of AHP

A question form was created for the main and sub-criteria obtained with the brain team and this questionnaire was distributed to the respondents who watched training videos on YouTube. Respondents consist of users who follow their own YouTube channel, which also belongs to one of the authors, as well as other educational channels. A total of 52 respondents who have watched more than one training channel have been reached. For each of the filled AHP forms, consistency value was calculated separately and 34 forms with consistency ratio below the expected value were taken into account.

If the inconsistency rates of AHP forms are above 10%, these forms should not be taken out of the analysis or taken into consideration (Tüzemen and Özdağoğlu, 2007: 221). Hence, 18 were excluded because they did not comply with the consistency rate. Later, geometric averages of the answers given to these forms were created and a final matrix was created and the consistency of this matrix was also examined. Since all consistency rates are below 10%, the significance levels of main and sub criteria are calculated. Summary tables of AHS are shown as follows.

Table 5. General score coefficients of main criteria

Channel	0.24
Lesson	0.46
YouTuber	0.29
CI= 0,001181797	CR= 0.002038

Source: Author's calculations

Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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Table 6: Significance levels of channel sub-criteria

	Sub Criteria	Final Priority Values
	Number of Subscriber	0.0313
	Number of likes	0.0291
	Positive reviews	0.0489
Channel Main Criterion	Corporate identity	0.0202
	New content	0.0400
	Video quality	0.0750
	CI= 0.059838659	CR= 0.048257

Source: Author's calculations

Table 7: Significance levels of course sub criteria

	Sub Criteria	Final Priority Values
	Duration of the course	**0.0540**
	Correct use of grammar	0.0779
Lesson Main Criteria	Fluent and lean lesson	*0.1102*
	Systematic and planned program	*0.1256*
	Teaching in electronic environment	0.0937
	CI= 0.024806606	CR= 0.022149

Source: Author's calculations

Table 8. Significance levels of YouTuber sub-criteria

	Sub Criteria	Final Priority Values
	Receiving positive comments	0.0497
	Dominating the subject	0.0650
	No unnecessary conversations	0.0476
YouTuber Main Criteria	Voice tone	0.0558
	Being famous	0.0358
	Recommendations and references	0.0401
	CI= 0.045945132	CR= 0.037053

Source: Author's calculations

When the final significance levels are analyzed, the criteria that YouTube users most care about when choosing YouTuber, as seen in Table 7, are * Fluent and lean course and * Systematic and planned program criteria have emerged within the main criteria of the course. Users who take courses on YouTube mostly watch videos by paying attention to the content of the course. In Table 6, the sub-criterion which is the most important among the Channel main criteria * Video quality; It resulted in 0.0750. Among the sub-criteria included in the YouTuber main criterion in Table 8, the highest level of importance was determined to be the command of

the subject. In other words, users who take lessons evaluate YouTubers according to the content of the lesson and how dominant the subject is.

Model of the TOPSIS Method

When choosing YouTuber with the AHP method, it was determined which users place the most importance. In the third step of the methodology, using the TOPSIS method, it was determined which of the 10 alternative YouTubers should be selected. These 10 members of YouTuber Brain Team have been identified and their severity has been adjusted based on all the sub-criteria set in the AHS. The names of these YouTubers are kept confidential because they are not permitted and they are named as (*Y1, Y2…*). In the TOPSIS test, the best YouTuber among the alternatives was determined as follows.

Table 9: Determining the best YouTuber with TOPSIS

YouTuber	Ci	Rank	YouTuber	Ci	Rank
Y1	0.760233281	*1*	Y6	0.41352512	9
Y2	0.33969276	10	Y7	0.456953329	8
Y3	0.513864168	7	Y8	0.647466696	3
Y4	0.536591356	6	Y9	0.556404322	5
Y5	0.670907926	2	Y10	0.608708013	4

Source: Author's calculations

When Table 9 is examined; The YouTuber, which ranks 1st among the top 10 that YouTuber users can choose, received the highest score. The 5th ranked YouTuber has been identified as the 2nd best YouTuber.

5. Conclusion and Recommendations

YouTube is a social site that has made great strides in getting news and information in recent years. In accordance with the founding mottos of the YouTube partners, YouTubers constantly provide sections and information from current life. Educational channels within YouTube channels, which have a very rich framework in terms of content, provide great benefits especially in the part of obtaining information. Education channels provide useful opportunities for users to reach with one click by publishing videos with both current topics and school and lesson content. At this point, the quality of each YouTuber cannot be the same, and it is not possible for the video and course qualities to be the same. Given this situation, users who want to take courses within YouTube may have problems with which YouTuber they should take. In other words, when users choose YouTuber, they definitely reference certain criteria according to themselves. YouTubers can have the opportunity to express themselves more clearly to their users if they are aware of these criteria. From this point of view, the aim of this study is to create various

Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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alternatives within the scope of Youtuber selection, which criteria are taken into consideration and the continuous improvement of Youtube channels. For this purpose, Delphi-AHP-TOPSIS, an integrated methodology, was used. Firstly, YouTuber selection criteria that users set within themselves were collected with Delphi technique. Using the iteration feature of this technique, final criteria are defined by eliminating distant criteria with the brain set. In total, 17 sub-criteria were prepared for AHP modeling by dividing them into main criteria. These three main criteria are; Channel has been designated as course and YouTuber. In the AHP model, which is the second stage of the application, it was determined which criteria the users mostly focused on when choosing YouTuber. These criteria are; * Fluent and lean course and * Systematic and planned program criteria emerged in the main criteria of the course. Users who take courses on YouTube mostly watch videos by paying attention to the content of the course. In Table 6, the sub-criterion which is the most important among the Channel main criteria *Video quality resulted in 0.0750.

In the third stage of the application, 10 YouTubers based on education, determined by using expert opinions, were ranked by Topsis method and it was determined which users gave more weight based on the determined criteria. As a result, YouTuber ranked 1st, taking the most importance among the alternatives.

The features of the YouTube platform, its general structure, and the development of YouTube channels have been examined on many grounds in the literature. This study can also shed light on the literature on choosing the best YouTuber on a categorical basis. Interesting results can be obtained if different Multi-Criteria Decision Making techniques are used, especially in the selection of YouTubers in the education category.

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Tüzemen / Which Youtuber Should Be Followed? A Comparison Based Delphi-Ahp-Topsis

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