

Simulation of explaining the role of Social Trust components on Advertising in Online Social Networks: moderating role of Innovative Culture

Behnaz Dehrouyeh¹, Abolfazl Danaei^{2*}, Seyed Mohammad Zargar³

¹*Phd student of media management, Department of Media Management, Semnan branch, Islamic Azad University, Semnan, Iran*

²*Associate Professor, Department of Media Management, Semnan branch, Islamic Azad University, Semnan, Iran*

³*Associate Professor, Department of Management, Semnan branch, Islamic Azad University, Semnan, Iran*

Abstract

Today, social networks have expanded a lot and a wide range of people are members of these networks, regardless of social stratification. The functions and services of these networks are rapidly changing and evolving, as many of the daily needs and services of people are offered in these networks. The present research aims to provide a model to explain the influence of social trust components on advertisements in online social networks (with the moderating role of innovative culture). For this purpose, first, the articles, sources, and references related to the topic were reviewed and the desired components were extracted. The statistical population in this research included 7 university experts and information and communication technology managers selected by the snowball method. The necessary formulas for implementing the model were checked with the opinion of experts. The validity of the research model was confirmed after performing various tests in VENSIM Software. After confirming the validity of the model, scenarios were developed and implemented. The results of the designed scenarios showed that the increase of social trust components such as the organization's credibility and security has the greatest effect on the effectiveness of advertising in online social networks.

Keywords: Social Trust, Advertising, Online Social Networks, Systems Dynamics, Innovative Culture

1. Introduction

Today, with the advancement of mass communication tools and computers, the penetration and expansion of the Internet in scientific, cultural, industrial, commercial, managerial, etc. fields are undeniable. (Killian & McManus, 2015; Yumitro et al., 2023). Shirkhodai et al (2018) believe that new developments in the field of information technology have caused the emergence of attractive virtual spaces such as social networks that are expanding day by day and provide an arena for the promotion of goods and services of producers. The development of information and communication technology is one field playing a significant role in the lives of people during the modern era (Kumari, 2019;

* Corresponding Author

Omotosho, 2019), facilitating efficient and fast communication and sharing of information (Bibi et al., 2017). It also leads to the establishment of social media platforms, which commonly provide a range of benefits and functions (Giri & Vats, 2019). It can be safely said that the emergence of social networks is one of the most influential phenomena of the 20th century (Karimi Alavijeh & Bakhshi, 2017). In most of the developed countries of the world, social networks have been widely used and have covered almost all aspects of people's lives, and the organizers of these networks have been able to use this tool in the best way, and the producers of products and services have been able to, according to the information that They gain trust and loyalty from these networks (Brodie et al., 2013). From the point of view of some managers, today we live in advertising-based societies. Consumers' attitudes and behavior towards a particular brand can be easily changed through advertising or a recommendation from someone they trust (Sanjari Nader et al., 2020). Social networks have changed the landscape of advertising (Sheidaei et al., 2022). Clement (2019) stated that 93% of companies have included social media advertising in their marketing strategies, which generates huge advertising revenue. Most brands rely on social media to communicate with consumers and provide more services, and if the advertisements of commercial brands on social networks are implemented well, they will create interaction with consumers. (Pang & Choy, 2020).

Studies have shown that sending personalized advertising messages is the most important concern of customers who receive mobile advertising. To satisfy this need, interactions play an important role in helping online consumers access personal messages defined by the seller. Interactions represent an online mechanism for the customer's compatibility with the messages presented in a more general form from electronic sellers to reach the personalized form of personal messages for the customer (Sheidaei et al., 2022). If consumers like a brand, all the communications and interactions made on that company's page can be seen, and from there many consumers consider the views of other consumers to be valid (Devries, 2019). Empirical evidence has shown that online brand communities play a vital role in increasing a brand's success in terms of maintaining consumer loyalty, increasing market penetration, increasing revenue, and encouraging consumers to engage in positive advertising (López et al., 2017).

There have not been many studies about social trust in advertisements on online social networks. Also, the existence of the innovative culture variable is one of the very new topics in online social networks, so the investigation of this type of innovation in advertising in online social networks is considered a new category. What effects can innovative culture have on advertising in online social networks or there may be an effective relationship; In other words, the investigation of innovative culture on advertising in online social networks shows how innovative culture presented in online social networks can affect advertising in these networks. Basically, in this article, innovative culture is introduced as a dimension of innovation; That innovative culture can be effective on the income and profitability of online social networks for advertising that improves the performance of online social networks is a question that has been answered in this research. Also, innovative culture along with social trust components can have an effective role in advertising on online social networks. Therefore, in this article, the influence of the components of social trust, including the presence of a sense of intimacy, the presence of participation, and the presence of a sense of security with the moderating role of innovative culture on advertising in social networks was investigated. In this paper, we seek to investigate the relationship between the components of social trust and innovative culture with advertising in online social networks. Therefore, this research has tried to look at the components of social trust and innovative culture in advertising in online social networks. Therefore, the main questions of the research are proposed as follows:

- How do the components of social trust affect advertising in online social networks?
- What effect does innovative culture have on advertising in online social networks?
- How to simulate the effect of social trust components on social media advertising, considering the role of innovative culture?

- How to evaluate the impact of social trust components on advertising in social networks considering the role of innovative culture?

Therefore, after reviewing the theoretical foundations in Table 1, the research variables were identified, categorized and sourced:

Table 1- Research variables

Row	Dimensions	Components	Objects	Ref.	
1	Social Networks	Social Networks	-	Ioanid et al. (2018)	
2		social media	-	Al-Khalaf & Choe (2019)	
3		Online social network	-	Dutta & Bhat (2016) Abdallah Alalwan et al. (2018) Safaie & Atefyekta (2020)	
4		social media	Quality of information, experience and expertise	Saima & Khan (2020)	
5		Community Relations	-	Davison (2019)	
6		social media	Facebook	Danias & Kavoura (2013) Shawky Ebrahim et al. (2019)	
7		social network	Social motivation	Verma (2021)	
8		social network	Instagram	Trachuk et al. (2021) Karimi Alavijeh & Bakhshi (2017)	
9			Positioning		
10			Branding		
11		Virtual social network	Density	Keshtkar & Pourmazaheri (2019)	
12			Centrality		
13			Access		
14		social network	Telegram	Khaniki et al. (2016)	
15		social network	Privacy	Zakeri Hamane et al. (2020)	
16	Advertising	Mobile advertising	-	Barakat & Asim El Sheikh (2010)	
17		Advertising	perceived value	Verma (2021)	
18			online shopping	Trivedi & Sama (2019)	
19		Mobile advertising	-	Lou & Yuan (2018)	
20		Word of mouth advertising	-	Andreassen & Streukens (2009)	
21		Strategy in advertising	-	Trachuk et al (2021)	
22		Advertising	-	Li et al. (2020) Abdallah Alalwan (2018) Singh et al. (2021) Bayad (2021) Karimi Alavijeh & Bakhshi (2017)	
23			Advertising	Viral advertising	Raghubasie & El-Gohary (2021)
24				Advertising process	
25				Creative innovation	
26				Digital advertising	
27			Digital advertising	Gordon et al. (2020)	
28			Advertising measurement		
29			commercial advertisements	Samsam Shariat et al. (2016)	
30	Advertising elements and content	Bakhtiari bastaki et al. (2021)			

31			The nature of the advertisement	
32			Talent	Ghajari & Naghavi (2020)
33			Job benefits	
34			Organizational Culture	
35			Labor market	
36			Socio-economic class	
37			interest	
38		Internet advertisement	-	Ahmadi & Ahmadi (2021)
39		Online advertising	-	Ghafourian Shagerdi et al. (2017) Ansari & Jodan (2020)
40	Trust	Trust to buy	Willingness to trust	Aeron et al. (2019)
41			Trust among online shopping consumers	
42		Internet business Trust	Reliability	Aiken et al. (2007)
43		social Trust	-	Chow & chan (2008) Guillou et al. (2021)
44		Trust	Trust e-commerce	Sutanonpaiboon & Abuhamdieh (2008)
45			Trust in online shopping	
46		Brand Trust	-	Lou & Yuan 2018
47		Trust	-	Bohler & Drake (2017) Eneizan et al. (2019) Dabbous et al. (2020)
48			online shopping	Dabbous et al. (2020)
49			Trust in the brand	Shawky Ebrahim et al. (2019)
50			-	Shams Koshki et al. (2013)
51		social Trust	A sense of intimacy	Kamran et al. (2018) Razmahang & Sadeghi (2020)
52			The presence of participation	
53			Having a positive feeling	
54		Trust	Security features	Haghighi & Montazer (2015)
55			Technological features	
56			User's individual-social characteristics	
57			Website feature	
58			Cultural characteristics of the user	
59		social Trust	Fundamental Trust	Sobhani & Hashemi (2017)
60	personal Trust			
61	generalized Trust			
62	institutional Trust			
63	Trust	Brand Trust	Sanjari Nader et al. (2020) Bakhtiari bastaki et al. (2021)	
64		Trust in technology		
65		Trust the source		
66	Trustworthiness	-	Ahmadi & Ahmadi (2021)	
67	Innovative Culture	Innovative culture	-	Oboreh (2021) Mowlaie et al. (2021)
68		Innovative culture	Tendency to innovation	Aliahmadi et al. (2018)
69			Decision and innovation intention	
70			Innovation perspective	

71			Assistance and innovative ideas	
72			Mutual respect and trust between people	
73			A sense of fairness	
74			Searching for ideas for new innovations	
75		Innovative culture	Intention to be innovative	Mohammadesmaeili (2016)
76			Innovation infrastructure	
77			Market trend of innovation	
78			The field of innovation implementation	
79		Innovative culture	Perceived innovative culture	Yasini (2018)

Based on the information obtained from the experimental background and research literature and using the opinions of experts, a conceptual model was designed in the form of Figure 1.

1.1. Research Gap

However, the most important discussion regarding people's relationship with these networks, regardless of technical facilities, is users' trust in these networks. The impact of trust and its aspects on social networks and its types have been emphasized by researchers (Kridera & Kanavos, 2024; Korantenget et al., 2023; Acharjee & Panicker, 2023; Thabit et al., 2022, Liu & Wang, 2022; Saeidi, 2020). For recent research on trust in the cases of Facebook and Twitter, one may refer to Sabatini and Sarracino (2019) and many others. This trust is somehow the most important factor of loyalty to them. Social trust cannot be produced easily and its emergence comes from the accumulation of various types of trust at different levels of society (Kamran et al., 2018). Trust is an acquired category that is obtained through education and experience in the context of society. Social trust is one of the important aspects of human relations, which provides the basis for establishing communication and cooperation between members of society (Khalili Ardakani et al., 2017). Today mass media are one of the most important sources of producing values such as trust and social participation. Riesman (1950) believes that mass media neutralizes the static state of following and social homogeneity and motivates people to become personally involved in social issues and participate in political life. Some theorists consider this direction so strong that they believe that the media can produce culture as a quasi-reality as a commodity in advertisements and replace a meta-reality as culture and social values. (Kamran et al., 2018). However, the important gap in this category is to deal with an innovative culture.

Innovation culture refers to a set of shared assumptions, values, beliefs, attitudes, and behaviors of organizational members that can help create and develop innovation in the production of a new product, service, or work process (Ali & Park, 2016). What is needed in practice, and perhaps the only solution to create innovation, is the development of a culture of innovation that leads the members of the organization to strive for innovation (Aibaghi Esfahani et al., 2020). Chield also points out that organizational realities and networks, and what causes or hinders innovation, is organizational culture (Green & Ciley, 2014). Innovative culture reflects the attitudes and behaviors of teams as well as the organization and provides a bridge between effective organizational practice and high-quality healthcare. (Jane et al., 2013). Innovative culture in social networks can affect both directly and indirectly. In the direct method, social networks are used as a platform to present creative and innovative ideas. This platform can be used to convey ideas, collect feedback, and communicate with audiences. Also, social networks can be used to create a suitable cultural environment to encourage the expression of creative and innovative ideas. In the indirect method, the culture of innovation in social networks takes place in the form of transferring the culture of innovation from innovative environments to social networks. By encouraging communication with innovative environments, people can

pitch their ideas to others and benefit from positive and negative feedback. Also, people can benefit from the experiences of others in the field of innovation and creativity and apply these experiences to their work. In general, social networks can be used as a platform to promote the culture of innovation and creativity, and by using them, the sharing of creative and innovative ideas can be promoted.

2. Theoretical Foundations and Research Background

2.1. Social Trust

In English-American law, trust is a relationship between persons in a situation where one has power, management, and property, and the other wants to benefit from these privileges (Kamran et al., 2018). Trudy Govier considers social trust to be the foundation of a life combined with the ethics of responsibility and goodness and believes that social bonds are formed and built in the shadow of trust. Social trust is a prerequisite for a dynamic and democratic political culture and system, and the existence of an atmosphere of distrust in society weakens the democratic political culture and reduces political trust (Almond and Verba, 1965). Issues related to risk, trustworthiness, privacy, security, and control of information appear as the main variables in the development of trust in the Internet (Aiken et al., 2007:5). Social trust can be defined as the belief that other people are reliable partners for cooperation. When we decide to participate and cooperate in a joint interaction with someone, it is reasonable to invest in this interaction to the extent that we can trust him to receive the desired response from him. Social trust is a fundamental belief in decision-making processes and affects a wide range of social behaviors such as cooperation in situations of conflict of interest or cooperation in social problems with a large number of people (Guillou et al, 2021).

2.2. Advertising

Advertising is the most powerful tool of awareness in introducing a company, product, service, or idea and point of view (Shafiei Nikabadi & Zarei, 2017). The extent of the advertising field is impressive. If the ads are productive and catchy, they can create an impression in the audience, even make them interested in the subject to some extent, or at least make them accept and recognize the product and its trade name (Kotler, 1999). In the meantime, although the Internet has provided an effective media for advertising, people seek to maximize their investment in this category (Rodgers & Thorson, 2010). With the ever-increasing expansion of mobile devices, electronic commerce, and marketing has gone beyond the Internet and has been displayed on mobile phones. Missionaries can easily reach a large number of users and communicate with them at a low cost (Lages, 2004). In recent years, the technology of mobile devices has grown rapidly, so new and advanced generations of mobile phones (smartphones) have been created. As a result, it is possible to use all the features of the media, provide personalized advertisements, provide advertisements according to time and place, and provide timely services to the user, and the efficiency of advertising messages has increased (Shafiei Nikabadi & Zarei, 2017). The purpose of advertising is not only to capture the market, but the goal should be to create deep trust and faith in people and buyers for the development of future works (Anonymous, 2010).

2.3. Online Social Networks

The rapid development of digital technology has changed people's lives in various fields (Prabowo et al., 2020). The Internet as the biggest source of information in the new century caused the emergence of online business at the global level (Zubair et al., 2020). Informal communication related to products and services has a strong impact on consumer behavior, which is often more than messages received through advertising. (Izadi et al, 2019). Social media networks represent new communication marketing networks for organizations to

communicate with customers, especially virtual communication with customers. (Costa et al., 2017). Businesses have started using social networks as a way to help connect employees and customers, to learn about their interests and characteristics, and to provide customer service in an engaging technology environment. (Ismail, 2017) There are debates about whether brands should have a social media presence; For example, Laroche et al (2012) support this idea; Because they consider social media as a medium between brands and customers. Companies create this relationship between brands and customers who may become more loyal to the brand; Anyway, nowadays businesses use social networks for brand management (Hudson et al, 2016; Moro et al, 2016; Parsons & Iepkowska-White, 2018), consumer trust (Cooley & Park-Yency, 2019), e-commerce and social commerce (Tajvidi et al, 2018), product development New and innovation (Du et al, 2016; Roberts & Piller, 2016), knowledge sharing (Leonardi, 2017), electronic word-of-mouth advertising (Wakefield & Wakefield, 2018), customer relationship management (Agnihotry et al, 2017; Cheng & Shiu, 2018; Pan et al, 2019) and sales growth (Kumar et al, 2017). Social networks and their increasing penetration among different users in all parts of the world have made these networks become suitable tools for advertising, e-commerce, and most importantly customer participation and engagement. (Izadi et al, 2019). Customers who are more involved in social networks are likely to increase their loyalty to the brand (Martin-Consuegra et al, 2018). The main difference between social media and other conventional media such as television, newspapers, magazines and billboards is that social media provides two-way communication between the company and the customers; While traditional media establish one-way communication (Prabowo et al., 2020). Social media has improved interaction among online brand communities by establishing a two-way relationship (Zolloa et al, 2020). Interaction is considered an important concept in the field of business-social drivers for success in communication, especially online communication (Park & Yoo, 2020).

2.4. Advertising in innovative culture

In the current environmental situation, which is associated with uncertainty, high risk and very fast changes, organizations have to develop innovation in order to survive and increase competitiveness. The capacity and power of innovation is one of the very important factors that significantly affects commercial performance. In a competitive market, manufacturers tend to spend more, grow faster, and be more efficient and profitable than non-innovative organizations. For this reason, innovation capability is a basic competitive tool for long-term survival and success of organizations. Organizations with greater innovation capacity can respond better to the environment in which they are located, more easily achieve the capabilities needed to improve organizational performance, and can strengthen their sustainable competitive advantage. (Rezaei Dolatabadi et al, 2012). As long as customers feel that social media advertising is relevant to their preferences and interests, they will be more willing to purchase products presented in social media advertising. One of the main innovative features of social media advertising is their ability to empower organizations to accurately customize and tailor their ads and messages. Accordingly, organizations now have more ability to deliver their advertisements and messages to their target customers. Moreover, customers who see ads relevant to their needs will definitely find these ads more useful and productive. (Abdallah Alalwan, 2018, 73).

2.5. Marketing in Social Networks

Social media marketing is the process of promoting websites, products, and services through online social channels and building relationships with current or potential consumers, providing marketers with significant opportunities to reach consumers (Abesh Loui Aghdam et al, 2023). In their social communities and creating personal connections with them. Social

media marketing practices are part of the advertising mix in the new communication paradigm (Chahal et al., 2019: 196). In general, marketing based on social networks is a set of marketing activities that uses social relationships formed between people to increase the organization's sales. Different examples of network-based marketing include word-of-mouth marketing, innovation diffusion, viral marketing (Wong et al., 2022: 340).

2.6. Social Networks and Marketing Communications

The growing trend of using social networks in different cultures and countries has seen an exponential increase in the levels of online communication worldwide, ranging from consumer-to-consumer interactions, consumer-to-business interactions, company-to-consumer interactions, and company-to-consumer interactions in CMSE (Continuity social environments through computers) (Peruta & Shields, 2018: 179, Abesh Loui Aghdam et al, 2023). Emerging digital media technologies, especially the Internet, social networking websites (eg: Facebook, LinkedIn, Snapchat), mass communication websites (eg: YouTube, Flickr) and mobile networks (based on Web 2.0) market and dynamics Companies have transformed business by changing competitive positions. Social media websites have changed the rules of the game for marketers to understand online consumer behavior in social networks. Marketers try to understand the business strategy for survival in social environments and create several methods to identify the behavior of buying goods and services using decision-making patterns (Wang, 2020: 3).

3. Methodology

The approach used in this research is system dynamics, which is a method for the qualitative description, exploration, and analysis of complex systems (Zargar, 2018). System dynamics is an approach to understanding the nonlinear behavior of complex systems over time by using the feedback loop. The importance of using the approach of system dynamics is that in the real world, the behavior of phenomena is formed by the interaction between a set of elements. The thinking and method of system dynamics is a kind of methodology and simulation and computer modeling to determine the framework, understand, understand, and discuss some complex managerial, industrial, social, and even medical issues. Dynamic systems are an aspect of systems theory and are used as a method to understand dynamic and continuous behavior in complex systems (Mohaghar et al., 2013). Forrester in 1950 at the University of Massachusetts is the origin of this method. After decades of development and improvement, the systemic dynamics model has been widely used in the study of economics, society, ecology, and many complex systems (Chang et al., 2008; Wang & Zhang, 2001). According to Tao (2010), System Dynamics has a few advantages, particularly in analyzing, improving, and managing the system characterized by complex feedback effects as well as a long development cycle. With this advantage and the requirement needed in our study, the system dynamics method is used.

To investigate a complex and dynamic issue, the following steps are considered: 1) statement of the problem, 2) formulation of dynamic assumptions of the model, 3) formulation of the simulation model, 4) model testing, 5) design of system improvement options and its evaluation (Sterman, 2000). In this research, using the dynamics approach, a dynamic model for the role of social trust components on the effectiveness of advertising in online social networks with the moderating role of innovative culture has been designed, and how the role of social trust components on the effectiveness of advertising in online social networks with the moderating role of innovative culture has been designed. It is simulated over time. The validation stage seeks to check the usefulness of the model based on the defined goals, and the degree of confidence in the validity of the model depends on the modeler's vision based on the designed dynamic model and the modeler's desired goals from the model (Sterman, 2000). After reviewing the theoretical bases of influential variables in developing the research model, they were extracted and approved by experts. In this article, the research experts included 7 experts who were selected by the snowball method. These people were selected considering the criteria of experience and ability, which consisted of university professors and information and communication technology managers with a master's degree or higher and with a minimum of 10 years of work experience. This model development process was executed using Vinsim PLE for Windows Version 6.3D software developed.

3.1. Reference Modes

Reference patterns represent the behavior of the model over time and are usually presented in the form of graphs, charts or data tables. In this research, the aim is to investigate the components of social trust on the effectiveness of advertising in online social networks (with the moderating role of innovative culture). Figure 2 shows the basic mode of advertising effectiveness in online social networks in the presence of social trust and innovative culture. In such a situation, if social trust increases and there is an innovative culture in the organization, the effectiveness of advertising in social networks will increase until it reaches its maximum.

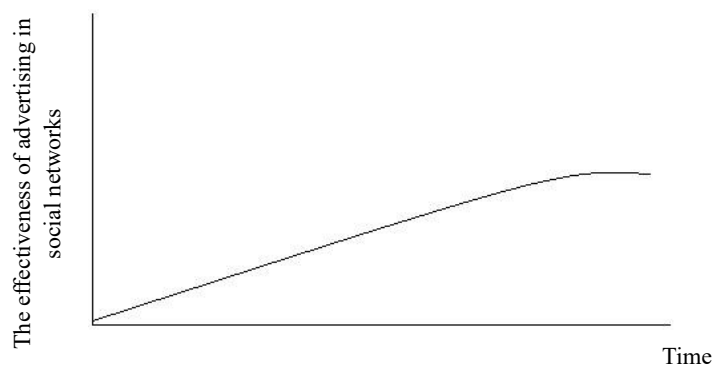


Figure 2. Reference Modes in research

3.2. Time Horizon of Modeling

Choosing the right time horizon for analyzing model results is vital. Usually, the time horizon of causal and effect loops is short-term, while the effects of learning and feedback loops are long-term, so it is important to establish a balance in the time horizon of these two. In most of the empirical research conducted in the field of diversification, a period of 3 to 5 years has been considered to check the results (Gary, 2005). Miczka & Größler (2010) have also investigated the dynamics of inter-organizational cooperation using the system dynamics modeling method in 60 months. In this research, based on the opinions of experts and the literature, a time horizon of 60 months has been considered so that there is enough time for feedback to function.

3.3. Development of Dynamic Hypothesis

"Dynamic hypothesis is a working theory about how a problem occurs" (Sterman, 2000). The dynamic hypothesis expresses the reasons for the problem observed in the reference models and is always subject to revision or rejection while learning from the modeling process and the real world. Based on the observations of the reference models and the theories found in the research literature, the dynamic hypothesis of the desired model was set as follows.

Social trust is subject to factors such as effective communication, shared values, personal relationship and perceived pleasure. As social trust increases, innovative culture improves. The existence of an innovative culture causes the creation of creative advertisements. Advertisements that are personalized according to the needs of people and are appropriate to the time and place of the person, increase the usefulness of the provided advertisement, which can strengthen the word-of-mouth advertisement, and this point increases the effectiveness of the advertisement. On the other hand, by repeating the effective advertisement, the image of the brand is engraved in the mind of the recipient of the advertisement and it makes the brand famous, which subsequently has a positive effect on the effectiveness of the advertisement in online social networks. It should be kept in mind that too much repetition leads to audience fatigue and hurts the effectiveness of the ad. In addition, the quality of the information provided in the advertisement and the selection of the appropriate social network are factors that directly affect the effectiveness of the advertisement.

3.4. Determining the Boundary of the Model or defining the Variables

The model boundary delineates the scope of the model by listing the key variables of the model; These variables include variables that are inside the system (endogenous) and variables that are outside the model (exogenous) and variables that are not in the model at all (excluded) (Sterman, 2000).

Table 2 shows the key variables in modeling the role of social trust components on advertising in online social networks (with innovative culture moderating factor).

Tabel 2. Model variables

Variable Name	Variable Status	Variable Type	Definition
E: External; I: Internal; F: Fixed; A: Auxiliary; L: Level			
The ideal society with social trust	E	F	A variable between 0 and 10 that represents a society where there is ideal social trust.
Distance to the community with social trust	I	A	A variable that indicates the distance of the current society from an ideal society with social trust.
social trust	I	L	Social trust is a variable that is subject to changes in effective communication variables, shared values, personal relationships, perceived enjoyment, and innovative culture.
The credibility of the organization	E	F	The credibility of the organization is a constant variable that directly affects social trust.
effective communications	I	A	Effective communication means the ability to convey a message in the best possible way, which is a function of social trust
Perceived pleasure	I	A	A variable that is a function of the variable of personal relationships and expresses the level of enjoyment of communication.
Personal relationships	I	A	This variable represents the process by which we share our information and feelings with others through verbal and non-verbal messages.
common values	I	A	This variable expresses the commonality between the basic beliefs of each person

Atmosphere to create innovation	I	A	This variable shows the existence of conditions and facilities for creating innovation.
Strategy	E	F	This variable, with a change in the range of 0 to 10, means setting goals and planning a plan to achieve them in the organization.
Innovative culture	I	L	This variable shows the creation of a culture to ground innovation in the organization.
Tendency to innovation	I	A	This variable shows the willingness to innovate. The increase of this variable means that there is a tendency to innovation among the people of the organization.
Advertising suitable for time and place	I	A	his variable shows the appropriateness of the ad received with place and time. The higher the value of this variable, the more the ad is presented at the best possible time and place.
Perceived usefulness	I	A	This variable shows the amount of usefulness and benefit that people get from communication with the individual and the society.
Word of mouth advertising	I	A	This variable indicates that the advertisement is transferred from one person to another. As these variable increases, it means that the content of the ad is suggested by people to each other.
Personalized advertising	I	A	This variable shows the appropriateness of the advertisement presented to the needs of the individual. The increase of this variable means that the ad presented has matched the person's taste, tendencies and needs.
The effectiveness of advertising in online social networks	I	L	This variable shows the impact of an advertisement and its content on people. As these variable increases, it means that the ad provided has a suitable effect.
Income	I	F	The constant variable is between 0 and 10, where 0 means no income and 10 means the maximum possible income.
Profit	I	L	This variable is the result of subtracting the income from the expenses of the organization.
Brand image	I	A	This variable means a set of communications about things like product features, benefits, or price, organized in meaningful ways.
Brand reputation	I	A	Brand reputation, brand image and credibility are intangible and very important assets of any company or enterprise.
Information quality	E	F	It is a variable between 0 and 10, the increase of which means providing quality information to people through advertising.
Trust in technology	E	F	A variable between 0 and 10 where 0 indicates no trust in technology and 10 indicates complete trust in technology.

3.5. Research Model Circles

3.5.1. Circles of the effect of repetition of advertisement on the effectiveness of advertisement in online social networks

Figure 3 shows a positive loop and a negative loop. Repetition of advertisements makes the image of the brand queen in the audience's mind and increases the brand's reputation. Brand reputation increases the effectiveness of advertising. On the other hand, if the repetition of the advertisement exceeds the capacity of the audience, it will cause audience fatigue and reduce the effectiveness of the advertisement in social networks.

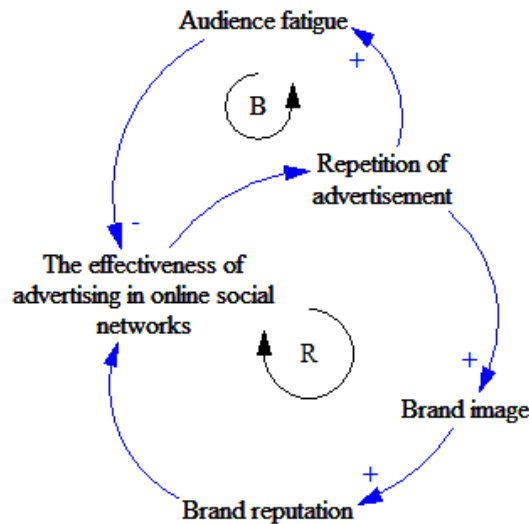


Figure 3. Circles of the effect of repetition of advertisement on the effectiveness of advertisement in online social networks

3.5.2. Influence circles of personalized advertising on the effectiveness of advertising in online social networks

If the advertisement is designed based on the personality and behavioral characteristics of each group or individual, it increases the appropriateness of the ad with the spatial and temporal conditions (which means that the person receives the best advertisement content at the best possible time and place), in such situations, the effectiveness and usefulness of the advertisement increases and the probability of word-of-mouth advertisement increases, which increases the effectiveness of the ad, effective advertisements increase the sale of products or provide more services, which increases profits, and more profits are caused by personalized advertisements. It should be kept in mind that providing personalized ads increases the organization's cost (figure4).

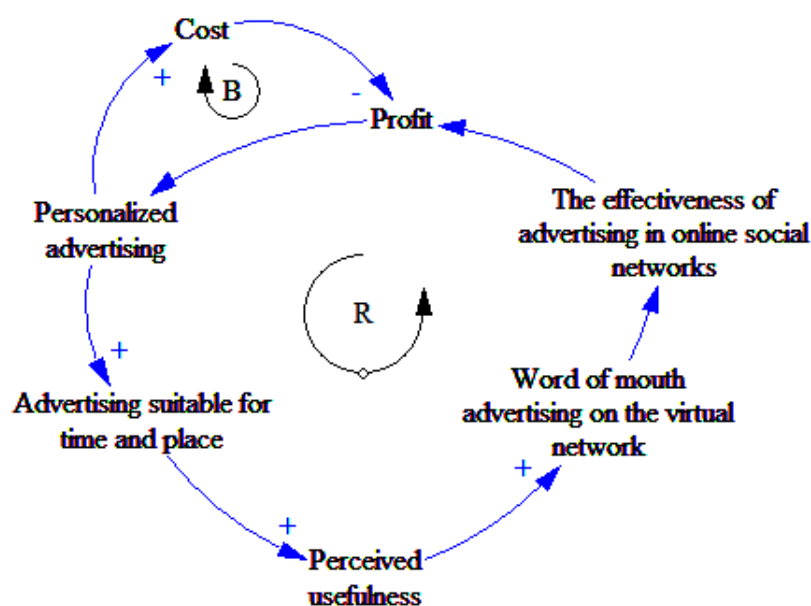


Figure 4. Influence circles of personalized advertising on the effectiveness of advertising in online social networks

3.5.3. Circle of innovative culture

The positive circle of innovative culture states that with the increase in the atmosphere and infrastructure to create innovation, the tendency to innovate increases, and the increase in the tendency to innovate increases the innovative culture, which is also directly influenced by the organization's strategies (figure 5).

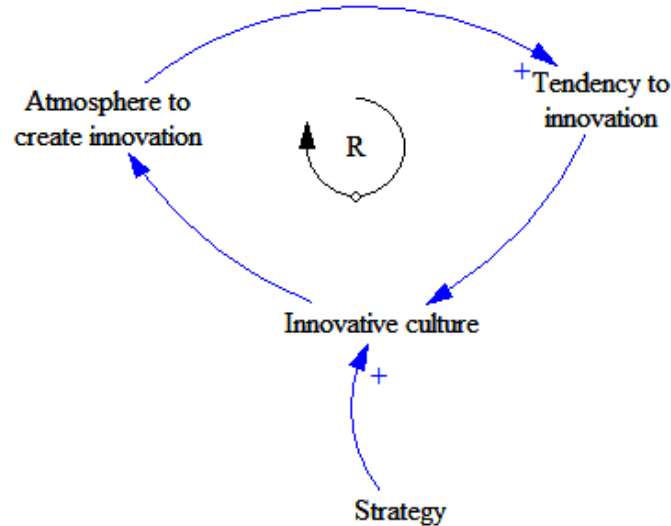


Figure 5. innovative culture

3.5.6. Influence circles of social trust and innovative culture

Effective communication is formed when the message presented by the audience is received correctly and accurately. Shared values increase if the audience receives the message carefully. Having many common values improves personal relationships between people. Since humans are inherently social and seek to create relationships, improving personal relationships makes people happy and strengthens effective communication. On the other hand, improving personal relationships is an influential factor in creating and improving social trust. Effective communication improves innovative culture and improving innovative culture increases social trust (figure 6).

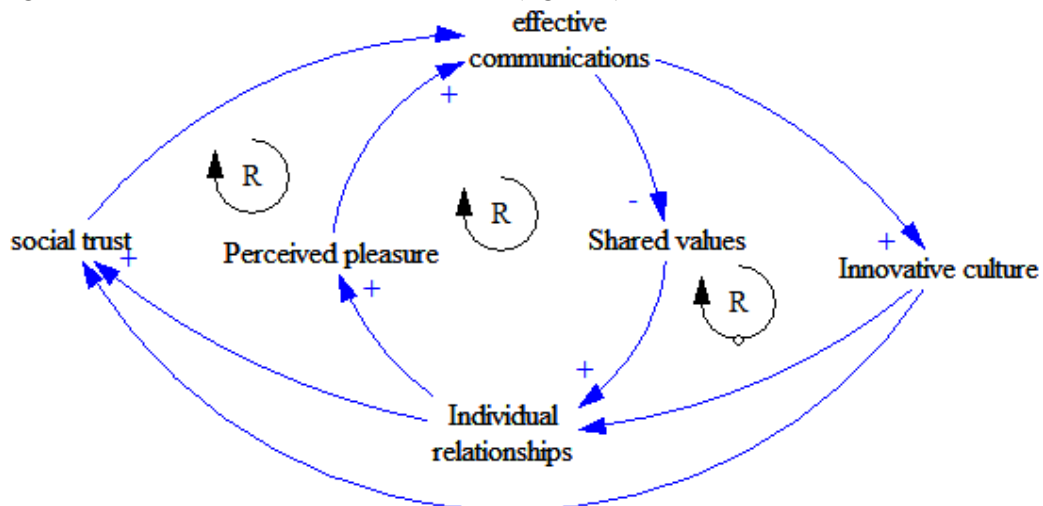


Figure 6. Influence circles of social trust and innovative culture

4. Research Findings

4.1. Boundary Adequacy Tests

In the boundary adequacy test, the question must be answered whether the important concepts related to the problem in the model have been considered. In this research, the proposed model is based on the literature review, and all the key variables of the model are built, based on the recognition of their

importance in the literature review related to social trust, innovative culture, and the effectiveness of advertising in online social networks. In addition to this, the necessity and importance of all the variables mentioned in the research literature for decisions related to the effectiveness of advertising in online social networks have also been examined in expert meetings with experts; the variables in the model are the results of the variables confirmed by the research literature and experts. To investigate the question of whether the behavior of the model shows a significant change after removing the boundary assumptions. The results of the presented model were analyzed after removing parts of the model and changing the model boundary.

Figure 7 shows the effectiveness of advertising in online social networks after removing innovative culture. As it is known, the model faces a significant change after removing the innovative culture. As in the research literature, the effect of innovative culture on the effectiveness of advertising in online social networks was mentioned, and experts also emphasized the effect of innovative culture on the effectiveness of advertising, the output of the model also shows that if the innovative culture is removed, there will be significant changes in the output of the model.

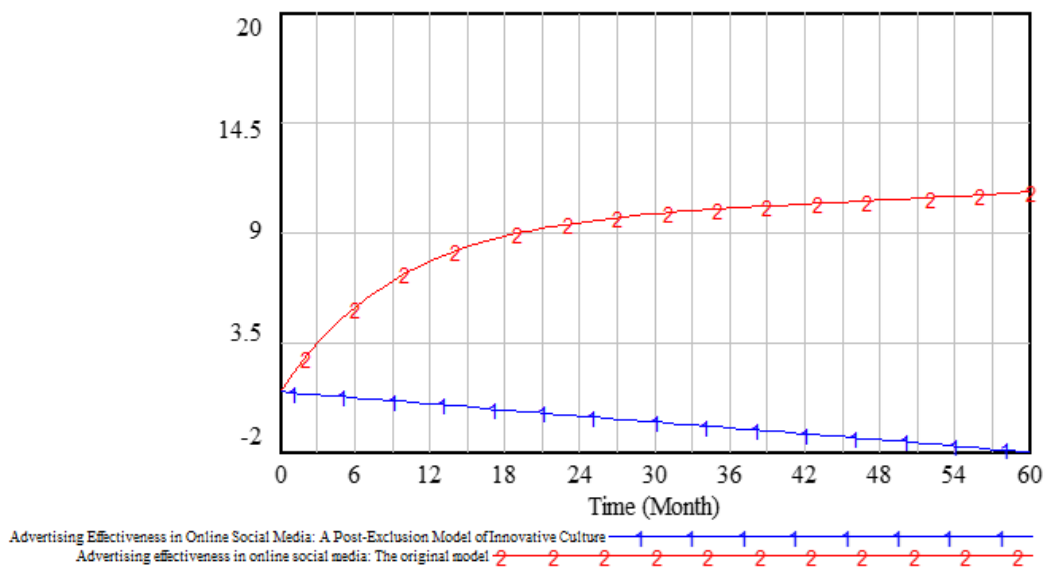


Figure 7. Testing the adequacy of the boundary by removing the innovative culture
 The boundary adequacy test was performed again for the perceived usefulness variable, which can be seen in Figure 8. As it is known, after removing the perceived usefulness variable, the model had a significant change. In this sense, the presence of the perceived usefulness variable in the model is important according to the research literature and experts' opinions as well as the output of the model.

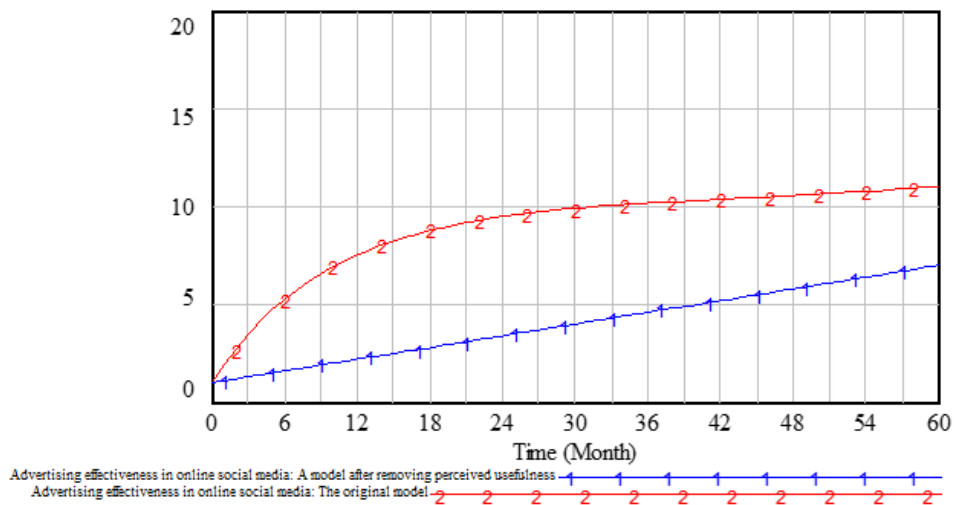


Figure 8. Limit adequacy test by removing perceived usefulness variable

Figure 9 is the output of the boundary adequacy test with the exclusion of social trust. Social trust is one of the main components of the model, and as it is known, removing this variable caused a significant change in the model.

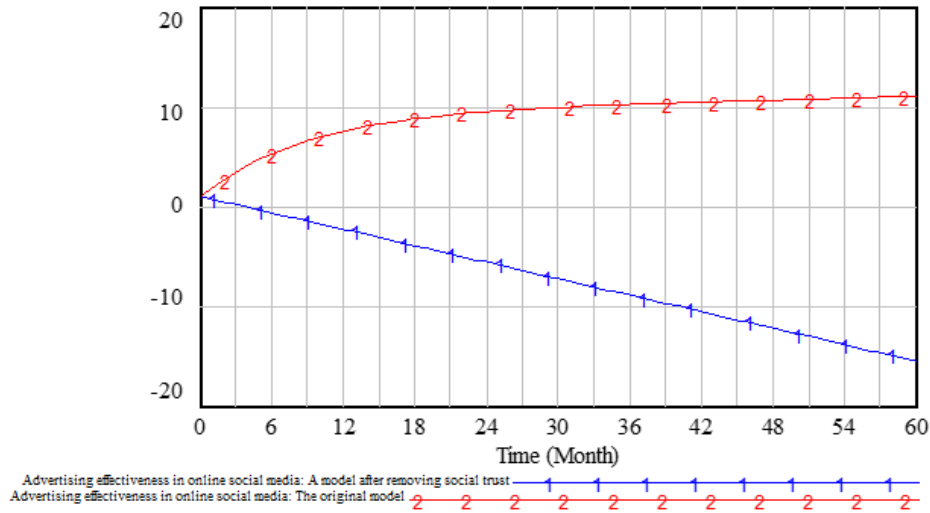


Figure 9. Adequacy test of the boundary by removing the social trust variable

4.2. Structure Evaluation Test and Dimensional Stability Test

The purpose of the structure evaluation test is to determine the conformity of the model structure with the descriptive knowledge related to the system and to check the rationality of the decision rules in shaping the behavior of the variables and the correctness of the structure of the model equations. For this purpose, different parts of the model have been tested to determine the compatibility of the model structure with the existing descriptive knowledge, the results of which are shown in Figure 10. As social trust increases, profits, innovative culture, and subsequently the effectiveness of advertising in online social networks increase.

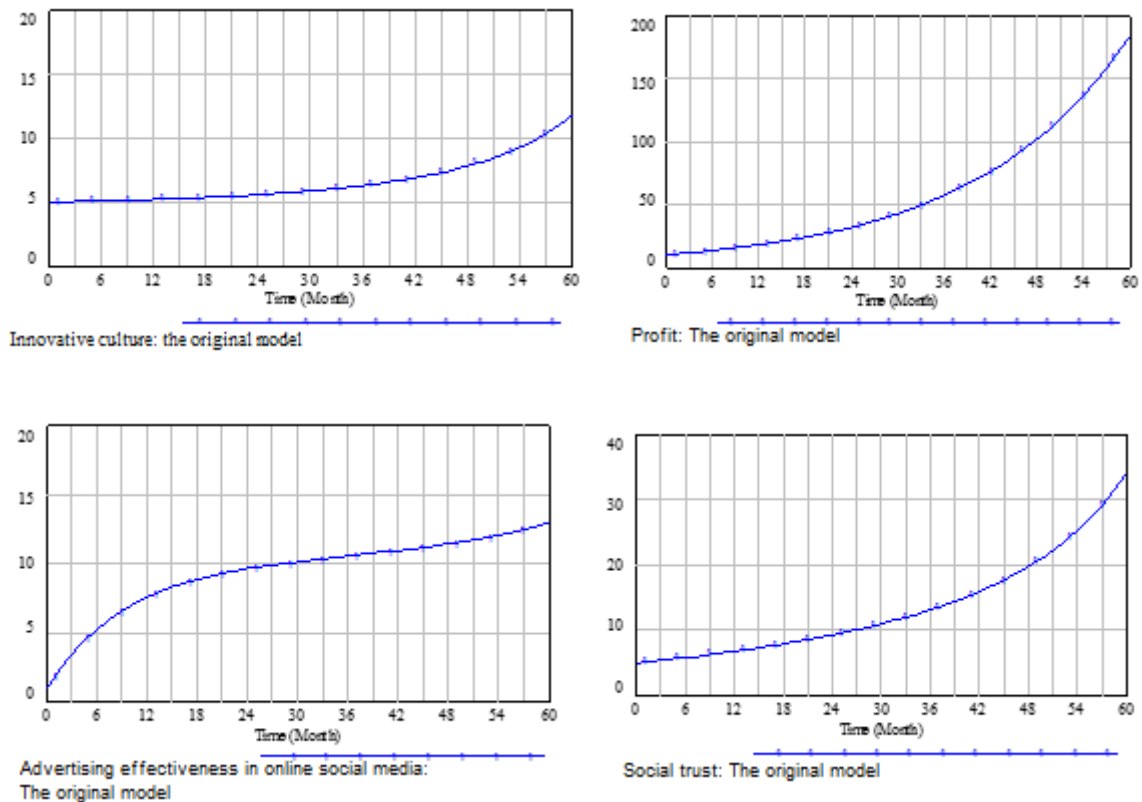


Figure 10. Structure evaluation test

In dynamic modeling, the sameness of the measurement units on both sides of the equations is of great importance, and the dimensional stability test examines this issue. Since in this research, the equations related to the model were written in the VENSIM software environment, the correctness of the measurement units was confirmed by the software.

Also, the parameters of the model have been determined by trial and error and comparing the behavior of the model with the reference models, and judgment methods based on experts' opinions were also used to ensure their validity.

4.3. Extreme Condition Test

The limit condition test is the answer to the question of whether the model shows appropriate behavior when its inputs are placed in limit conditions such as zero or infinity. In other words, the model must be stable even in limiting conditions; There are two ways to perform the limit condition test: First, he examined all the equations used in the model in the limiting conditions of their variables; or that the behavior of the model was investigated in scenarios where the inputs of the model are in limiting conditions.

In the following, various variables are placed in a limit state and their effect on the effectiveness of advertisements in online social media is examined.

- **The first situation:** In this situation, word-of-mouth advertising and personalized advertising are set to the maximum level of 10. The second situation:
- **In this situation:** word-of-mouth advertising and personalized advertising are at a minimum and equal to zero.

As can be seen in Figure 11, the model has maintained its stability in the minimum and maximum states.

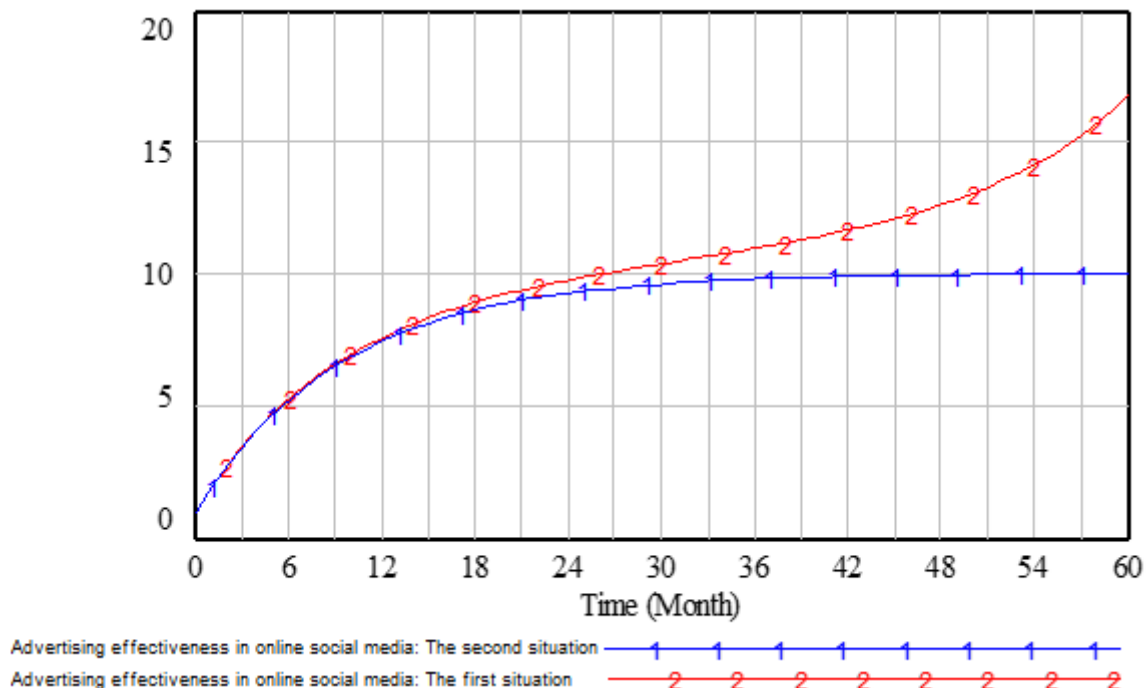


Figure 11. Limit condition test in the first and second situation

- **The third situation:** In this situation, the income was set at the maximum level and equal to 10.
- **The fourth situation:** In this situation, the income was considered to be minimal and zero.

As shown in Figure 12, the model has maintained its stability in the minimum and maximum state.

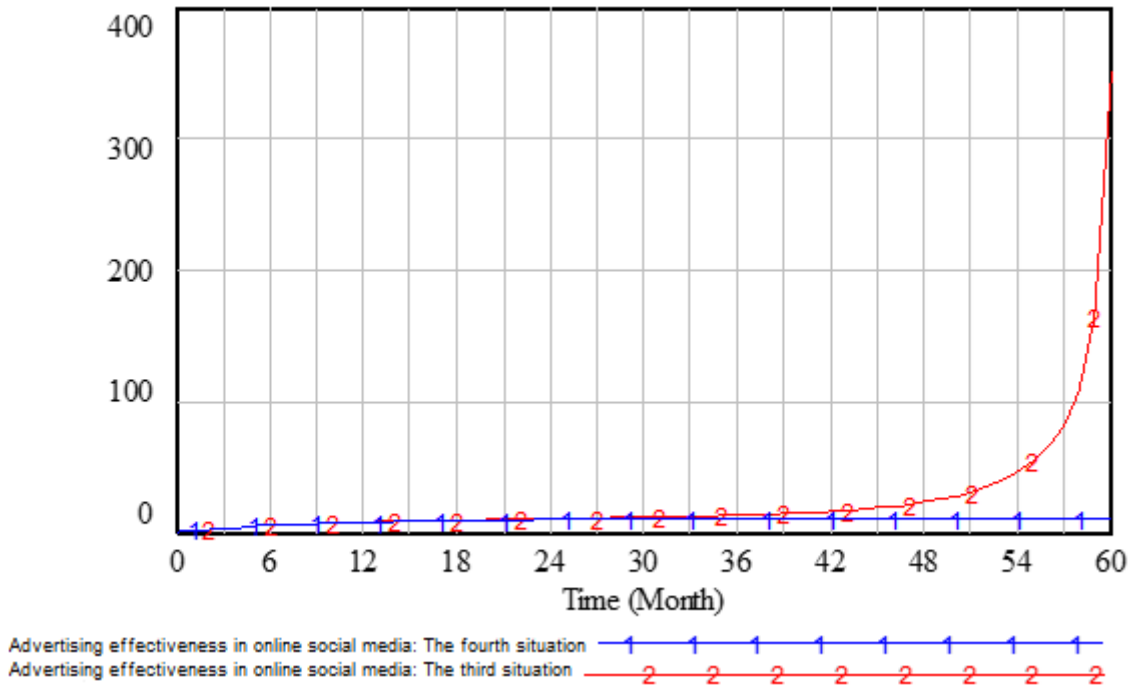


Figure 12. Limit condition test in the third and fourth state

- **The fifth situation:** In this situation, the innovative culture was considered as maximum and equal to 10.
- **Sixth situation:** In this situation, the innovative culture was considered to be minimal and equal to zero.

As can be seen in Figure 12, the model has maintained its stability in the minimum and maximum state.

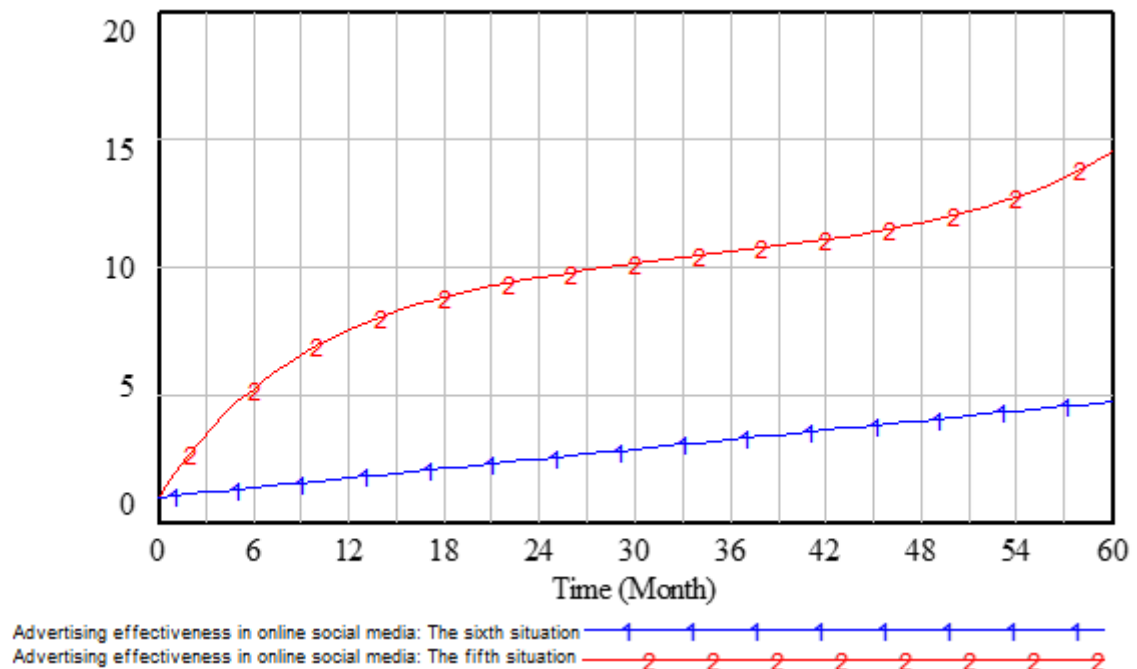


Figure 12. Limit condition test in the fifth and sixth state

- **Seventh situation:** In this situation, social trust was considered at the maximum level and equal to 10.
- **Eighth situation:** In this situation, social trust was considered to be minimal and equal to zero.

As shown in Figure 13, the model has maintained its stability in minimum and maximum conditions.

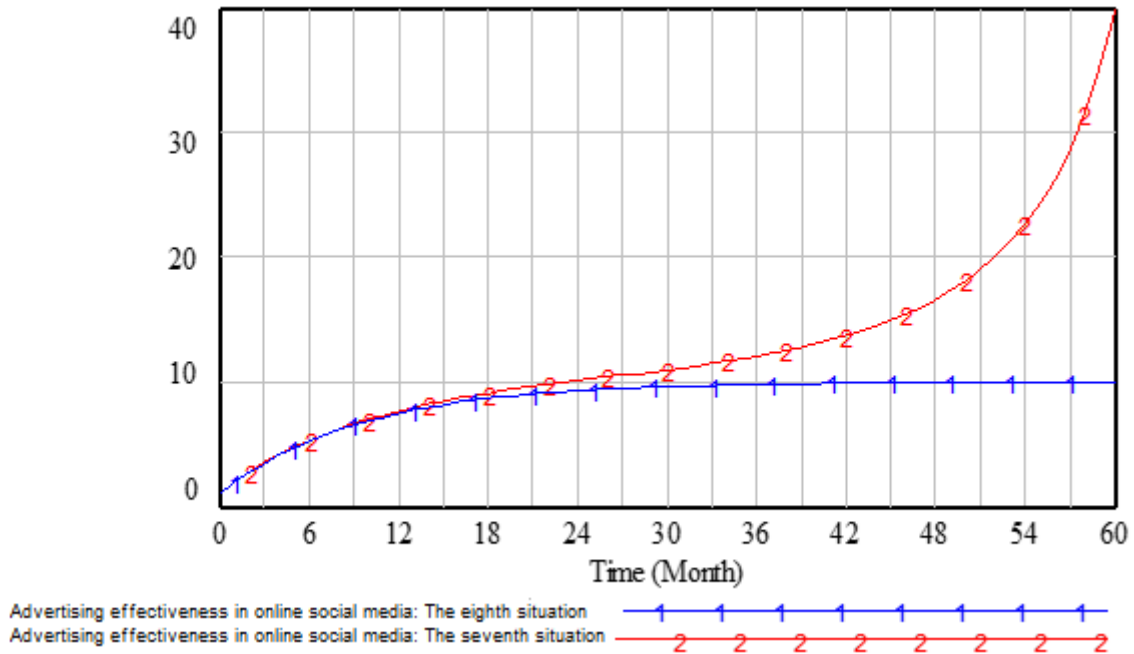
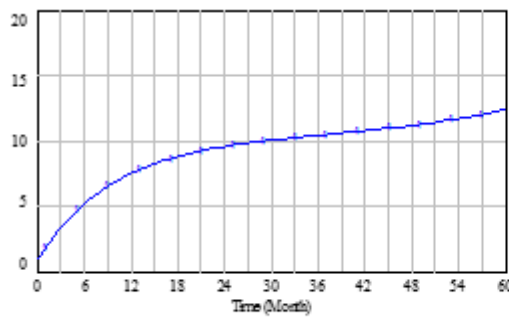


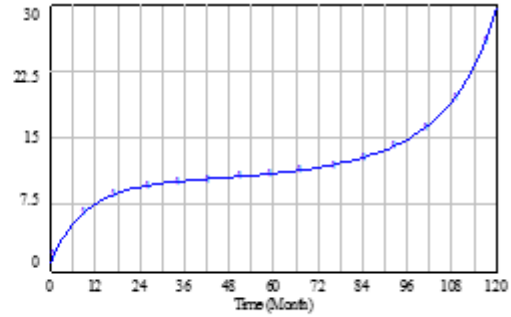
Figure 13. Limit condition test in seventh and eighth state

4.4. Integration Test

This test shows the sensitivity of the model's results to the choice of time period. To perform this test, the 60-month time period of the model was cut in half and turned into a period of 120 fifteen-day episodes. Figure 14 shows the model in the mode of 60 months and Figure 15 shows the model in the mode of 120 parts of fifteen days.



The effectiveness of advertising in online social media: 60



The effectiveness of advertising in online social media: 120

Figure 14. Model in 60 episodes of 30 days Figure 15. Model in mode 120 episodes 15 days

4.5. Sensitivity Analysis Test

The sensitivity analysis test answers the question of whether the model outputs change significantly by changing the model inputs within an acceptable range of uncertainty. Figure 16 shows the sensitivity of advertising effectiveness in online social networks to changes in income. For this purpose, the amount of income has been changed from 3 to 3.5, 4, 4.5, and 5, and as it is known, the behavior of the model changes according to the changes in the income variable.

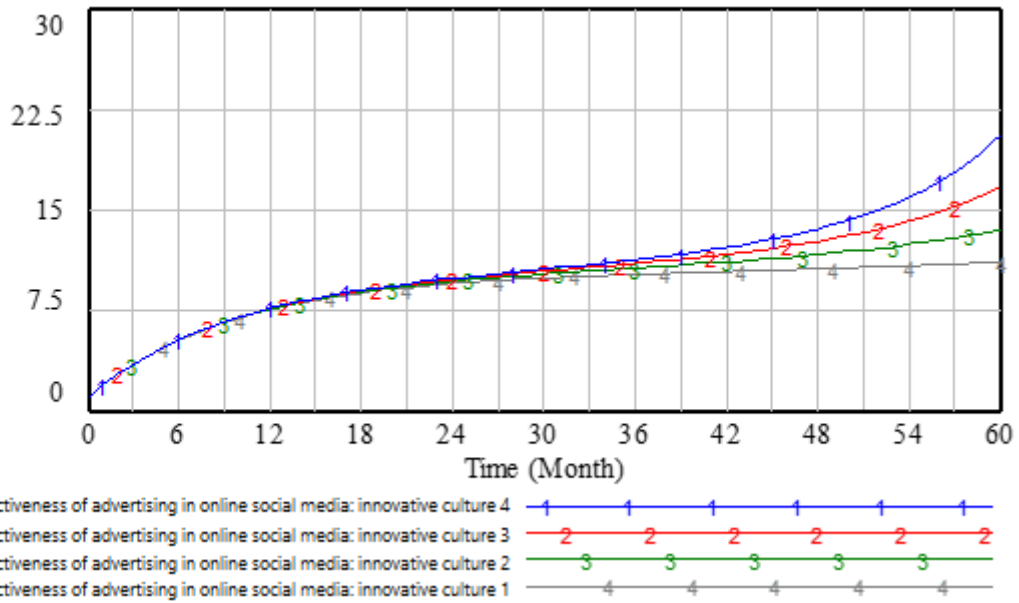


Figure 18. Sensitivity analysis test of the effectiveness of advertising in online social media to changes in innovative culture

Figure 19 shows the variable sensitivity of social trust to changes in innovative culture. For this purpose, the amount of strategy has been changed from 5 to 5.5, 6, 6.5, and 7, and as it is clear, the behavior of the model changes dramatically with respect to the changes in the strategy variable.

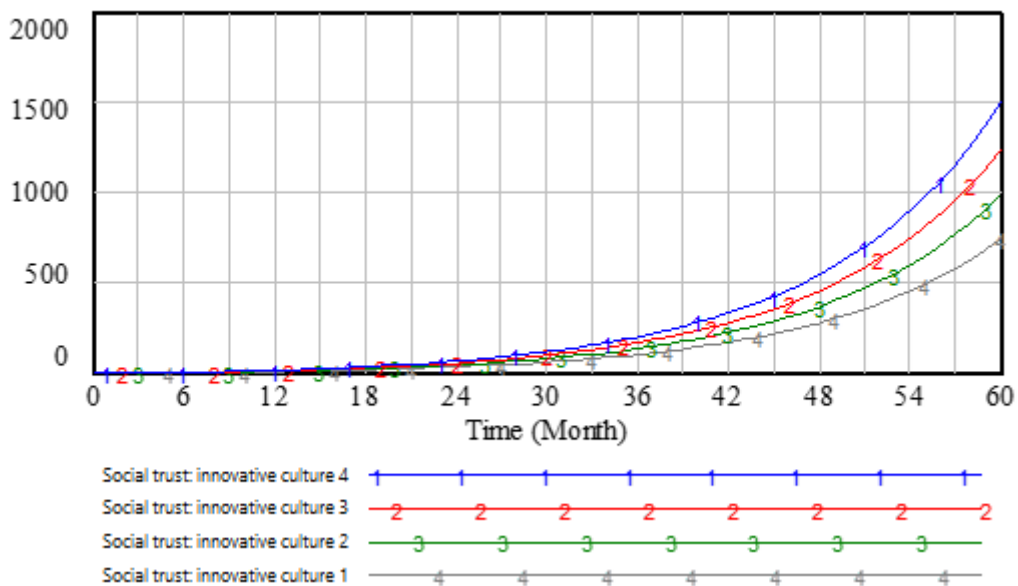


Figure 19. Sensitivity analysis of social trust towards innovative culture

4.6. Implementation of different scenarios

After testing the model and verifying its validity, it is time to implement different scenarios. Variables under the control of the organization's manager are used to execute the scenarios. 3 scenarios have been considered to evaluate the effectiveness of advertising in online social media.

- The first scenario: increasing social trust through increasing the credibility of the organization and security.
- Second scenario: personalized advertising, innovative culture will be enhanced.
- The third scenario: the choice of social network and the quality of information will be changed. This means that the best and most effective network will be identified by checking social networks and then take action to provide advertising on the social network. In this case, the probability of advertising effectiveness increases. Also, the information presented in the

advertisement should be done without the slightest exaggeration and magnification and by providing accurate and practical information.

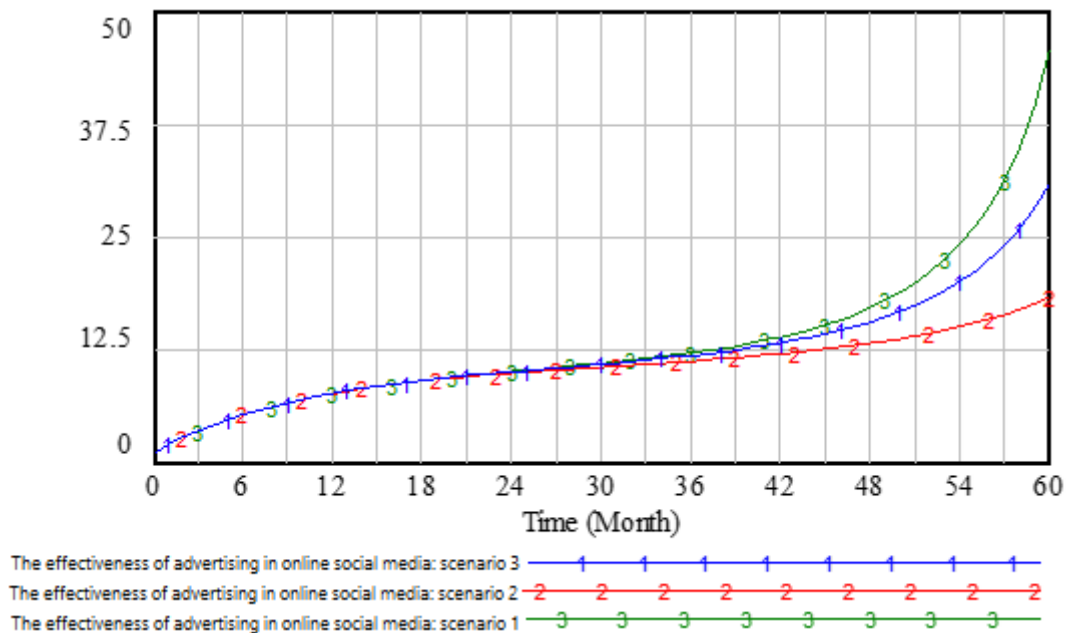


Figure 20. scenarios

By implementing different scenarios (Figure 20), as it is known, the first scenario increases the effectiveness of the advertisement to a greater extent. This means that social trust has a great influence on the effectiveness of advertising. After that, the third scenario and the second scenario become online in the order of a wave of increasing the effectiveness of advertising in social networks.

5. Conclusion

The aim of the present research was to provide a model to explain the influence of social trust components on advertisements in online social networks (with the moderating role of innovative culture). For this purpose, first, the articles, sources, and references related to the topic were reviewed and the desired components were extracted.

The necessary formulas for the implementation of the model were checked with the opinion of experts. The validity of the research model was confirmed after performing various tests in VENSIM software. After confirming the validity of the model, scenarios were developed and implemented. The results of the designed scenarios showed that the increase of social trust components such as the credibility of the organization and security has the greatest effect on the effectiveness of advertising in online social networks. The following scenarios are examined:

The first scenario: increasing social trust through increasing the credibility of the organization and security.

Two global reports were released in 2020 that highlight the urgent need for the advertising and media industries to work together to rebuild public trust (<https://www.thedrum.com/news/2020/05/15/advertising-and-social-media-face-fresh-trust-issues-amid-global-crisis>). Kantar's study (A data analytics and brand consulting company in the UK) found that there is mistrust among consumers towards advertisers and social media platforms.

The report surveyed 8,000 people in eight markets, including the US, UK, and China, with a total of \$400 billion in ad spend. It found that advertising is the least common source people use to get information about a business, with only 14 percent saying they trust advertisers in this regard.

In a 2021 survey of adults in 17 markets worldwide that assessed their perception of social media advertising, it was found that 48 percent of respondents from India thought that social media advertising was somewhat or very trustworthy. The same was true for 45% of surveyed consumers in the UAE. In comparison, 10 percent of respondents from the UK had the same opinion about social media advertising at the time (<https://www.statista.com/statistics/1227942/trustworthiness-social-media-ads-world/>).

Kantar found that British consumers are among the most cynical consumers globally, with Britons showing a "worrying" lack of trust in social media. 70% of people in the UK said they "don't trust" much of what they see on social platforms, including posts by brands.

According to the reports presented, what is clear is the crisis of trust in social media advertising. In this scenario, social trust increased by increasing the credibility of the organization and information security. Keller and his colleagues defined the credibility of the company as follows: "the degree of consumer's belief in the willingness and ability of the company to provide products and services and meet the needs and demands of the customer".

The issue of security in the virtual age, as one of the important social issues, has received the attention of theorists of communication sciences, culturists and cyber psychologists, and among the most important of these theories, it is related to the following researchers:

Van Dijk (2012) in the book *Network Society*, believes that the modern world has become much more cautious in terms of trust. From his point of view, privacy in networked society has three aspects: physical, relational and informational. His views on espionage and data eavesdropping, information identification and lack of trust and its dangers are in this field. Castells (2009) like Van Dyck believes that information is power. The existence of communication technology is both a foundation for the freedom and advancement of citizens and serves contemporary political security purposes. In order to complete Castells' theories, Turkle's (2012) comments should be used, who believes that anonymity and the ability to exchange information on the Internet may make people with fake identities communicate with each other (Zakeri Hamane et al., 2020).

Second scenario: personalized advertising, enhanced innovative culture.

One of the reasons for the failure of advertisements is incorrect content and the inappropriate place and time of using the advertisement. In this scenario, the researcher intends to investigate the effect of improving the advertisement by personalizing it. In addition, it should be kept in mind that to create a personalized advertisement, a creative and innovative look at issues is very important. Dahlen (2005) and Hutter & Hoffmann (2014) concluded in their research that creative and innovative advertising has a positive effect on emotional and behavioral response (attitude to advertising, brand attitude, purchase intention and word of mouth).

The third scenario: the choice of social network and the quality of information were changed.

Statistics and Information in 2020 showed that social media, which accounts for \$84 billion in global advertising budgets, was ranked as the least trusted medium, with only 17 percent of respondents naming media such as Facebook and Twitter as a reliable source. Worldwide, newspapers rank highest in the media category at 37 percent. TV and radio respectively with 31% and 32% of the respondents said that they believe in these media to transmit accurate information (<https://www.thedrum.com/news/2020/05/15/advertising-and-social-media-face-fresh-trust-issues-amid-global-crisis>). According to this information, choosing the right social media is very important. Today, due to the widespread use of digital tools and the Internet, access to information has become very easy. People are exposed to thousands of commercial advertisements every day, most of which are on social media, and this shows that the need for people to search for information from social networks is greater than ever (Lou & Yuan, 2018).

By examining the prepared scenarios, it has been determined that what affects the effectiveness of advertising in online social media more than other factors are the increase in social trust through the increase in the credibility of the organization and information security.

Based on the obtained results, the following suggestions are provided: Considering the increase of social trust through increasing the credibility of the organization, the following suggestions are presented to increase the credibility of the organization:

- 1- Loyalty to the promises made on social media.
- 2- Create activities worth talking about: The best way to build credibility is to do something that supports the organization's ability to perform and meet customer expectations. Happy customers will speak volumes about their good experiences with the organization.
- 3- Paying attention to the employees, feedback and active listening, fulfilling the promises made will make the employees discuss the goals of the organization on social media and the organization will gain fame and credibility through the employees.
- 4- Paying attention to customers' needs, receiving feedback and solving their problems increases the reputation of the organization and satisfied customers can build the reputation of the organization.
- 5- By following up on dissatisfied customers and dealing with their problems, the credibility of the organization increases and the trust of customers in the organization increases.
- 6- Communicating with trusted influencers that are aligned with the values of the organization creates credibility. Associating your brand with influencers that customers admire, respect and trust is a great starting point for building credibility.
- 7- Focus on customer lifetime and customer loyalty. If the organization has long-term customers, it means that the organization consistently delivers results that customers are satisfied with.
- 8- Create a professional website to display the business. Having a professional website is important. Social media footprint, quality press and other factors are important, but a professional website is absolutely on top. Nowadays, for almost every business, a website is a storefront, office, showroom
- 9- Forge your culture literally from the inside out. If employees identify with the organization's values, their actions are more powerful than any paid advertising campaign. And when the organization's team starts talking about the organization's mission on their social media channels, the organization is on its best path.

Considering the increase of social trust through increasing the security of the organization's information, the following suggestions are presented to increase the security of the organization's information:

- 1- Monitor customer data: Know what data you have and where it is stored. Monitoring customer data means staying ahead of potential cyber-attacks.
- 2- Before the organization's system is hacked, do the necessary tests to know how you can limit possible damages if the system is hacked. Testing can highlight issues and weaknesses, allowing you to make changes and fixes before the actual attack.
- 3- Transparency: Customers want to know how their data is collected, used and protected. To earn the trust of your customers, you need to be transparent about cybersecurity. Create a system plan for transparency, including regularly updating customers about their security and giving them options to opt out of data collection.
- 4- Updates: Just because a cybersecurity program is in place once doesn't mean it's good enough forever. Hackers and technology are constantly evolving, and an organization's cybersecurity program must adapt. Update your organization's software and devices to the latest versions, regularly assess your approach to security, and move to protect consumer data.

The most important limitation of the research was the conversion of qualitative data into quantitative data, which is not accurate due to placing the data in a range of numbers obtained from the graphs, and only the behavior of the model is considered.

Reference

Abdallah Alalwan, A. (2018). Investigating the impact of social media advertising features on customer purchase intention, *International Journal of Information Management*, Vol. 42, PP: 65-77.

- Acharjee, S., Panicker, A. T. (2023). Trust levels in social networks, *Heliyon*, Volume 9, Issue 9, September 2023, e19850.
- Ahmadi, A., Ahmadi, D. (2021). Factors affecting the increase of click-through rate and users' trust in personalized online advertisements, *Journal of international business administration*, 4(1), 91-110.
- Aeron, P, Jain, S, Kumarc, A. (2019). Revisiting Trust toward E-Retailers among Indian Online Consumers, *JOURNAL OF INTERNET COMMERCE*, No. 1, PP: 45-72.
- Al-Khalaf, E and Choe, P. (2019) Increasing Customer Trust Towards Mobile Commerce in a Multicultural Society: A Case of Qatar, *Journal of Internet Commerce*, Vol. 19, No. 1, PP: 32-61.
- Aibaghi Esfahani,S ,Ebrahimi,E, sheikh, R. (2020) .Innovative Culture, Provides Improvement of Organizational Learning by utilizing internal branding (Research in Iran's Oil Industry), *Journal of Innovation and Value Creation*, 17 (9), 69-84.
- Ali, M and Park, K. (2016). The mediating role of an innovative culture in the relationship between absorptive capacity and technical and non-technical innovation, *Journal of Business Research*.
- Aiken, K. Damon. M, Robert. S-C L, Ben. F, Richard. Osland, G. (2007) Dimensions of Internet Commerce Trust, *Journal of Internet Commerce*, Vol. 6, No. 4, PP: 1-25.
- Ansari, F and Jodan, M. (2020). Online marketing versus offline marketing (advantages and disadvantages), specialized scientific quarterly of new research approaches in management and accounting, Q5, No. 58, pp. 94-86.
- Andreassen, T-W. and Streukens, S. (2009). Service innovation and electronic word-of-mouth: is it worth listening to?, *Managing Service Quality*, Vol. 19, No. 3, PP: 249-265.
- Bayad, J. A. (2021). Assessing (The impact) of advertisement on customer decision making: Evidence from an educational institution, *Aflak for science journal*, , Vol. 6, No. 1, PP: 425-439.
- Bakhtiari bastaki., S., Ghafari ashtiani., P., Hamidizadeh., A., & Sanavi Fard., R. (2021). Modeling Factors Affecting Perceived Deception of Advertising in Social Networks with a Structural-Interpretive Approach. *Business Intelligence Management Studies*, 9(34), 273-302.
- Barakat, S and El Sheikh, A. (2010). TRUST AND USER ACCEPTANCE OF MOBILE ADVERTISING, *European, Mediterranean & Middle Eastern Conference on Information Systems*, PP: 1-9.
- Bibi, A., Hussain, Z., Khan, F., and Maqsood, A. (2017). "Quantitative evaluation of security and privacy perceptions in online social networks: a case study," in 14th International Bhurban Conference on Applied Sciences and Technology, IBCAST 2017 (Islamabad: Institute of Electrical and Electronics Engineers Inc.), 425–433.
- Brodie, R.J., Ilic, A., Juric, B., & Hollebeek, L. (2013). Consumer engagement in a virtual brand community: An exploratory analysis. *Journal of Business Research*, 66(8), 105–114.
- Bohler, Jeffrey. R. Drake, John. (2017). Building Trust through Social Networking, *Twenty-third Americas Conference on Information Systems*, No. 23, PP: 1-10.
- Castells, Manuel. (2009). *Communication power*. Oxford: Oxford University Press.
- Chang, Y., Hong, F. and Lee, M. (2008) A System Dynamic Based DSS for Sustainable Coral Reef Management in Kenting Coastal Zone, Taiwan. *Ecological Modelling*, 211, 153-168.
- Clement, J., (2019). Social media - Statistics & Facts [WWW Document]. URL <https://www.statista.com/topics/1164/social-networks/>
- Dahlen, M. (2005). The medium as a contextual cue - Effects of Creative Media Choice, *Journal of Advertising*, 34 (3), 89.
- Danias, K and Kavoura, A. (2013). The role of social media as a tool of a company's innovative communication activities, *THE MAŁOPOLSKA SCHOOL OF ECONOMICS IN TARNÓW RESEARCH PAPERS COLLECTION*, VOL. 23, No. 2, PP: 75-83.

- Dabbous, A. Barakat, K A. Merhej Sayegh, M. (2020). Social Commerce Success: Antecedents of Purchase Intention and the Mediating Role of Trust, *JOURNAL OF INTERNET COMMERCE*, PP: 262-297.
- Davison, K. (2019) Early Modern Social Networks: Antecedents, Opportunities, and Challenges, *The American Historical Review*, Vol. 124, No. 2, PP: 456–482.
- Devries, E. L. E. (2019). When more likes are not better: The consequences of high and low likes-to-followers ratios for perceived account credibility and social media marketing effectiveness. *Marketing Letters*, 30, 275–291.
- Dutta, N and Bhat, A. (2016) Exploring the Effect of Store Characteristics and Interpersonal Trust on Purchase Intention in the Context of Online Social Media Marketing, *Journal of Internet Commerce*, Vol. 15, No. 3, PP: 239–273.
- Eneizan, B. A, Ghabash Mohammed. Alhamzah, A. Anas, S.A. Odai, E. (2019). Customer Acceptance of Mobile Marketing in Jordan: An Extended UTAUT2 Model with Trust and Risk Factors, *International Journal of Engineering Business Management*, Vol. 11, PP: 1-10.
- Forrester, J. (1958) Industrial Dynamics: A Major Breakthrough for Decision Makers. *Harvard Business Review*, 36, 37-66.
- Gary, M.S. (2005). Implementation strategy and performance outcomes in related diversification. *Strategy. Manag. J.* 26, 643–664.
- Ghafourian Shagerdi, A, Daneshmand, B, Behboudi, O. (2017). The Impact of Social Networks Marketing toward Purchase Intention and Brand Loyalty, *Modern Marketing Research Quarterly*, 7(3), 175-190.
- Ghajari, H., & Naghavi, A. (2020). Factors affecting on employment in internet advertising businesses; Digital marketing. *Interdisciplinary Studies in Humanities*, 13(1), 125-149.
- Giri, D., and Vats, A. (2019). “Social media and disaster management in india: scope and limitations,” in *Advances in Science, Technology and Innovation* (Cham: Springer Nature), 349–356.
- Green W. and Ciley R, (2014), The field of radical innovation: making sense of organizational culture es and radical innovation, *Industrial marketing management*, Vol.43, PP.1343- 1350.
- Guillou, L, Grandin, A, Chevallier, C. (2021) Temporal discounting mediates the relationship between socio-economic status and social trust, *R. Soc. Open Sci*, Vol. 8, No. 6, PP: 1-14.
- Gordon, R. B. Kinshuk, J. Katona, Z. Narayanan, S. Shin, J. Wilbur, C. K. (2020). Inefficiencies in Digital Advertising Markets, *Journal of Marketing*, Vol. 85, No. 1, PP: 7-25.
- Hutter, K., & Hoffmann, S. (2014). Surprise, Surprise. Ambient Media as Promotion Tool for Retailers. *Journal of Retailing*, 90(1), 93–110.
- Ioanid, A. Deselnicu, D-C, Militaru, G. (2018) The impact of social networks on SMEs’ innovation potential, *Procedia Manufacturing*, Vol. 22, PP: 936-941.
- Jane M., C, Mathilde, M. Roland, B, Anna P., N. (2013). A large-scale longitudinal study indicating the importance of perceived effectiveness, organizational and management support for innovative culture *Social Science Medicine*, 119-124.
- Karimi Alavijeh, M. R., & Bakhshi, M. (2017). Determining Influential Users in Social Networks (The Case of: Word of Mouth on Digikala Company Instagram Page). *Journal of Information Technology Management*, 9(3), 587-612.
- Kamran, F., Ghiyasian, A., & Akhtar Mohagheghi, M. (2018). The amount of social trust on advertisements of online social networks. *Social Research*, 10(38), 10-23.
- Karimi Alavijeh, M. R., & Bakhshi, M. (2017). Determining Influential Users in Social Networks (The Case of: Word of Mouth on Digikala Company Instagram Page). *Journal of Information Technology Management*, 9(3), 587-612.

- Keshtkar, M., & Pourmazaheri, S. (2019). Examining and Understanding the Impact of Social Networks on Social Innovation. *Scientific Journal of Strategic Management of Organizational Knowledge*, 1(3), 117-145.
- Khalili ardakani, M. A., Arvin, B., & tavassoli farsheh, F. (2017). Social Trust and its Related Factors (Survey of Youth in Mashhad). *Social Sciences*, 24(76), 111-144.
- Khaniki, H., Kia, A. A., & Mir, S. (2016). The role of telegram's advertisements (a social network) in ensuring readers to purchase goods. *News Science*, 5(18), 11-58.
- Killian, G. & McManus, K. (2015). A marketing communications approach for the digital era: Managerial guidelines for social media integration. *Business Horizons*, 58(5), 539-549.
- Khosroshahi, G., & Ghadami, N. (2020). Social Environment as One of the Factors Causing Offense and Its Impact on the Lifestyle (with an Emphasis on Virtual Social Networks). *Journal of Legal Research*, 18(40), 389-410.
- Kumari, S. (2019). Impact of ICT and social media on society. *J. Emerg. Technol. Innov. Res.* 6, 406–408.
- Koranteng, F.N., Wiafe, I., Katsriku, F.A. and Apau, R. (2023), "Understanding trust on social networking sites among tertiary students: An empirical study in Ghana", *Applied Computing and Informatics*, Vol. 19 No. 3/4, pp. 209-225. <https://doi.org/10.1016/j.aci.2019.07.003>
- Kridera, S.; Kanavos, A. (2024). Exploring Trust Dynamics in Online Social Networks: A Social Network Analysis Perspective. *Math. Comput. Appl.*, 29, 37. <https://doi.org/10.3390/mca29030037>
- Lam, L. Nguyen, P. Tran, K. (2021). The Relation among Organizational Culture, Knowledge Management, and Innovation Capability: Its Implication for Open Innovation, *J. Open Innov. Technol. Mark. Complex*, Vol. 7, No. 66, PP: 1-16.
- Liu, Y.; Wang, B. (2022). User Trust Inference in Online Social Networks: A Message Passing Perspective. *Appl. Sci*, 12, 5186.
- López, M., Sicilia, M., & Moyeda-Carabaza, A. A. (2017). Creating identification with brand communities on Twitter: The balance between need for affiliation and need for uniqueness. *Internet Research*, 27(1), 21–51.
- Lou, C and Yuan, S. (2018). Influencer Marketing: How Message Value and Credibility Affect Consumer Trust of Branded Content on social media, *Journal of Interactive Advertising*, Vol. 9, No. 1, PP: 58-73.
- Miczka, S. and Größler, A. (2010), "Merger dynamics: Using system dynamics for the conceptual integration of a fragmented knowledge base", *Kybernetes*, Vol. 39 No. 9/10, pp. 1491-1512.
- Mohaghar, A., Jabbarzadeh, Y., amoozad mahdiraji, H., & mokhtarzadeh, N. (2013). Analysing Iranian Industry Behavior by Using Dynamic Systems Modeling. *Industrial Management Studies*, 11(28), 1-19.
- Omotosho, M. O. (2019). Information revolution and growing power of communication: a foundation of new diplomacy. *Jadavpur J. Int. Relat.* 23, 142–157.
- Pang, J Ho. & Choy, C. (2020). Content marketing capability building: A conceptual framework. *Journal of Research in Interactive Marketing*.
- Raghubansie, D. A and El-Gohary, H. (2021). Digital Advertising Creative Processes and Innovation in UK SME Advertising Agencies: An Empirical Investigation of Viral Advertising, *Scientific Journal for Financial and Commercial Studies and Researches*, Vol. 2, No. 2, PP: 75-116.
- Safaie, N and Atefyekta, H. (2020). Investigating the Effect of Social Dependency on Customer Trust in Social Networks, *New Marketing Research Journal*, 9(4). 55-76.

- Samsam Shariat, S. M. R; Atashpour, S H; Kamkar, M. (2016). Comparison of effective factors in the effectiveness of commercial advertising from the perspective of people and advertising experts, *Knowledge and Research in Psychology*, vol. 32, pp. 90-120.
- Sabatini, F. Sarracino. F. (2019). Online social networks and trust, *Soc. Indicat. Res.*, 142, pp. 229-260
- Saeidi, S. (2020). A new model for calculating the maximum trust in Online Social Networks and solving by Artificial Bee Colony algorithm. *Comput Soc Netw* 7, 3 (2020).
- Sanjari Nader, B., Yarahmadi, F., & Baluchi, H. (2020). The Impact of Social Network Based Brand Communities on Brand Evangelism through Strengthening Brand Trust. *Consumer Behavior Studies Journal*, 7 (2), 24-47.
- Sheidaei, A., Eivaziheshmat, A., & Sanavifard, R. (2022). the study of Impact of Personalization of Advertisements on Online Users Shopping in Modern Society (Case Study: Instagram Social Network). *Political Sociology of Iran*, 5(6), 138-157.
- Shirkhodai, M., shahi, M., nejat, S., & mahmudi nasab, S. (2017). The Effect of social media on Trust and Brand Loyalty Formation in the Brand Community (Case Study: The Social Network of Instagram). *New Marketing Research Journal*, 7(3), 107-124.
- Shawky Ebrahim, R. (2019) The Role of Trust in Understanding the Impact of Social Media Marketing on Brand Equity and Brand Loyalty, *Journal of Relationship Marketing*, Vol. 19, No. 3, PP: 1-22.
- Singh, P. Baruah, M. Bhattacharyya, N. (2021). A study on effect of advertisement on consumer buying behaviour in Jorhat city, *The Pharma Innovation Journal*, Vol. 10, No. 6, PP: 281-285.
- Sterman, J. (2000). *Business Dynamics: Systems Thinking and Modeling for a Complex World*. Boston: Irwin/McGraw-Hill.
- Tao, Z. (2010) Scenarios of China's Oil Consumption Per Capita (OCPC) Using a Hybrid Factor Decomposition-System Dynamics (SD) Simulation. *Energy*, 35, 168-180.
- Thabit, S., LianShan, Y., Tao, Y., Abdullah, A. L.-b. (2022). Trust management and data protection for online social networks. *IET Commun.* 16, 1355-1368.
- Trachuk, T. Vdovichena, O. Andriushchenko, M. Semenda, O. Pashkevych, M. (2021). Branding and Advertising on Social Networks: Current Trends, *IJCSNS International Journal of Computer Science and Network Security*, Vol. 21, No. 4, PP:178-185.
- Trivedi, J and Sama, R. (2019). The Effect of Influencer Marketing on Consumers' Brand Admiration and Online Purchase Intentions: An Emerging Market Perspective, *Journal of Internet Commerce*, PP: 103-124.
- Turkle, Sherry (2012). *Alone Together: Why We Expect More from Technology and Less from Each Other*, Basic Books; 1 edition.
- Van Dijk, Jane A.G.M. (2012). *The Network Society*, SAGE Publications Ltd; Third Edition.
- Verma, A. (2021). understanding impact of media engagement on advertising acceptance and value within mobile social network in Indian millennials, *IT in Industry*, Vol. 9, No.1, PP: 1343-1352.
- Wang, Y. and Zhang, X. (2001) A Dynamic Modeling Approach to Simulating Socio-Economic Effects on Landscape Changes. *Ecological Modelling*, 140, 141-162.
- Yumitro G, Febriani R, Roziqin A and Indraningtyas A (2023). Bibliometric analysis of international publication trends on social media and terrorism by using the Scopus database. *Front. Commun.* 8:1140461.
- Zakeri Hamane, R., Azam Azade, M., GHaziNejad, M., & Bastani, S. (2020). Qualitative Study of Users' Sense of Online Security in Social Networks. *New Media Studies*, 6(21), 141-178.
- Zargar, M. (2018). Presenting a Dynamic Model for Formulating Horizontal Strategy in Multi-Business Firms. *Industrial Management Studies*, 16(51), 301-328. doi: 10.22054/jims.2017.15909.1562