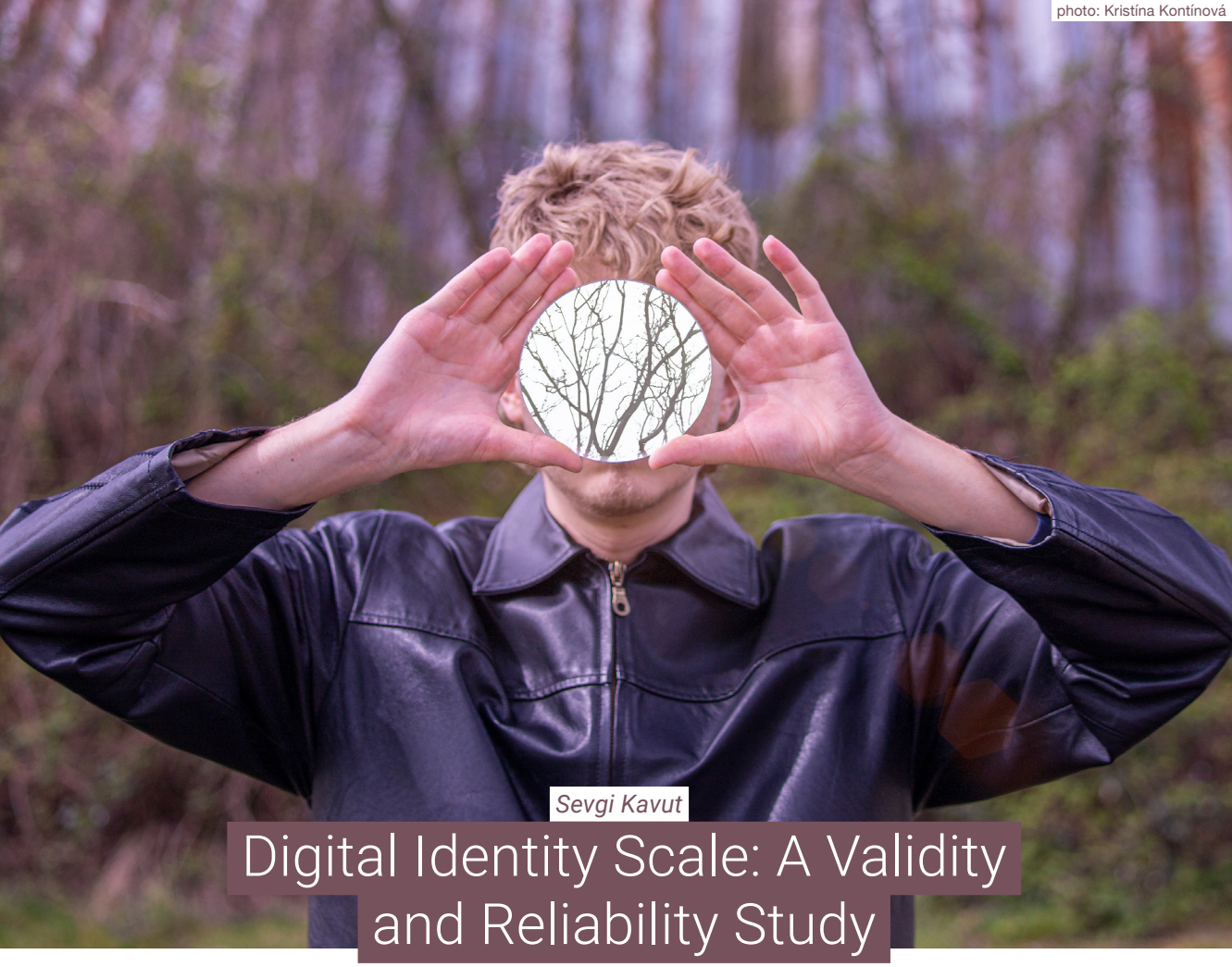

Sevgi Kavut

Digital Identity Scale: A Validity and Reliability Study

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ABSTRACT

The purpose of this study is to develop a reliable and valid scale for measuring digital identity definitions, digital personalities, self-presentation strategies, communication styles in digital contexts, and digital identity perceptions of digital environment users over the age of 18. This study is significant since it is the first scale study on the subject of digital identity in Turkish literature, filling a gap in the field and creating a unique, reliable and valid scale. The process of developing this scale consists of many phases. First, in-depth interviews were conducted with 18 people and an item pool was created by reviewing literature and data obtained. Item numbers were reduced according to the view of experts. Expert opinions were obtained using the Lawshe method. Afterwards, the pilot study was applied to 278 participants for construct validity. Following this, the main study was conducted with 511 participants. After the data was collected, exploratory and confirmatory factor analyses were carried out. The scale's validity and reliability was tested and approved. The result of exploratory and confirmatory factor analysis was a scale with 28 items and 3 factors. These findings are deemed important so that this scale can be considered a reliable and valid measurement tool.

KEY WORDS

Digital Identity. Digital Identity Scale. New Communication Technologies. Reliability. Scale Development. Validity.

1 Introduction

Digital identity is a relatively new yet growingly significant topic. The implications of digital identities on people's lives, behaviour, and how they present themselves in digital contexts with impression management and personality traits are predicted to remain unexplored until a measurement method is established. Thus, the purpose of this study is to develop a unique, reliable and valid scale for measuring digital identity definitions, digital personalities, self-presentation strategies, communication styles in digital contexts, and digital identity perceptions of digital environment users over the age of 18 in Turkey.

This study is significant since it is the first scale study on the subject of digital identity in Turkish literature, filling a gap in the field and creating a unique and legitimate scale. In the meantime, through individual digital identity accounts and usages, this study depicts digital identity definitions, digital personalities, self-presentation strategies, communication styles in digital contexts, and digital identity perceptions of users over the age of 18.

The main problem in developing this scale is the deficiency of measurement tools in Turkish literature and the inadequacy of current digital identity scales in international literature. Thus, this study has targeted developing a valid and reliable measurement tool which reveals digital identity and sub-dimensions of digital identity. Examining articles, theses, dissertations, scales, and other research in the national and international literature reveals that studies on digital identity are undertaken on a restricted and homogeneous population, such as university students, younger people, and members of specific occupational groups. The existing scales have a weak correlation to reveal digital identity definitions, digital identity presentations and digital identity perspectives of digital users. Thus, this study has targeted various sociodemographic groups, including those with digital environment users over the age of 18, based on factors including age, income, gender, and education. It is believed that this scale will address a need in the field and advance the fields of sociology, psychology, and communication in particular.

It is noted that there is not much research on the topic of digital identity. Nonetheless, it is acknowledged that this subject is significant and has progressively become vital from a national and worldwide perspective. This study aims to contribute to new studies in digital identity, digital presentation, digital personality, digital reputation, digital impression, digital communication topics.

2 Literature Review

The nature of human communication and the internet, which contains an incredibly large amount of data at a profoundly varying rate, both allow for greatly reduced communication costs and simultaneously incredible distances, as well as coverage of all other media content (Reed, 2019). Every major advancement in technology alters humans. The emergence of some aspects of the modern digital world predates the era of smartphones and personal computers. However, the measurement and rate of change in our lives have unexpectedly grown due to accessibility, the usage of mobile phones, and the rapid growth of internet advances (Lemma, 2017).

Digital identities facilitate individuals' ability to exhibit themselves to various audiences and to acquire distinct personas across various social media channels. Within the virtual digital environment of cyberspace, these identities' distinct artificiality is fully present. Because of this special characteristic, the relationship between digital IDs and their corresponding offline IDs is unclear (Brown, 2016). Digital identity is defined by Sullivan and Stalla-Bourdillon as "it is an identity constituted from saved information and transmitted on digital forms" (2015, p. 268). Digital identities can be also described as a composition of technology and identity, individuals who present identity in the digital world. Everywhere people go, their identities are marked

with information about them. These marks may be classified as information on social media, name, phone number, creating a full profile covered by the image, commenting on a forum, filling out a form, and maintaining a blog (Ayed & Ghernaouti-Helie, 2011). At the same time, digital identity is a concept that is appropriate to the digital world. This trend has a link that raises privacy concerns about people's real-world identities and their identities in the virtual world, as people engage in more activities in the virtual world (Pato, 2003). Digital identity is defined by Phiri et al. (2011) as the formation of personality traits, attitudes, and preferences of individuals who can receive personalized services that can exist online on mobile devices, in workplaces, and in many other areas.

A digital identity is a social identity that is formed online through the creation of online profiles. On networking sites, self-offering is displayed in a social setting. Social media profiles on the internet are crucial for identity authorization (Bozkurt & Tu, 2016). Digital identities are now an important part of the identity management system due to the growth of the internet and the expansion of online services. A presentation of all available user data in online contexts is called a digital ID (Phiri et al., 2011). According to Rodrigues, a digital identity is one that has been formed by relationships, computer technology, and digital interactions like the Internet and digital media. Account names, domain names, artificial intelligence, biometric data, digital certificates, digital pictures, digital/electronic signatures, e-portfolios, geotagging, globally unique identifiers, ID cards or symbols, mobile IDs, passwords, personal data, IP addresses, personal profiles, smart cards, reputation, etc. can all be sampled, according to Rodrigues, who stated that there are various ways in which digital IDs can be viewed (Rodrigues, 2011).

Nowadays, identities may be constituted as analogue (document), digitized (scanning) or digital (digital footprint) (Kavut, 2021a). Furthermore, as seen in the figure 1, Kavut (2021a), digital identity modules are classified into three stages as digital identity, digital impressions and digital mark or digital footprint. We can say that personal digital identities constitute digital impression via social media platforms and this process creates digital marks.

FIGURE 1: *Digital identity module*
Source: Kavut (2021a, p. 33)

Goffman's writings help to develop theories for comprehending the connection between identity and social networks. The dramaturgical approach of Goffman offers an appropriate framework for the development of identity. Proposed individualism, self-narratives, and cultural practices of connectedness are more generally positioned in parallel with Goffman's work on social networks. Goffman observed the unique components of performance as well as

deliberate self-presentation in various circumstances (Cover, 2016). Goffman clarified that daily existence is a type of performance and used a theatrical metaphor to describe people's attitudes and behaviour (Wood & Smith, 2005). The historical roots of the concepts of personality and personality traits are based on Trendelenberg, known for his work between 1870 and 1910 (Paranjpe, 2002). Although the concepts of person and personality are used synonymously, they have different meanings. The concept of the person suggests individual differences in personality while expressing people's rights and duties (Paranjpe, 2002). Digital identities are a fairly new concept derived from the applications of individuals developed in online environments. The digital identities of individuals are in pieces and therefore consist of a combination of several services or networks (Costa & Torres, 2011). Digital identity creation can provide young people with the opportunity to showcase themselves, if utilized with caution. Finding an identity that governs one's experiences and life and enables one to become an individual is the primary goal in life, according to Frosh, a psychoanalytic and identity theorist. Identity is expressed in this way as the middleman (Frosh, 2010, in Balick, 2014). Self-presentation is distinct from other behaviours because effective communication relies heavily on genuine or perfect responses. Self-presentations are abnormal ways for people to convey their sentiments, realities, and/or self-beliefs as well as their interpersonal outcomes and impacts (Schlenker, 2012). With a multitude of digital experiences, a digital identity structure has arisen. A digital identity can be defined as an enumeration of one's online self-definitions. Building a second self that works with their second life is how people construct their digital identities (Sohier & Brée, 2019).

Digital identity is the method of self-presentation that people exhibit online, both in a personal and professional context (Ahlquist, 2016). According to Kavut (2021b), digital identity refers to an identity type that encompasses cultural capital, individual profiles, social media records, and person sharing in digital contexts. Put differently, digital ID, or biometric identity, is a type of identification that simultaneously verifies encoded identities in social and content networks and incorporates the characteristics of intelligent identity technologies like blockchain and apps based on additional data (Feher, 2019). Simultaneously, digital identity is known as a digital presentation of publicly available data on people or organizations. Obtaining permissions can be used for a variety of purposes, such as verifying identity claims. Digital credentials comprise not only the individual's qualifying information, such as social security number and passport number, but also biometric information, such as footprint characteristics (Bertino et al., 2009). Consequently, when the term "digital identity" is used, it is understood to refer to a concept that encompasses not only how individuals present themselves on various online platforms, but also a more comprehensive structure that includes things like membership and biometric traits, individual preferences, attitudes, and behaviours related to name, surname, social media, and other online transactions.

Schmidt and Cohen mentioned the importance of digital identities in their book *The New Digital Age – Reshaping the Future of People, Nations, and Institutions*, suggesting that the world's virtual (online) population will exceed the world's population within the next decade. They emphasized that while online identities rarely overshadow people's physical selves, in the future, individuals' identities in everyday life will become more recognizable than virtual activities and relationships (Schmidt & Cohen, 2013). Their digital IDs are physical, such as fingerprints and DNA; passwords, such as driver's licenses; Khan, who divides this into four sections: behavioural identity such as electronic and online shopping, such as social media accounts, stated that the electronic and behavioural identities he defines dynamically can develop in line with the habits of individuals, while the legal and physical identities he defines as static are unique and irrevocable (Khan, 2018).

Digital identities are an important topic today. It has developed around two macro areas: presentation and reputation. The presentation dimension is the way people display their behaviour in online environments, how to participate and interact in these shared areas, and what persona or self they assume as part of their digital presence. In the reputation dimension,

the focus is on what others think of the individual. While reputation is independent of people's online presence, it is socially dependent. That's why digital identity management is important because it can affect people's activities both face-to-face and online (Costa & Torres, 2011). Identities will be the most valuable resource for citizens in the future and they will mostly exist online. They claimed that people's experiences on the internet can start even before they are born, that people's life experiences can become frozen over time and eventually surface where they are visible to all, and that businesses can develop new techniques to control information (Schmidt and Cohen, 2013). Focusing on the benefits of digital identities, Aiello et al. (1998) explained that digital IDs also meet the needs of many areas such as online shopping, transactions between businesses, online banking, verification of codes, internal identities when necessary for government, private or business use of the Internet. Al-Mahmood et al. (2018) explained in their work on digital identities and online reputation that The Reputation Economy's author Michael Fertik stated that online reputation is more important than money or power. This explanation is a case in point of the economic value and importance of digital identity.

3 Methodology

3.1 Aim and Method

The purpose of this study is to develop a reliable and valid scale for measuring digital identity definitions, digital personalities, self-presentation strategies, communication styles in digital contexts, and digital identity perceptions of digital environment users over the age of 18 in Turkey. This study was conducted with the field research method. This study used an online Google Form survey as its survey method. The correlational survey model served as the study's research model.

3.2 Sample

The study's target population comprises Turkish consumers and creators of digital environments. The study's sample consists of adult Turkish citizens over the age of eighteen who use digital environments.

4 Scale Development Process

There are numerous steps involved in the development of this scale. First, a pool of items was produced by reviewing both domestic and foreign literature, and 18 people were interviewed in-depth. In line with the data obtained, the item pool was created and 252 scale items were prepared in the light of the collected information. The scale items are regulated and sent to an expert for assessment. Expert opinions were obtained using the Lawshe approach. There are three academicians and two communication specialists from Turkey among the five experts. The number of articles in the draft questionnaire form was reduced to 55, after evaluation by the experts. Based on the fact that the number of articles is 5 times greater, the pilot research study was aimed to be applied to 275 people, and the online questionnaire prepared through Google Forms was applied to 278 participants.

Pretest (pilot) survey studies are the only way to pre-evaluate questions that pose problems for respondents and interviewers. Therefore, both basic textbooks and prerequisites for experienced researchers are explained as mandatory (Presser et al., 2004). Pre-evaluation (pilot) applications prepared for the evaluation of surveys are recommended to be carried out by

the interview method (Altunışık, 2008). For this reason, the in-depth interview method was used in the initial stages of designing the Digital Identity Scale to create open-ended and sentence completion questions utilizing the preliminary research form and questions.

Pretest studies usually means testing surveys to screen and identify possible problems for a small sample group of 15 to 30. Even the best surveys can be improved by preliminary studies, the general rule on this issue is not to start fieldwork without a comprehensive preliminary. All features of surveys, including survey content, words, order of questions, forms, the difficulty of questions, and guidelines, should be tested (Malhotra, 2006, p.195). Reynolds et al. (1993) emphasized in the literature that the number of pretest samples should be small, that this number can be compared between 5-10 and 50-100, and that the sample is small but large enough to cover the target audience.

The scale's composition was determined to have 28 items and 3 factors, following the completion of the pilot study and factor analysis. In the initial study, 511 participants were contacted via email addresses and social media platforms, and an online survey form created using Google Forms was distributed to them. The 5-way Likert scale was used to rate the items. Next to each of the items five choices were placed. These choices were arranged and scored as (1) *Strongly Disagree*, (2) *Disagree*, (3) *Neutral*, (4) *Agree*, and (5) *Strongly Agree*.

5 Findings

5.1 Reliability Analysis

De Vaus (2002) explained that a reliable measurement gives similar results if the test is repeated. The most commonly used test reliability index in reliability analysis is Cronbach alpha (α) (Ryan, 2013). Table 1 displays the reliability coefficients of the digital identity scale based on data from the pilot research.

Scale Dimensions	Number of Items	Guttman	Cronbach (α)
Describing Digital Identity	11	.890	.944
The Need for Digital Identity, Personality, and Digital Identity Presentation	9	.905	.918
Communication, Impression, and Reputation Management in Digital Environments	8	.945	.957
Total	**28**		**.910**

TABLE 1: *The coefficients of reliability analysis*

Source: own processing, 2024

Büyüköztürk (2005) explained that the reliability coefficients of scales 0.70 and above are generally considered sufficient for test scores. The results of the reliability analysis demonstrate the scale's overall and sub-dimension-wide reliability. Table 1 clearly shows that the scale's reliability research yielded a height sufficient for all reliability coefficients with an alpha value of .910 Cronbach.

The Cronbach alpha internal consistency value of scale shows that the reliability coefficient of Describing Digital Identity dimension was found to be α: .944, The Need for Digital Identity, Personality, and Digital Identity Presentation dimension was found to be α: .918, and Communication, Impression And Reputation Management in Digital Environments dimension was found to be α: .957. These results were obtained by looking at the reliability multiples of the sub-dimensions of the scale. Upon closer inspection, it became evident that the scale had a high internal consistency rate. It was found that alpha values for all sub-dimensions are greater than 0.70 and therefore the scale has sufficient reliability.

5.2 Validity Analysis

According to De Vaus (2002), the validity measurement has been defined as realizing the measurement of things wanted or intended to be measured. Factor analysis has mostly been used to support the validity of the Digital Identity Scale. After determining the KMO and Bartlett values, factor analysis is used in conjunction with the varimax rotation procedure and the maximum likelihood approach. Lawley invented the maximum likelihood method in 1940 to handle factor exclusion. The maximum likelihood method has calculated sample values for each factor loading by calculating loadings that maximize sample suitability of the surveyed correlation matrix (Tabachnick & Fidell, 2014). Maximum likelihood (ML) is the most commonly used prediction method (Harrington, 2009). The recognized statistical method known as factor analysis excludes the dimension reduction technique in particular, as well as the latent structure of a set of variables. Factor analysis is classified into two types: exploratory and confirmatory factor analysis (Ryan, 2013).

5.3 Exploratory Factor Analysis

An exploratory factor analysis was performed on 278 participants in total. 55 items in total are included in the first stage of factor analysis. The appropriateness of the factor analysis of the data was assessed using Bartlett's test (sig=.000) and KMO (.823) The analysis yielded a KMO and Bartlett's test value of over 80, indicating significance.

A first-factor analysis was conducted on fifty-five items. 55 items are grouped under twelve factors, and the eigenvalue is large starting at one. The variation of these twelve components concerning the scale is 67.79 percent. Twelve components specified items have common variances (communalities) ranging from 0.275 to 0.889. Due to the low factor loading values in the factor commonality and under different factors, items constructed for measurement were selected to be gradually removed from the scale. Consequently, items 1, 2, 4, 5, 8, 11, 16, 18, 20, 22, 25, 27, 29, 31, 33, 34, 36, 38, 39, 40, 42, 45, 48, 49, 52, 54, and 55 were removed from the scale. This decision was taken after considering expert opinions and literature support. The second stage of factor analysis is applied after these transactions. Three sub-dimensions were found to be collected using a 28-item scale in the final form, and it was found that the distribution of sub-dimensions was consistent. The Kaiser-Meyer-Olkin and Bartlett test was used to assess the suitability of the factor analysis of the data in the exploratory factor analysis.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.858
Bartlett's Test of Sphericity	Chi-square	7045.037
	Df	378
	Sig.	.000

TABLE 2: *KMO and Bartlett's test values of digital identity scale*

Source: own processing, 2024

Table 2 indicates that Bartlett's Sphericity test score of 0.00 ($p<0.05$) and the Kaiser-Meyer-Olkin value of .858 are significant. This value shows that the available data are excellent for factor analysis. In other words, KMO and Bartlett's values are appropriate for factor analysis of the data. It is found that in the second stage of factor analysis, KMO values are higher than in the first.

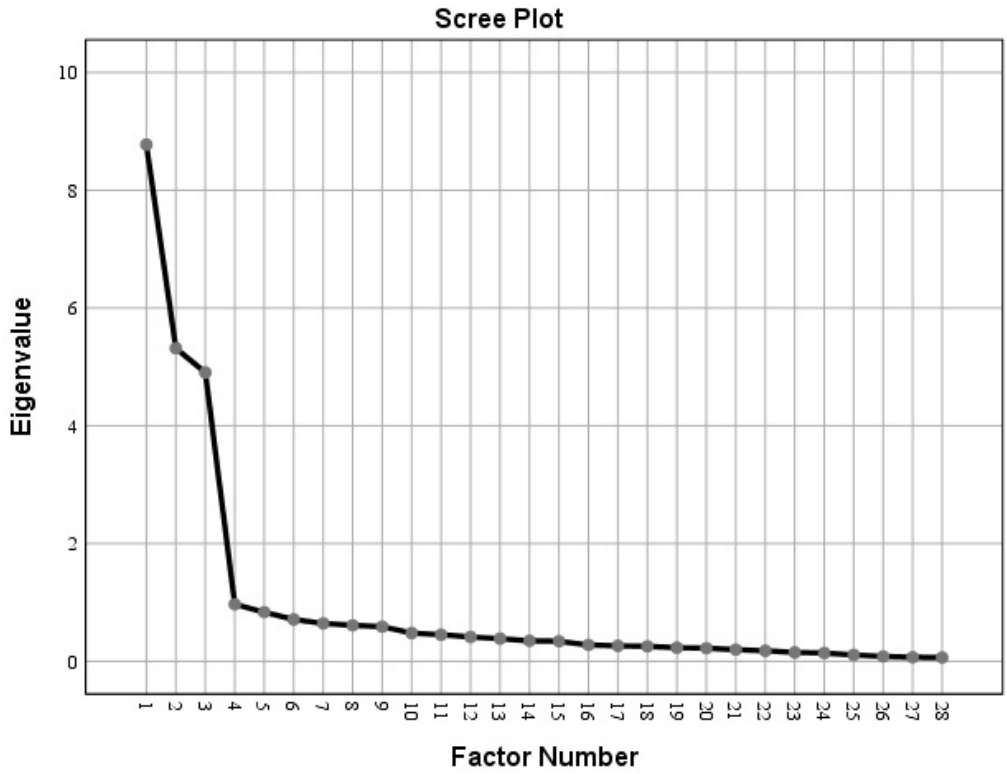

FIGURE 2: *Digital identity scale scree plot*

Source: own processing, 2024

The scree plot shows that the chart curve tends to decrease after three factors. Thus, it was determined that three should be the scale factor number. In the second stage, the scale was collected under three factors, with an eigenvalue greater than 1, when factor common variances (communalities) tables and scree plots were analysed. The total variance value of Digital Identity Scale is 67.84%. It is found to vary between 0.493 and 0.880 in terms of common variances (communalities) of three sub-dimensions that are defined alongside items.

Factors	Initial Eigenvalues			Total Factor Loads			Rotation Sums of Square Loads		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	8.776	31.341	31.341	8.053	28.761	28.761	6.784	24.229	24.229
2	5.316	18.987	50.328	5.007	17.883	46.644	6.040	21.571	45.800
3	4.904	17.514	67.842	4.906	17.521	64.165	5.142	18.364	64.165

TABLE 3: *Eigenvalues and variance of digital identity scale*

Source: own processing, 2024

Table 3 displays the item factor loads. A review of the component matrix table reveals that these 28 items are included in the first, second, and third-factor load values, and that factor load values are 594 and above. This finding suggests that the scale has a generic element. The first component, λ1=8.776, describes 31.34% of the total variance, the second factor, λ2=5.316, 18.98%, and the third factor, λ3=4.904, describes 17.51% of the total variance, according to the eigenvalue statistics of the factor analysis conducted in the second stage.

Items	Factors		
	1	2	3
1. Digital identity is the identity that creates the person one wants to be in the virtual environment and reflects it to others as if it were real.	.875		
2. Digital identity is the identity by which people reflect their way of life in digital media such as profile photos, identity details, political-social posts made, and people being followed.	.854		
3. Digital identity is an intermediary identity for individuals to find people who resemble them as a mirror that allows them to see themselves.	.832		
4. Digital ID is the identity that contains the presentation of all the information that we have created online as a tool that helps communicate when used correctly.	.821		
5. Digital ID, when used correctly, is an identity that strengthens the face-to-face environment by hosting content that cannot be asked or criticized.	.812		
6. Digital ID is a kind of personal marketing identity that people show to people they know or do not know.	.796		
7. Digital ID is the identity of many companies for advertising purposes to reach their user profiles to understand in which direction perceptions are heading.	.784		
8. I think digital ID and virtual ID are the same things.	.742		
9. Digital identity is an identity in which real-life reputation is digitized and digitalized.	.676		
10. Digital identity, like the footprint of an individual, is the identity that can be monitored at any time on social media, job applications, credit usage, online purchases, digital banking, and choosing friends.	.655		
11. Digital ID is the identity that protects individual data against data leaks and cyberattacks and provides online security.	.618		
12. Digital IDs are an identity that everyone needs, which are necessary for all personality structures.		.852	
13. Social people need a digital identity as much as introverted people.		.836	
14. If the presented digital identity is far from reality, the person does not like themself and presents their personality differently in the digital environment.		.808	
15. People who have a sense of curiosity and want to be noticed by other people need a digital identity.		.796	
16. People need digital identities because of their desire to make them like themselves.		.761	
17. In digital environments, individuals talk about their positive personality traits with the idea that reality has no chance of being investigated.		.743	
18. Identity formation in digital environments takes advantage of good impressions and personality and thanks to this, people present themselves better.		.673	
19. The life of everyone appears perfect and smooth in digital environments.		.638	
20. People need digital identities to earn money in this area by catching on.		.594	
21. I think that communication with words or emojis alone is not healthy without hearing the voice of the other person, without seeing their face.			.905
22. I think that communication in digital environments is a false and insincere form of communication.			.895
23. I think that communication in digital environments, along with face-to-face communication environments, can be an effective tool.			.875
24. With digital identity, I think that people try to make themselves think that they are living a life that others will aspire to, by making them look much more successful, rich, and beautiful than they are.			.859
25. I think a special effort should be made on social media to have a good reputation via digital identity.			.836
26. I think that in digital environments people will not care when the assessment of others about themselves is negative.			.834
27. I think it is important how one sees oneself in digital environments.			.824
28. I think it can be dangerous to have close ties with other people in digital environments.			.781

TABLE 4: *Rotated factor matrix of digital identity scale*

Source: own processing, 2024

The component matrix's findings demonstrate that the Digital Identity Scale, which has three sub-dimensions, is a valid and reliable measuring instrument. Describing Digital Identity dimension makes up 11 items. The Need for Digital Identity, Personality, and Digital Identity Presentation dimension makes up 9 items. Communication, Impression and Reputation Management in Digital Environments dimension makes up 8 items. Internal consistency and reliability of the scale were calculated for each factor value, which ranged from 594 to 905, as well as for the total score of 910. Eleven items make up the first factor: 3, 6, 7, 9, 10, 12, 13, 14, 15, 17, 19; nine items make up the second factor: 21, 23, 24, 26, 28, 30, 32, 35, 37; and eight items make up the third factor: 41, 43, 44, 46, 47, 50, 51, 53. By analysing the scale items and items in the factors after the factor analysis, the researcher created the scale factor names: Describing Digital Identity is the first factor, The Need For Digital Identity, Personality, and Digital Identity Presentation is the second factor, and Communication, Impression, and Reputation Management in Digital Environments is the third factor.

5.4 Confirmatory Factor Analysis

The confirmatory factor analysis stage of the scale was carried out, following the exploratory factor analysis. The confirmatory factor analysis has been satisfied with the AMOS program. Confirmatory factor analysis (CFA) is a research method that uses structural equation modelling to show correlations between latent and observable variables (Çapık, 2014).

Gürbüz (2019), acceptable values of path analysis model indices explain in Table 5. A goodness of fit index for the level I and level II path analysis models and the acceptance criteria of fit indices have been explained in Table 5. While evaluating the results of the confirmatory factor analysis in table, it is evaluated by considering indices such as χ2, CMIN (χ2)/DF, NFI, TLI, IFI, CFI, GFI, AGFI, RMSEA, RMR, SRMR, AIC, CAIC and ECVI.

Model Fit Index	Model Result (Level I)	Model Result (Level II)	Acceptable Value	Harmony
X^2 Test	.000	.000	p>.05	Acceptable
CMIN (X^2)/ df	2.101	2.139	<5	Acceptable
NFI	.915	.913	>.90	Acceptable
TLI	.940	.938	>.90	Acceptable
IFI	.954	.952	>.90	Acceptable
CFI	.953	.951	>.90	Acceptable
RMSEA	.063	.064	<0.80	Acceptable
GFI	.870	.870	>.90	Acceptable
AGFI	.822	.822	>.90	Acceptable
RMR	.083	.079	<0.80	Acceptable
AIC	841.977	853.318	The smaller value between the two models	Acceptable
CAIC	1351.015	1353.101		Acceptable
ECVI	3.040	3.081		Acceptable

TABLE 5: *Results I and II goodness of fit index path model*

Source: Gürbüz (2019, p. 34)

The digital identification scale's first-level goodness of fit index results was analysed in Table 5, revealing a chi-square of 621.977, a degree of freedom (df) of 296 (p=.000), and a chi-square / df=2.101. The scale's comparative fit index (CFI) score was 953; the goodness of fit index (GFI) value was 870; the TLI value was 940; the IFI value was 954; and the RMSEA

value was 063. Based on the analysis of model comparative fit indices, it was determined that ECVI 3.040, AIC 841.977, and CAIC 1351.015 had values that were smaller and both saturated compared to independent models. Based on the findings, the goodness of fit indices are often observed to be quite good (Bayram, 2013; Meydan & Şeşen, 2015; Karagöz, 2016).

After looking at Table 5's results for the digital identity scale's second level goodness of fit indices, the chi-square measured 637.318 degrees of freedom (df) was 298 (p=.000), and chi-square / df=2.139 was discovered. There was a CFI of 951; an RMSEA (Root Mean Square Error of Approximation) of 064; a GFI of 870; and an RMR of 079. The values of the model comparative fit indexes are AIC 853.318, CAIC 1353.101, and ECVI 3.081. These findings demonstrate that the scale is smaller than the independent model and also saturated. It was discovered after the results of the analysis were reviewed that the fit indices are fairly good (Bayram, 2013; Meydan & Şeşen, 2015; Karagöz, 2016). The chi-square model, which allows for the assessment of the precise model convenience of the sample to model, is the most widely used model fit index (Harrington, 2009). The range of the chi-square's degree of freedom is measured in chi-square tests and ranges smaller than five are recognized as the goodness of fit index (Erkorkmaz et al., 2013).

It is seen that supply exceeds goodness fit and acceptable fit index with values of level I 2.101 and level 2 2.139. It is accepted that values of CFI and TLI have between .90 and .95 as the goodness model fit index (Brown, 2015). The CFI values in the first level are 1.953 and 2.951, while the TLI values in the first and second levels are .940 and .951, respectively .938 are markers of good fit. A good fit is indicated by a GFI (Goodness of the Fit index) value of .90 or higher, while satisfactory compliance is indicated by a value of .85 or above (Karagöz, 2019). An explanation of the scale's permissible GFI .870 compliance value is provided. Overall, all indices of goodness of fit indicate good model fit. The validity and reliability of the 28-items, 3-sub-dimensions of Digital Identity Scale have thus been validated by the results of exploratory and confirmatory factor analyses.

Kaiser-Meyer-Olkin Sampling Adequacy		.893
Bartlett's Test of Sphericity	**Chi-square**	4819.911
	Df	378
	Sig.	.000
Cronbach Alpha		.894

TABLE 6: *Test-retest reliability of digital identity scale*

Source: own processing, 2024

The KMO value, which was 858 in the pilot study conducted with 278 participants, grew to 893 in the main study, which was produced with 511 participants, according to an analysis of the KMO and Cronbach Alpha data relevant to the main study. The pilot study's Cronbach alpha value was 910, whereas the main study's score was 894. The results show that the Digital Identity Scale is a legitimate and reliable measurement tool.

6 Conclusion

The Digital Identity Scale revealed digital identity definitions, digital personalities, self-presentation strategies, communication styles in digital contexts, and digital identity perceptions of digital environment users over the age of 18 in Turkey. The main problem in developing this scale is the deficiency of measurement tools in Turkish literature and the inadequacy of current digital identity scales international literature. Thus, this study targeted developing a valid and

reliable measurement tool. Examining articles, theses, dissertations, scales, and other research in the national and international literature reveals that studies on digital identity are undertaken on a restricted and homogeneous population, such as university students, younger people, and members of specific occupational groups. The existing scales have a weak correlation to reveal digital identity definitions, digital identity presentations and digital identity perspectives of digital users. Therefore, this study targeted various sociodemographic groups, including those with digital environment users over the age of 18, based on factors including age, income, gender, and education.

Scales and measurement tools on digital identity and digital identity types in the literature were examined. Upon reviewing the literature, both domestically and internationally, it became apparent that the present scales typically have an indirect connection to the topic of digital identification. A sub-dimension known as Virtual Appreciation was discovered in the sub-dimensions of the "Virtual Identity Scale" created by Kardaş (2017) when the measurement instruments for assessing Digital Identity in Turkey were examined. The Social Approval Needs scale created by Karaşar and Öğülmüş (2016) has been found to include a Positive Impression Release sub-dimension. Demir (2011) created the Turkish adaptation of the Identity Functions Scale created by Serafini and Adams (2009). There are 22 compounds on the initial iteration of Serafini and Adams' scale. It has 15 items in Demir's study on Turkish adaption. Sohier and Br**é**e (2017) developed a Digital Identity Scale with four sub-dimensions: Digital Self, Virtual Reputation, Social Inhibition Elimination, and Self-Search, after analysing the measuring tools discovered in the international literature. Serafini and Adams (2009) developed the Identity Functions Scale, also referred to as Structure, which included questions regarding identity and self. The Identity Views Scale (AIQ-IV), created by Cheek and Briggs (2013), has five sub-dimensions: Relational Identity, Individual Identity, Social Identity, Collective Identity, and Special Items. The social identity and relational identity sub-dimensions were utilized.

This study examined the scale materials of the researchers stated, and it is included in literature. It was appropriate to construct a scale as the Digital Identity Scale is not included in Turkish literature. There is a major shortage when there is no measurement device in the relevant subject. It is a unique, valid, and reliable scale developed within the framework of scientific research. This scale consists of 28 items and 3 sub-dimensions. The first sub-dimension of the scale is titled Describing Digital Identity and consists of 11 items which reveal digital identity definitions of individuals. The Need for Digital Identity, Personality, and Digital Identity Presentation are the titles of the second sub-dimension of the scale, which consists of 9 items regarding people's demands for digital identities, digital identities' presentation, and personality attributes. Communication, Impression, and Reputation Management in Digital Settings is, with 8 items, the third sub-dimension of the scale that deals with communication patterns that are composed in digital settings and controlling impressions and online reputation with digital identities.

The scale can be tested on several sample groups or with various factors connected to digital identification, such as those under the age of eighteen, certain age and educational groups, college students, and personnel in the communication and information sectors. The outcomes may vary if various variables and subjects from the Digital Identity Scale are examined. The scale can be a contribution to the field in this way. It is thought that the scales that are currently in use only provide a small area of study for digital identification, after reviewing the research. It is believed that this scale will address a need in the field and advance the fields of sociology, psychology, and communication in particular.

The overall results indicate that this scale has appropriate validity and reliability. Having said that, emerging and enabling technologies like blockchain, big data, AI, and the internet of things are linked to digital identity. Digital identity research has become more important as a result of recent developments in communication technologies including artificial intelligence, big data, blockchain, and other developments. It is recommended that researchers can develop

valid, reliable and update scales regarding enabling technologies and digital identity parallel to current technological advancements. Besides, it is suggested that future researches should replicate this study on larger samples such as different cultures, sociodemographic groups or other countries. Trying different survey and data collection methods is suggested for future researches.

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Author

Assoc. Prof. Sevgi Kavut
University of Kocaeli in Türkiye /Turkey
Faculty of Communication
Kabaoglu, Baki Komsuoglu Boulevard, No: 515, Umuttepe
41001, Kocaeli
TURKEY
sevgikavutt@gmail.com; sevgi.kavut@kocaeli.edu.tr
ORCID ID: 0000-0002-0253-3906

Sevgi Kavut is an Associate Professor at the Department of Advertising at the Kocaeli University, Faculty of Communication, Turkey. She graduated from Istanbul University Faculty of Communication, Journalism Department, and Public Relations and Publicity Department. She received her MA degree in Public Relations and Publicity from Marmara University and her Ph.D. degree in Public Relations and Publicity from Istanbul University. Her main research areas are communication studies, digital identity, interpersonal communication, communication psychology, new communication technologies, social media, personality and impression management.