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Parsimonious BWM (BWM-P) for prioritizing ad appeals in the Metaverse world

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Abstract

Metaverse has made sense for organizations regarding new opportunities it is likely to offer, and studies on Metaverse-related subjects in different areas have increased incredibly. Advertising is an area where Metaverse-related studies are few. For the first time, this paper prioritizes Metaverse ad appeals and performs the Parsimonious Best-worst method (BWM-P) for this purpose. BWM-P, an improved version of the BWM method, allows consistent results to be achieved quickly by reducing the number of pairwise comparisons. Regarding the findings, Metaverse experience is the paramount Metaverse ad appeal, followed by product familiarity and NFT of advertisement, respectively. Further, standardization and Metaverse bonuses are the other significant Metaverse ad appeals. The present research contributes to existing knowledge by analyzing ad appeals to ensure the effectiveness of advertising strategies in the Metaverse world.

Keywords: Metaverse, ad appeals, advertising, MCDM, Best-worst method.

1 Introduction

Having been first conceived by Neal Stephenson in his fictional work, Snow Crash, in 1992 (Joshua, 2017), the Metaverse has recently appeared as a ground-breaking innovation for scholars and marketers. It is a synthesized form of a three-dimensional (3D) world (Ning et al., 2023), suggesting an experience predicted to align with the real world. Early antecedents of Metaverse, such as Second Life (Gent, 2022), Fortnite, and Roblox (Rojas, 2024), are considered to be launching this great concept to the world and allowing consumers to experience an aligned virtual life (Dwivedi et al., 2022). Subsequently, they were formed to provide an immersive computerized experience, especially in gaming. However, they failed to offer an experience perceived as similar to reality and only focused on specific interest groups (e.g., gamers). In comparison, with recent technological developments, the Metaverse supports users to have much more experience than before (Dwivedi et al., 2023). Currently, the Metaverse platforms seek to create real-life experiences and provide delightful results when trying to retain standards of respect for all age groups.

1.1 Motivation of the research

Metaverse has the potential to create unprecedented experiences. It is expected to change how people live and interact with others (Ahn et al., 2022) since it is a designed domain for people to play, work, and interact (Wang et al., 2022). It is also stated that among the compelling reasons for being in the Metaverse world are some factors, such as interoperability between activities and platforms, that will take over most of our lives (Dwivedi et al., 2023). As such, research on Metaverse has started to spread in various disciplines, such as tourism and hospitality (Gursoy et al., 2022), information technology (Ge, 2022), education (Makransky and Mayer, 2022), and psychology (Mandolfo et al., 2022).

On the other hand, in the marketing domain, research on Metaverse is still in its early stage but is growing at an incredible pace in sub-fields of marketing, such as advertising (Kim, 2021; Taylor, 2022; Ahn et al., 2023; Haikel-Elsabeh, 2023), retail (Yoo et al., 2023), branding (Sung et al., 2023; Kniazeva et al., 2023), and sales. There is also no question that advertising will be a part of this computer-generated world (Taylor, 2022), and the advent of media technologies will probably keep in the direction of what is called "immersion" (Ahn et al., 2022). Such a significant evolution of immersive technologies and their essences show us that the Metaverse may derange and change our traditional view of advertising and consumers' reactions to it (Kim, 2021). Perhaps the current state of advertising research on the Metaverse can be likened to the debate of digital advertising research in the 1990s (Taylor, 2022). More specifically, the emergence and development of the Internet, with digital advertising, was expected to completely change the traditional understanding of advertising (Kim, 2021). In this regard, a few attempts were made to understand the role and impact of advertising in Metaverse (Kim, 2021; Kadry, 2022). Eyada (2023) analyzed the potential within the Metaverse and the challenges it would face. Ahn et al. (2022) focused on how advertising may work in the Metaverse. Samad et al. (2023) identified areas where further research is needed and developing best practices for creating effective advertising campaigns in virtual worlds. Du et al. (2022) proposed a targeted advertising framework in the Metaverse. As a result, the need for further research on creating effective advertising campaigns in Metaverse (Samad et al., 2023) points out the primary motivation for this study.

1.2 Purpose of the research

Creating effective advertisements has been a chronic challenge for a long time (Gong and Cummins, 2020) for those who want to attract consumers. Thus, companies have identified various benefits (e.g., hedonic, utilitarian, aesthetic, and social benefits) and various message content to appeal to consumers for advertised goods and services. Herein, ad appeal is about persuasive communication directed at consumers (Okazaki et al., 2010), meaning "the general tone and nature of the commercial or message" (Clow and Baack, 2005). As one of the vital factors of ad effectiveness (Raza et al., 2020), ad appeals have a substantial impact on consumers when they pay attention to ads (McKay-Nesbitt et al., 2011)

and play a decisive role in the expansion of a company's wealth (Sun et al., 2021).

Prior studies have examined the effect of ad appeals on some marketing-related concepts (e.g., brand equity, consumer attitude and consumer adoption, consumer response, consumer engagement, consumer behavioral intention, advertising on social media, etc.) and given contexts (e.g., Covid-19 pandemics, conventional meat-based protein versus plant-based protein alternative selection, sustainability, consumer religiosity, social media video ads, global branding, green-related advertising, etc.) (Nuweihed and Trendel, 2023; Lim, et al., 2021; Casais and Pereira, 2021; Raza et al., 2020; Gong and Cummins, 2020; Yang and Zhao, 2021; Cabano and Minton, 2023; Ye and Mattila, 2021; Yang et al., 2021). Similarly, a vast amount of research up to now has compared ad appeals as rational vs. emotional (Casais and Pereira, 2021; Zhang et al., 2014; Cabano and Minton, 2023; Gong and Cummins, 2020; Yang et al., 2021), implicit vs. explicit (Gong and Wang, 2023), hard-sell versus soft sell (Okazaki et al., 2010), self-benefiting versus other-benefiting (Shan et al., 2023), desirability versus feasibility (Han et al., 2019), and attempted to determine superiority of a specific appeal over the other. Therefore, with expert opinions and multi-criteria decision-making (MCDM) terminology, this study aims to clarify which ad appeal drivers are decisive in Metaverse as well as their significance levels. Focusing on such prioritization allows for discovering which type of advertising is more advantageous for advertising strategies in the Metaverse. Consequently, our research questions are as follows:

- **RQ 1:** What are the prominent ad appeals on the Metaverse platform?

- **RQ 2:** What is the ranking of the significance of these Metaverse ad appeals?

To respond to the research questions above, this research performs the Parsimonious Best-Worst Method (BWM-P) model, which is an improved version of the (BWM-P) offered by Moslem (2023). BWM, offered by Rezaei (2015), is an MCDM method known for its advantages, such as its simple and understandable structure, effectiveness, and a way to achieve effective and consistent results with a few pairwise comparisons (Pamucar et al., 2020; Stevic et al., 2017). Whereas n represents the number of evaluation criteria, BWM requires (2n-3) pairwise comparisons (Yaran Ögel et al., 2023; Amiri et al., 2021). However, as the number of criteria increases, the problem of inconsistency in the analysis emerges (Ecer, 2021; Mahdiraji et al., 2019). Because more pairwise comparisons are required to complete the analysis, especially when the number of criteria is more than seven, experts are conflicted and make inconsistent evaluations (Hashemkhani Zolfani et al., 2022; Tanrıverdi et al., 2022). For instance, it is required to complete seven pairwise comparisons for five criteria and nine comparisons for six criteria, while 11 pairwise comparisons are realized for seven criteria. However, in the BWM-P approach, it is sufficient to make only three pairwise comparisons for seven criteria. Based on these arguments, the BWP-P approach is applied in the study to achieve consistent and reliable results.

1.3 Structure of the research

The remainder of this study is structured as follows. The paper begins by defining Metaverse and reviewing the potential presence of advertising in this immersive world. Then, it is followed by introducing advertising appeals to address the need to execute a successful advertising strategy in Metaverse. Research methodology is next presented, and findings, including theoretical and managerial implications, are finally discussed.

2 Literature survey on Metaverse and ad appeals

This section first focuses on the Metaverse and advertising in the Metaverse. Subsequently, papers on ad appeals are reviewed. Finally, research gaps, as well as novelties and contributions of the study, are clarified.

2.1 Advertising in the Metaverse

Though Metaverse was termed in 1992 by Neal Stephenson, it is recently included in the daily lexicon and received increasing attention shortly after the rebranding of Facebook to Meta (Weinberger, 2022). The Metaverse, simply an integration of the "meta" and the "verse," indicating transcendence and universe, respectively, is a digital world with an autonomous economic system and a consistent value system connected to the physical world (Wang et al., 2022). Though the Metaverse has been characterized as a second life (Sanchez, 2007), 3D virtual worlds (Dionisio et al., 2013), and life-logging (Bruun and Stentoft, 2019), there has not been a usual scientific definition yet. Yet, the existing body of knowledge, generated content, and social activities related to Metaverse are expanding incredibly (Hodgson, 2019). As a virtual, self-sustaining, entirely immersive, hyper spatiotemporal, and synthesized form of the worlds of human, physical, and digital (Ning et al., 2023), the Metaverse is covered as a designed area for people to play, work, and interact (Wang et al., 2022). It could be thought that it is a new generation of internet (Grider and Maximo, 2021), making use of blockchain technology, avatars, and virtual reality (VR) headsets in this blended physical-virtual world (Lee et al., 2021).

Far et al. (2023) listed advertising marketing as one of the popular applications in the Metaverse. They cited introducing advertising marketing as a way to make money from the Metaverse (Hollensen et al., 2022). Therefore, many firms have introduced virtual stores or set up offices (Far et al., 2023) and performed concerts (Tassi et al., 2022) in Metaverse. Common factors one may use for defining advertising (Kerr and Richards, 2021), mediation, directness to a specific receiver, activation of it by an accountable sponsor, and a compelling intent to encourage some desired reactions are implied uniqueness. This uniqueness in Metaverse will probably change how advertising may perform in Metaverse (Kim, 2021) and how advertisers produce, and people consume advertising (Ahn et al., 2023). Thanks to its immersive nature and the possibility of creating experiences dissimilar to ones on social media, the Metaverse could be one of the best media paths for advertising. In this context, a high degree of "immersion" and "interaction" are the most essential aspects of Metaverse, which could provide excellent opportunities for advertisers to pay attention. Both in a place or an object, the level of sensory cues and varying extent of interactions can be measurements of immersiveness and interactivity (Haikel-Elsabeh, 2023).

2.2 Ad appeals

Ad appeal, one of the main characteristics of advertising effectiveness (Raza et al., 2020), is deemed as a persuasive argument (Holmes and Crocker, 1987; Yang et al., 2021), a content (Holbrook and Batra, 1987; Shan et al., 2023) or information. It, therefore, aims at consumers' attention and attempts to affect their decisions, actions (Lin, 2022), and purchase intention (Yang et al., 2021). To achieve an effective connection with consumers and gain a competitive advantage, companies take advantage of different appeals (Quach et al., 2021). A persuasive ad appeal can create an effect on the goods and services that are advertised (McKay-Nesbitt et al., 2011), shape the decision-making processes of individuals (Raza et al., 2020), and have a stirring effect on their attitudes (Nguyen, 2014). So, researchers have examined advertising appeals extensively and effectively (Shan et al., 2023). Here is essential to decide which appeal ought to be used when achieving effective communication (Shan et al., 2023) and promoting advertising strategies (Gong and Wang, 2023), considering an appeal that a company uses can produce different effects on individuals (McKay-Nesbitt et al., 2011; Casais and Pereira, 2021). That is, it is essential to decide which appeal ought to be used when achieving effective communication (Shan et al., 2023) and promoting advertising strategies (Gong and Wang, 2023), considering an appeal that a company uses can produce different effects on individuals (McKay-Nesbitt et al., 2011; Casais and Pereira, 2021; Aaker et al., 1986; Cacioppo and Petty, 1982). Accordingly, researchers have suggested various types of appeals. Among them, rational (also utilitarian or informational) and emotional appeals (also hedonic or transformational) are most commonly used (Lim et al., 2021; Yang et al., 2021; Leonidou and Leonidou, 2009; Zhang et al., 2014). Further, some include feasibility and desirability appeals (Han et al., 2019), soft-sell (i.e., emotional) and hard-sell (i.e., rational) appeals (Lim et al., 2021), warmth and competence appeals (Kim and Ball, 2021), explicit and implicit green appeals (Gong and Wang, 2023), self-benefiting and other benefiting appeals (Dai and Sheng, 2022),

and normative and injunctive appeals (Lin, 2022). A rational content of appeal is composed to provide information and facts without emotions and to persuade consumers through appeal to reasoning. In this approach, factual product information is emphasized with advantageous, distinguishing features (Mueller, 1986; Lim et al., 2021) of goods and services such as quality, performance, value, and reliability (Albers-Miller and Stafford, 1999; Zhang et al., 2014; Yang et al., 2021). Rational ad appeals present functional information important to consumers and knowledge they regard as accurate (Zhang et al., 2014; Casais and Pereira, 2021). On the other hand, planning information about a problem and presenting a solution to that problem are the main characteristics of the rational tone of ad appeal (Casais and Pereira, 2021). Contrary to rational appeals, an emotional tone of appeal follows hedonic, esthetic, and pleasurable benefits (Yang et al., 2021; Andreu et al., 2015; Zhang et al., 2014) and conveys messages addressing consumers' emotions (Casais and Pereira, 2021; McKay-Nesbit et al., 2011), such as threat, adventure, regret, fear, romance, enthusiasm, and status (Casais and Pereira, 2021; Zhang et al., 2014; Cutler and Javalgi, 1993). Based on the direction designed to be given to consumers' behaviors (Casais and Proenca, 2015), emotional advertising messages may be positive or negative (Casais and Pereira, 2021; Zhang et al., 2014; Lim et al., 2021). To evoke shame and guilt in consumers, advertisers employ a negative tone of emotional appeals, such as fear and threat, while to induce consumers about the benefits of change in their behaviors, positive emotional ad appeals come to the fore (Buyucek et al., 2019; Casais and Pereira, 2021). Table 1 presents some categories of appeal types in traditional advertising literature.

Type of ad appeal	Category	Reference
Emotional ad appeal	Positive emotional appeal: Happiness, comfort, enthusiasm, humor, affectivity, empathy, love, hope, relief, pride. Negative emotional appeal: Sadness, discomfort, fear, undesired consequences, guilt, worry, regret, anger, affliction, frustration.	Casais and Pereira (2021)
Rational ad appeal	Logical information, intellectual appeal, appeals to reasoning, presentation of facts, awareness, presentation of solutions.	Casais and Pereira (2021)
Soft-sell ad appeal	Feeling: Creative, instinctive, imaginative, abstract. Implicitness: Insinuation, appealing, subjective, expressive. Image: Entertaining, interpretive, playful, impression-based.	Okazaki et al.(2010)
Hard-sell ad appeal	Thinking: Rational, logical, analytic, factual, concrete. Explicitness: Precise, explanation, convincing, persuasion Instructive. Fact: Educational, descriptive, realistic, informative evidence-based.	Okazaki et al. (2010)
Self-benefit ad appeal	Fund-raising appeals: Quality programming, commercial-free programming, recognition, premium or gift. Charitable appeals: "Build your resume by developing and practicing job skills", "enjoy networking opportunities and meet new people." Consumption situation: Double-layer design, wide mouth; effectively prevents scalding, easy cleaning of the inside of the cup, ensures hygienic drinking water. Fisher et al.	(2008), White and Peloza (2009), Shan et al. (2023)

Other-benefit ad appeal	Fund-raising appeals: Funding cuts, financial targets Charitable appeals: "Help those less fortunate" and "help make the community a better place for everyone." Consumption situation: Environmentally friendly and biodegradable; protects earth's resources; protects the earth's ecology.	Fisher et al. (2008), White and Peloza (2009), Shan et al. (2023)
Warmth ad appeal	Perceived warmth: Kindness, caring, friendliness.	Kim and Ball (2021)
Competence ad appeal	Perceived competence: Ability, efficiency, intelligence.	Kim and Ball (2021)
Explicit green ad appeal	Low carbon emissions, energy saving, reusability, recyclability.	Usrey et al. (2020), Gong and Wang (2023)
Implicit green ad appeal	Passive presence of green-related information in message visual.	Usrey et al. (2020), Gong and Wang (2023)
Desirability ad appeals	"Valence" of a goal-relevant action.	Han et al. (2019)
Feasibility ad appeals	"Ease or difficulty" of achieving a goal.	Han et al. (2019)
Sexual ad appeals	Graphic depictions of provocatively dressed models, nudity, sexual intercourse, sexual innuendo, explicit or implicit sexual behavior, sexual embeds.	Hyllegard et al. (2009) Wirtz et al. (2018)
Normative ad appeals	Injunctive: Societal goals, such as environmental protection and social responsibility. Descriptive: Actions of others.	Lin et al. (2022)
Benefit ad appeals	Advantages of specific actions.	Lin et al. (2022)

Table 1: A summary of traditional ad appeals

Self-benefiting and other benefiting appeals, as broadly debated in pro-socially and pro-environmentally behaving (e.g. organic food (Kareklas et al., 2014)) characterized by the emphasizing values of products or behaviors that deliver consumer (i.e., self-benefiting appeal) benefit (White and Peloza, 2009) or social benefit (i.e. other-benefiting appeal) (Green and Peloza, 2014; Shan et al., 2023).

Among many categorizations of advertising appeals, hard-sell, and soft-sell advertising appeals, in comparison, are broader concepts than other appeals. In the "hard-sell" effort, there is a more direct way to sell, while the "soft-sell" approach adopts subtler and indirect solutions. For instance, emotional appeals, which can be correlated with soft-sell advertising, seem not to reflect the ideas of subtlety and indirectness. Instead, they emphasize mood and image, while hard-sell advertising is potentially consistent but, at the same time, differs from the rational appeal in terms of directedness. In the soft-sell approach, an image or an atmosphere can be created by an indirect mechanism (e.g., a beautiful scene, emotional story), while in the hard-sell approach to orientate sales, distinguishing features, brand name, comparison with other products, product recommendations are generally emphasized (Okazaki et al., 2010).

Advertisers can apply implicit or explicit tone (Banerjee et al., 1995; Luo et al., 2020) of persuasion as in green-related advertising strategies. In explicitly green-related advertising, the environmentally friendly facet of products is emphasized, while environmental issues are not positioned in an easily seen part of the content. (Gong and Wang, 2023; McQuarrie and Phillips, 2005).

For the rest, to deliver a sexual message to consumers to be able to stimulate sexual feelings, a model can be used with his/her words, images, or with their actions, meaning sexual appeals (Wirtz et al., 2018; Reichert et al., 2001). Warmth and competency of an ad appeal are associated with the degree of perception of "good intention" and "capability of bearing this intention" of the brand (Kim

and Ball, 2021). The final example of ad appeal types here is about highlighting goal-achieving action, in which the desirability of an appeal refers to the "valence of a goal-relevant action," while feasibility emphasizes the "ease or difficulty" of it (Han et al., 2019).

In sum, we decided on seven potential ad appeals for this research after a comprehensive literature review and experts' opinions.

Standardization (C1): Each virtual world in Metaverse has its software infrastructure. Since the content that a company advertises in any virtual world may not be functional in others, the strategy of advertising standardization suggests addressing a common strategy (i.e., a common advertising appeal) to advertise the same object (Papavassiliou and Stathakopoulos, 1997). Thence, content standardization can be a persuasive ad appeal to promote these computer-generated realities.

Metaverse experience (C2): Contrary to traditional marketing, experimental marketing assumes that customers make emotional, cognitive, social, relational, sensorial, and behavioral reactions to organizational stimuli (Schmitt, 1999). In this regard, consumer experience can be managed with performance-related (e.g., with rational/emotional appeal) or context-based factors (herein Metaverse) (Carbone and Haeckel, 1994). The contextual condition of Metaverse, herein, can be characterized by varying levels/degrees of "closeness to the real world," "sociability," and "telepresence." All three characteristics of Metaverse can be an organizational cue (i.e., information or communication) (Barrera and Shah, 2023). Metaverse experiences can be designed with varying levels/degrees of immersiveness, sociability, and telepresence to understand customer actions and behaviors in this context-specific environment (Barrera and Shah, 2023).

NFT of advertisement (C3): By depending on blockchain technology, NFT can be described as a heterogeneous token that can be owned, stored, and traded (Dowling, 2022). Since NFTs can be traded, they are used to advertise digital objects in different environments (e.g., games, virtual real estate, sports collectibles, etc.) (Buchholz, 2022). In this regard, NFTs can initiate a new type of advertising and a new way to connect to audiences (i.e., appeal) for those who strongly desire to live superior experiences, expect continuing consumer connections, and more significant sales revenue (Lee et al., 2023).

Differentiation (C4): A product differs in meaning and purpose based on its benefits to consumers. Therefore, the same appeal is expected not to serve all types of products and consumption goals for all audiences. So, as stated in the study of Johar and Sirgy (1991), the effectiveness of an advertising appeal is a function of product-related factors, including product differentiation. That is, appeals employed to show the benefits and values of products (e.g., in emotional or self-benefiting appeal) can have different efficiencies (Zhang and Neelankavil, 1996).

Celebrity endorsement (C5): Undoubtedly, a more immersive and interactive marketing approach would draw ahead to a future where the Metaverse would have an important role. The traditional collaboration between brands and celebrities was like product gifting, social media postings, etc. While such collaborations are productive for companies, Metaverse takes this partnership to an upper level by enabling the co-creation of a virtual event, promoting NFTs (Aw and Agnihotri, 2023), and allowing consumers to choose the celebrity who they desire to take part in advertising.

Metaverse bonuses (C6): A user can win a cash award in a virtual world in exchange for watching an ad. Using such an award in other virtual worlds can be a stimuli (i.e., appeal) to attract consumers to watch an ad.

Product familiarity (C7): Brands often advertise identical content across platforms (herein real world and Metaverse) (Felix et al., 2017) with the logic of a one-size-fits-all approach; even intimate appeals could be productive when communicated through similar platforms (Reich and Pittman, 2020). On the other hand, the effectiveness of ad content on a specific product could be decisive in an individual's prior knowledge (Rhee and Jung, 2019; Dens and De Pelsmacker, 2010; Stayman and Aaker, 1988) using product information in Metaverse which is similar to real-world could serve as an appeal.

2.3 Research gaps and novel contributions

There is a lot of discussion about Metaverse and the opportunities that Metaverse commerce creates for companies (Hofstetter et al., 2022). However, it would not be wrong to say that academic

progress is in the infancy of this entirely immersive world, specifically in marketing, including advertising, retailing, branding, sales, etc. Indeed, companies utilize advertising to promote themselves and affect today's consumers who are curious about being there. As such, few academic studies (Kim, 2021; Kadry, 2022; Eyada, 2023, etc.) have tried to comprehend the understanding of advertising in Metaverse. However, many points (e.g., advertising campaign effectiveness, potentials, and challenges may be advertising campaign face in Metaverse) should be made clear. Thus, this work contributes to existing knowledge and bridges the gap by analyzing advertising appeals to ensure the effectiveness of an advertising strategy in the Metaverse.

Another gap that the paper will bridge is in the methodological context. BWM-P, a new and improved modification of BWM, was employed in only a few studies in the literature. Thus, this research is a candidate to be one of the pioneer papers of BWM-P and guides researchers. Therefore, applying this approach in such a remarkable current study may pave the way for solving other real-world problems.

3   Research methodology and application

BWM produces credible results with fewer comparisons due to utilizing merely two pairwise comparison vectors for attributes, i.e., best-to-others and others-to-worst. Moreover, it brings easiness in calculating and saving time (Ecer and Pamucar, 2020; Torkayesh et al., 2021). In this study, the BWM-P model, a new extension of BWM, is used to determine which Metaverse ad appeals are more significant. An expert group of ten people working in the advertising industry and academicians in Turkey is asked to evaluate seven Metaverse ad appeals (standardization, Metaverse experience, NFT of advertisement, differentiation, celebrity endorsement, Metaverse bonuses, and product familiarity). In the case study, two surveys are applied to experts aiming to collect data using both BWM and BWM-P approaches. It is clarified the goal of the survey and the essential stages of the applications. The following questions are asked in the survey regarding BWM:

- Please state the best and worst Metaverse ad appeals.

- Please assess the best Metaverse ad appeal regarding the others on a scale of 1-9 (1: very bad, 9: very good).

- Please assess the others regarding the worst Metaverse ad appeal on a scale of 1-9.

As a result of a face-to-face interview, experts first decide on the best and worst Metaverse ad appeals together. Afterward, they also respond together to the survey questions. BMW-P differs from conventional BMW by directly scoring criteria (aspects). The main steps of BMW-P are explained below (Moslem, 2023).

Step 1. First, evaluation factors (Metaverse ad appeals) are determined. It is also decided who the experts will be.

Step 2. Evaluation factors are rated by experts. The scores are then normalized. In other words, experts rate each factor (f). Then, the normalized evaluations ($c(\alpha_{mr})$) for all $m = 1, \ldots, n$ are computed.

Step 3. Reference factors are decided. Usually 3 reference elements (good, medium, and bad) are sufficient. Let us show the reference factor by r and the number of reference factors by v_m.

Step 4. The weights of reference elements are found with classical BWM (see Zolfani et al., 2020; Ecer, 2021). More clearly, the best factor is compared with the others, while the others are evaluated concerning the worst factor. It should be noted that the consistency of pairwise comparisons must be considered. Whereas $c(\alpha_{mr})$ for all $m = 1, \ldots, n$ and for all $r = 1, \ldots, v_m$, they should be compared with the corresponding ratings $tm(\alpha_{mr})$ checking that the monotonicity is met, that is confirming that $tm(\alpha_{mr1}) > tm(\alpha_{mr2})$ if $c(\alpha_{mr1}) > c(\alpha_{mr2})$.

Step 5. In the last step, the weights of factors other than reference elements are calculated through linear interpolation. After all weights are computed, the final weights of the factors are determined by normalization. Let $c(t_m(f))$ is the normalized score of the factor f, which is computed from the interpolation of the values chosen by the reference BWM in the 3rd and 4th steps, $c(\alpha_{mr})$ is

Feature	Aggregated score	Normalized score	Rank
C1	41	0.1419	4
C2	51	0.1765	1
C3	43	0.1488	3
C4	37	0.1280	6
C5	30	0.1038	7
C6	39	0.1349	5
C7	48	0.1661	2

Table 2: The direct scores of features

Best to others	C2	C1	C5
C2	1	3	9

Table 3: Preference for the best Metaverse ad appeal regarding all Metaverse ad appeals

the normalized score of $r + 1$ reference factor obtained from pairwise comparison, α_{mr} is the direct assessment of the reference factor via the experts, $t_m(f)$ is the direct corresponding rating demanded by the expert to the factor f, for each $t_m(f) \in [\alpha_{mr}, \alpha_{mr+1}]$. Consequently, Eq. (1) is used for linear interpolation method for the BWM-P model.

$$c(s_m(f)) = c(\alpha_{mr}) + \frac{c(\alpha_{mr+1}) - c(\alpha_{mr})}{\alpha_{mr+1} - \alpha_{mr}} \cdot (t_m(f) - \alpha_{mr}) \qquad (1)$$

In the BWM-P approach, first, direct scoring is realized. Then, classical BWM is performed on the reference elements, indicating the main difference in the BWM-P. Thus, time and effort are saved (Moslem, 2023).

Within the framework of the information given, the real world application in this research is carried out as follows.

Step 1-2. Seven Metaverse ad appeals are scored directly by each expert. Since there are seven factors here, experts assign 7 points to the feature they prefer most and 1 point to the feature they prefer least. The scores are then aggregated by applying an arithmetic mean. The final rate scores for each feature are presented in Table 2.

Step 3. In this step, we decide on three reference elements as C2 (0.1765), C1 (0.1419), and C5 (0.1038), since C2, C1, and C5 have the highest, middle, and lowest values in our case, respectively. Moslem (2023) and Duleba (2022) do not recommend selecting many reference elements to avoid increasing the number of pairwise comparisons.

Step 4. To find the reference elements' weights with BMW, experts make pairwise comparisons together (Tables 3-4).

So, we obtain the following non-linearly constrained optimization problem.

Others to the worst	C5
C2	9
C1	3
C5	1

Table 4: Preferences of all Metaverse ad appeals concerning the worst Metaverse ad appeal

	C1	C2	C3	C4	C5	C6	C7
Parsimonious weight	0.2307	0.6923	0.3230	0.1748	0.0769	0.2027	0.5538
Final weight	*0.1023*	*0.3071*	*0.1433*	*0.0775*	*0.0341*	*0.0899*	*0.2457*
Rank	4	1	3	6	7	5	2

Table 5: Weight values of Metaverse ad appeals

$$Minimize\ \xi$$

$$subject\ to \begin{cases} \left|\frac{w_2}{w_1} - 3\right| \leq \xi; \\[4pt] \left|\frac{w_2}{w_5} - 9\right| \leq \xi; \\[4pt] \left|\frac{w_1}{w_5} - 3\right| \leq \xi; \\[4pt] \sum_{j=1}^{n} w_j = 1; \\[4pt] w_j \geq 0\ for\ all\ j \\[4pt] \xi \geq 0 \end{cases}$$

$$Minimize\ k$$

$$\rightarrow\ subject\ to \begin{cases} w_2 - 3w_1 \leq kw_1; w_2 - 3w_1 \geq -kw_1; \\[4pt] w_2 - 9w_5 \leq kw_5; w_2 - 9w_5 \geq -kw_5; \\[4pt] w_1 + w_2 + w_5 = 1; \\[4pt] w_1 \geq 0; w_2 \geq 0; w_5 \geq 0; \\[4pt] k \geq 0 \end{cases}$$

Once solving this problem, the weights of the reference elements are 0.6923 (C2), 0.2307 (C1), and 0.0769 (C5).

Step 5. In the first stage of the last step, the weights of factors other than the reference elements are determined by the interpolation method (Eq. 1).

$$\begin{aligned} c(s_m(C7)) &= 0.2307 + \frac{0.6923 - 0.2307}{0.1765 - 0.1419} \cdot (0.1661 - 0.1419) = 0.5538 \\[6pt] c(s_m(C3)) &= 0.2307 + \frac{0.6923 - 0.2307}{0.1765 - 0.1419} \cdot (0.1488 - 0.1419) = 0.3230 \\[6pt] c(s_m(C6)) &= 0.0769 + \frac{0.2307 - 0.0769}{0.1419 - 0.1038} \cdot (0.1349 - 0.1038) = 0.2027 \\[6pt] c(s_m(C4)) &= 0.0769 + \frac{0.2307 - 0.0769}{0.1419 - 0.1038} \cdot (0.1280 - 0.1038) = 0.1748 \end{aligned}$$

Once the weights of all Metaverse ad appeals are computed, they are normalized to obtain the final weights. Table 5 demonstrates the results.

Regarding Table 5, Metaverse experience (C2) is the most preferred Metaverse ad appeal, followed by product familiarity (C7) and NFT of advertisement (C3), respectively. Additionally, standardization (C1) ranks fourth, Metaverse bonuses (C6) ranks fifth, differentiation (C4) ranks sixth, and celebrity endorsement (C5) ranks last.

All in all, Table 6 summarizes the characteristics of the BWM-P approach and similar methodologies. In the analytical hierarchy process (AHP) technique, the required pairwise comparisons' number is 21 for the real-world case in this research, calculated through $n(n-1)/2$ pairwise comparisons, where $n = 7$. Traditional BWM needs 11 pairwise comparisons, $2n - 3$. In contrast, the BWM-P requires merely three pairwise comparisons, 2n-3, where the number of reference factors is 3. This illustrates that BWM-P ensures easier and faster solutions for calculating the weight values than AHP and BWM. Further, compared with decimal numbers utilized in AHP, the BWM-P employs solely integers, making the computations easy. Additionally, the respondents may find BWM-P easier to perceive than AHP and traditional BWM and, therefore, update their answers more effortlessly to boost consistency.

4   Discussion and implications

Sufficient advertising-oriented Metaverse research is absent in the relevant literature. Based on this research gap and drawing upon literature and experts' opinions, this research aims to determine

	AHP	BWM	BWM-P
Need for decision-makers	Yes	Yes	Yes
Type of comparisons	Pairwise	Pairwise	Pairwise and few direct assessments
Interpolation	No	No	Yes
Consistency	Partly	Partly	Yes
Number of pairwise comparisons for the case in this work	Very high (21)	High (11)	Very low (3)
Type of numbers used	Decimal	Integer	Integer
Analysis time	Very long	Short	Short

Table 6: Characteristic summaries of the proposed and other approaches

which Metaverse ad appeal is potentially most effective. Regarding the findings, first, we revealed that "experience" is the most preferred potential appeal that would increase an ad campaign's effectiveness. Further, product familiarity and NFT of advertisement to promote digital objects are decided potential Metaverse ad appeals. According to the findings, an integrated communication approach, Metaverse bonuses, product differentiation, and celebrity endorsement in an advertising campaign are ranked in lower significance.

In recent years, creating a superior experience has been a core motivation and a fundamental element of competitive advantage for companies (Verhoef et al., 2009; Gao et al., 2021). Similarly, almost all Metaverse applications share the goal of enhancing user experience. Thus, Metaverse marketing applications should be regarded as technology and consumer experience. In this sense, a level of sociability, immersiveness, and telepresence (Barrera and Shah, 2023), specified to Metaverse, would contribute to the design of a superior customer experience.

The research makes various theoretical contributions. First, whereas few studies have claimed advertising effects on Metaverse (Kim, 2021; Kadry, 2022; Eyada, 2023), this study contributed to understanding advertising in the Metaverse context. Second, there is a contribution to customer experience literature by examining customer experience from a different context. Since it is assumed that experience is a context-depending construct (Gao et al., 2021; Gahler et al., 2023), the findings have implications to which ways a company should leverage designing customer experience (including a level/degree of impressiveness, telepresence, and sociability) in Metaverse. Third, according to some researchers (Rhee and Jung, 2018; Dens and De Pelsmacker, 2010; Stayman and Aaker, 1988), an individual's prior knowledge is one of the determinants of the effectiveness of ad appeal. Indeed, for consumers who have abundant knowledge about any product, it is suggested that emotional content rather than rational should be employed (Rhee and Jung, 2018). This study is similar to the assumptions of Rhee and Jung (2018) in that results (product familiarity) have shown that prior knowledge about a product in the real world would affect the persuasiveness of an appeal in Metaverse. Fourth, NFT of an advertisement is regarded as a new and innovative way of communication and advertising today (Lee et al., 2023). Having emerged as a gifted way to promote brands, it effectively establishes and enhances long-term customer relationships (Buccholz, 2022). Likewise, NFTs are credited as the third important point for advertised content to contribute to long-term customer-brand relationships.

5   Conclusion

The current work aims to determine which Metaverse ad appeal is potentially most effective. Using BWM-P, we consider seven Metaverse ad appeals and prioritize them. The findings reveal that the Metaverse experience is the most critical Metaverse ad appeal, followed by product familiarity, NFT of advertisement, standardization, Metaverse bonuses, product differentiation, and celebrity endorsement, respectively.

Future work can perform analyses by increasing the number of Metaverse ad appeals. As companies adapt to the Metaverse world, Metaverse ads can be evaluated and ranked in terms of ad appeals. In this context, well-known MCDM methods (TOPSIS, MARCOS, EDAS, ARAS, VIKOR, COPRAS,

TODIM, etc.) can be employed in ranking. To better model uncertainty and ambiguity, researchers can also benefit from various extensions of fuzzy sets, such as hesitant, spherical, Pythagorean, neutrosophic, q-rung orthopair, and so on (Candea & Filip, 2016; Duţă & Filip, 2008).

5.1 Ethical approval

The ethical approval for this study has been granted by Afyon Kocatepe University, Social and Human Sciences Scientific Research and Publication Ethics Committee (Date: 16.8.2023, Approval no: 2023/243).

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