

The Contribution of Climate Change Risk Assessment Models to the Transition towards Digital Marketing

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Abstract

The purpose of this study was to identify the contribution of climate change risk assessment models to the transition towards digital marketing. The descriptive analytical approach was used in this study. A (120) sample of experts faculty members in assessing climate change and its repercussions on the transition to digital marketing at Al-Isra University in Jordan was selected. A questionnaire of two dimensions was used by the researcher to identify the contribution of climate change risk assessment models to the shift towards digital marketing. The study reached results, including: The arithmetic mean of the extent to which governments and relief organizations are aware of the nature of climate change is (3.29), which is at a medium degree of application. The arithmetic mean of the risks of climate change through digital marketing was (3.16), which is at a medium application degree. Finally, the results showed a statistically significant effect at the significance level (0.05) of climate changes on digital marketing operations.

Keywords: risks, climate change, digital marketing.

Introduction

Resilience to climate change is a challenge for many sectors, and collaborative efforts among these sectors are critical to developing and implementing more effective prevention strategies (Sesana et al, 2018). In this context, the World Bank and the Nature Conservancy published a report that provides guidelines for such cooperation in evaluating climate change models in order to address the high risks of climate change and the resulting disasters, and the required mechanisms to transfer towards digital marketing during climate change (Goldstein et al. al, 2019). Therefore, governments, companies and NGOs are realizing that whenever it is about combating the consequences of changing climate and the need to preserve societies from the threat of resulting disasters, preserving and restoring nature is perhaps the smartest investment of all (Peduzzi, 2019). On the other hand, risk assessments are based on a set of procedures carried out by organizations that enable them to identify the risks they face, so that they analyze them in order to find the appropriate solution that eliminates those risks or reduces their impact (Huong et al, 2019). However, climate change

risk assessment refers to the processes through which decisions are taken that would reduce the risks of climate change, depending on the processes related to planning, analysis and response to variables, and then working to evaluate and control them (Benevolenza & Derigne, 2019). It is worth noting that digital marketing, like other economic activities, has an essential role during climate changes as it reduces the occurrence of risks to individuals, in addition to being a way to support avoiding exposure to harm through climate changes that occur such as floods, high temperatures, torrential rains and volcanoes. Therefore, the use of digital marketing mechanisms contributes to a large extent in protecting individuals from risks (Howes et al, 2015).

In the same context, working to employ digital marketing mechanisms equally while properly assessing and controlling the risks of climate change contributes to reducing losses to societies in all ways; that is, limiting it to the narrowest possible limits (Dwivedi et al, 2022). From this angle, the importance of presenting models about the risks of climate change and their link to digital marketing mechanisms in increasing the chance

of success in reducing disasters resulting from climate change through the methods used in planning and decision-making, and working to support activities around digital marketing (George et al, 2021). It should be noted that one of the most important ways to properly manage the assessment of climate change risks is to think about the possibilities associated with digital marketing operations, in order to avoid any potential loss. As for the assessment of risks according to digital marketing operations, it is done after the discovery and identification process. (Conway et al, 2021).

Assessing and reducing risks through e-marketing operations is working to find the extent of the damage resulting from a major mistake or large loss that may occur as a result of climate change, and then prioritizing risks according to their actual impact, in addition to working on reviewing risk management programs (Chaffey & Ellis-Chadwick, 2019). As a complement to the assessment process, presenting models for adaptation to climate change coincides with the assessment and review process; because the process on which risk management depends is to move away from old techniques and work to find new techniques to address risk, such as e-marketing. The evaluation and review processes also aim to discover errors, and then correct decisions on their impact to prevent a major loss. Consultants or experts in the field of management and marketing can also be used to determine the digital marketing mechanisms that must be followed during climate changes (Ouazad & Kahn, 2019).

Based on the foregoing, and the fact that climate adaptation risk assessment models are considered a strategic entry point to reduce the risks resulting from climate change, their importance and effective role in the operations they carry out, which is to prepare for risks and deal with them according to digital marketing mechanisms, until plans are developed to implement the confrontation. This necessarily requires countries to have mechanisms related to the management of climate change risk assessment in order to be able to make positive change. Accordingly, this study comes to show the contribution of climate change risk assessment models to the shift towards digital marketing. The justifications for the study

come in light of what is being proposed in our time of the dominance of the issue of climate change. Here, it has become necessary to consider the issue of climate changes assessment more deeply and extensively in light of these data, so that countries can develop appropriate strategies and processes for planning to manage risks in climate change mechanisms.

Problem of the Study

The new status and the new phase in terms of risk assessment of climate change and its potentials, has created important challenges, and it has placed the responsibility of countries and organizations to face and handle situations in the here and now and the future, particularly considering the likelihood of issues becoming more severe and accelerating of changes and developments sweeping the world in terms of mechanisms of climatic change.

It's important to keep in mind that the assessment of climate change risks is related to the processes of conducting risk management planning, identifying and analyzing risks, and planning responses to them, implementing responses, and monitoring risks. The objectives of climate change risk assessment also include increasing the possibilities for positive risks and reducing the possibilities for negative risks, in order to improve the chances of reducing the risks of climate change (Conway et al, 2019.)

This is indicated by the study of Huong et al (2019), which dealt with methods of adaptation and response to reduce the risks of climate change, and the study of George et al (2021) also showed that adaptation to climate change is done by developing plans and strategies that relate to climate change assessment models. Howes et al (2015) note that climate change is exacerbating the repercussions of storms, floods, and erosion which are threatening the lives and livelihoods of millions around the world. Indeed, the most recent edition of the World Economic Forum's Global Risk Assessment Report cites inability to respond to the consequences of climate change is the main danger to societies and economies around the world in terms of impact.

Now, more than ever, the human and financial implications of climate change are garnering

attention, so it's important to focus resources on risk mitigation through digital marketing for businesses and humanitarian communities (Dwivedi et al, 2020). This will call for enabling governments, aid organizations and other non-governmental organizations to achieve the maximum benefit from their investments, and in fact, digital marketing is considered one of the most effective and feasible solutions in terms of reducing the risks resulting from climate change (Dewi, 2022).

However, facing the risks resulting from climate change with it requires employing adaptation, response and monitoring processes in order to obtain the most comprehensive, complete and relevant risk information in order to be able to respond quickly to climate change. Since countries and relief organizations are required to develop their structures in accordance with the developments in the management of climate change adaptation assessment, they must employ digital marketing mechanisms to reduce and mitigate the risks of climate change. Hence, the foregoing prompted the researcher to consider the mechanisms of contribution of climate change risk assessment models to the shift towards digital marketing. According to the previous considerations, the problem of the study becomes clear through the following main question:

What is the contribution of climate change risk assessment models to the transition towards digital marketing?

Questions of the Study

1. To what extent are governments and relief organizations aware of the nature of climate change?
2. To what degree do governments and relief organizations have mechanisms to mitigate the risks of climate change through digital marketing?
3. Is there a statistically significant effect at the significance level (0.05) of climate changes on digital marketing operations?

The Study Objectives

1. Identifying the contribution of climate change risk assessment models to the transition towards digital marketing.

2. Identifying the extent to which governments and relief organizations are aware of the nature of climate change.
3. Identifying the degree to which governments and relief organizations have mechanisms to mitigate the risks of climate change through digital marketing.
4. Identifying whether there is a statistically significant effect at the significance level (0.05) of climate changes on digital marketing operations.

The Study Significance

The significance of this study appears in the fact it seeks to show the contribution of climate change risk assessment models to the shift towards digital marketing through the opinions of experts in governments and relief organizations. In addition, the study studies an important aspect of evaluating the risks related to climate change and its relationship to digital marketing. The importance of the study is as follows:

Scientific significance (theoretical)

1. Revealing the awareness of countries and organizations of the nature of the risks they face in climate change and the role of digital marketing in reducing those risks.
2. Shedding light on the nature of climate change assessment models, and trying to determine the level of application of adaptation management processes through digital marketing mechanisms.
3. The results of the study may contribute to enriching research in the field of climate change assessment.

Practical importance (Empirical):

1. The results of the study may contribute to assisting relief organizations in evaluating ways to adapt and respond to climate change, in addition to monitoring and evaluation in order to mitigate those risks.
2. The results of the study may enhance the identification of methods for evaluating the management of risks related to climate change.

3. The results of this study may contribute to the benefit of decision-makers from organizations, researchers and academics, as well as those who developed programs and executive plans in the assessments of climate change and methods of adaptation and response through the use of digital marketing processes.

Terms of the Study

Risk assessment: the process by which the probability of losses occurring is measured; by prioritizing these risks according to their impact (Sesana et al, 2018).

Climate adaptation: it is a modification of natural or human systems responding to current or anticipated climatic stimuli, or the impact of those stimuli, and this modification aims to mitigate damages and make better use of beneficial opportunities (Neef et al, 2018).

Climate adaptation is also known as a response to global warming, which is also known as climate change or anthropogenic climate change (Cattivelli, 2021).

The Intergovernmental Panel on Climate Change defines adaptation as the process of adaptation to the actual or the anticipated climate and its consequences on human systems, where adaptation aims to mitigate or avoid damage, and to make better use of beneficial opportunities (Tanimonure, 2021).

Digital Marketing: it is a strategy that is related to organizing modern technological communication methods, by substituting the virtual market for the traditional market and into

a practical reality and tangible using electronic media (Marjolein et al, 2018)

It is also determined by the development of improved ties with the client and ongoing involvement with regard to privacy. It motivates companies to bring in new customers, preserve the old ones, transcend borders, and open up marketing spaces for the individual and the company (Shamykamboj, 2018).

Methodology

A descriptive analytical approach was applied to investigate the opinions of the sample members to find out their views on the contribution of climate change risk assessment models to the transition towards digital marketing.

The study Sample

A sample of (120) experts faculty members in evaluating climate change was chosen at Zarqa University in Jordan.

Instrumentation

A questionnaire of two dimensions was used in the study to reveal the contribution of climate change risk assessment models to the shift towards digital marketing.

Validation

The questionnaire's internal consistency validity was confirmed by distributing to a (50) faculty members pilot sample at Al-Isra University in Jordan, and then the correlation coefficients were calculated between the total score for each dimension and the total score for the questionnaire; as shown below:

Table (1) Pearson correlation

Dimensions	Correlation Coefficient	Value of Significance
Organizations' awareness of the nature of climate change	0.809**	000.0
Climate change through digital marketing	0.793**	000.0

From the preceding table, it is obvious that the degrees of correlation coefficients for the dimension of organizations' awareness of climate change and their relationship to digital marketing are high correlation coefficients; they're also statistically significant at the significance level. (0.05).

Reliability

The researcher used Cronbach's Alpha, a method that involves assessing the correlation of items with each other, to validate the questionnaire's reliability. Table (2) shows the questionnaire reliability coefficients and each of its dimensions using Cronbach's Alpha equation.

Table (2) Cronbach's Alpha

Dimensions	Cronbach's Alpha
Organizations' awareness of the nature of climate change	0.857
Climate change through digital marketing	0.794
Total	0.908

As can be seen from the previous table, the total reliability coefficient of the questionnaire was (0.908), This is a high reliability coefficient, indicating that the questionnaire has a high level of reliability and can be trusted in the study's field application.

Results and Discussion

The Firs Question: To what extent are governments and relief organizations aware of the nature of climate change?

To answer this question, a descriptive analysis of the responses of the sample members was conducted about the extent to which governments and relief organizations are aware of the nature of climate changes. The arithmetic means and standard deviations of the responses of (study members) were calculated, and the following table shows that:

Table (3) Awareness of governments and aid organizations of climate change

No.	Item	Mean	Standard Deviation	Rank	Degree
4	Governments and relief organizations categorize climate change according to its sources into internal and external factors.	3.59	0.871	1	High
2	Governments and relief organizations rely on qualitative methods to analyze climate change.	3.32	1.038	2	Medium
6	Governments and relief organizations rely on quantitative methods to analyze climate change.	3.29	0.960	3	Medium

No.	Item	Mean	Standard Deviation	Rank	Degree
1	Governments and relief organizations rely on modern programs to analyze the risks of climate change	3.23	1.033	4	Medium
5	Governments and relief organizations divide the risks of climate change into simple and complex so that they are easy to deal with.	3.19	1.121	5	Medium
3	Governments and relief organizations use experts to analyze the risks of climate change.	3.11	1.145	6	Medium
Weighted Mean		3.29	1.231	-	Medium

Table (3) shows that the arithmetic mean of the responses of the sample subjects about the extent to which governments and relief organizations are aware of the nature of climate changes has reached (3.29), and a standard deviation of (1.231), which refers to a medium degree of application. The arithmetic means of the items in this dimension ranged from (3.11) to (3.59), with the lowest and greatest arithmetic means being (3.11) and (3.59), respectively, while the study participants' replies were between a percentage range of (68%) and (52%).

The researcher explains this result to the awareness of governments and relief organizations of the nature of climate change;

this, of course, increases the need to re-update and develop programs and design programs that reduce the risks of climate change.

The Second Question: To what degree do governments and relief organizations have mechanisms to mitigate the risks of climate change through digital marketing?

To answer this question, a descriptive analysis of the responses of the sample members was conducted about the extent to which governments and relief organizations have mechanisms to mitigate the risks of climate change through digital marketing. The following table shows that:

Table (4) The risks of climate change through digital marketing

No .	Item	Mean	Standard Deviation	Rank	Degree
6	Evaluating the plans designed to manage risks according to the employment of digital marketing operations	3.37	1.209	1	Medium
4	Explaining the plans that adopt digital marketing operations to avoid the risks of climate change	3.34	1.377	2	Medium
5	The ability to predict risks and mitigate their effects according to digital marketing mechanisms	3.29	1.172	3	Medium

No .	Item	Mean	Standard Deviation	Rank	Degree
2	Developing approved plans to deal with risks that contribute to reducing the potential effects of climate change	3.26	1.159	4	Medium
3	Developing a contingency plan to mitigate the emergency based on digital marketing operations	3.21	1.271	5	Medium
1	Taking precautionary measures to prevent the risks of climate change, according to the digital marketing approach	2.51	1.317	6	Low
Weighted Mean		3.16	1.207	-	Medium

It is evident from the previous table that the arithmetic mean of the responses of the sample members about the risks of climate change through digital marketing has reached (3.16), and a standard deviation of (1.207), which is located at a medium degree of application. Between the lowest and greatest arithmetic means, the arithmetic means of the items in this dimension ranged from (3.37) to (2.51), and the responses of the study participants were within a percentage range of (52%) and (68%).

This is indicative of the fact that the study sample has a medium perception that governments and relief organizations have mechanisms to mitigate the risks of climate change through digital marketing, by evaluating plans designed to manage risks according to the enhancement of

digital marketing operations, and clarifying the plans that depend on digital marketing operations to avoid the risks of climate change, in addition to the ability to predict risks and mitigate the level of their effects according to digital marketing mechanisms.

The Third Question: Is there a statistically significant effect at the significance level (0.05) of climate changes on digital marketing operations?

To answer this question and verify the hypothesis, the respondents were asked about climate change and its relationship to digital marketing processes, and they gave three answers, which are high, medium, and low. The following table shows that:

Table (5) Climate Change and Digital Marketing

Climate Change and Digital Marketing	No.	%
High	4	3.3
Medium	37	30.9
Low	79	65.8
Total	120	100

We note from the data of Table (5) that the respondents mentioned that climate changes and its relationship to digital marketing is low, and this result indicates that the use of digital marketing during climate changes has not yet reached the required level, and therefore it is necessary to pay attention to digital marketing in

order to contribute to reducing the risks of climate changes.

The respondents were also asked about their consent to employ digital marketing during climate change, and they gave three answers, Agree, Neutral, and Disagree. Table (6) illustrates this

Table (6) Digital Marketing Employment

Digital Marketing Employment	No.	%
Agree	7	5.8
Neutral	55	45.8
Disagree	58	48.4
Total	120	100

The results in Table (6) indicate the lack of development in the use of digital marketing, and accordingly there is an urgent need to employ digital marketing during climate changes.

And to verify the validity of the research hypothesis test, which states (there is a statistically significant effect at the significance level (0.05) of climate changes on digital

marketing operations). The first phenomenon, which is climatic changes (the independent variable), was divided into high, medium, and low, and the second phenomenon, which is digital marketing (the dependent variable), was divided into agree, neutral, and disagree. The two phenomena can be studied together according to this division as shown in Table (7).

Table (7) The impact of climate change on digital marketing

Digital Marketing	Climate Change						Sum of Rows	
	Agree		Neutral		Disagree			
	No.	%	No.	%	No.	%	No.	%
High	4	3.3 %	0	0.0%	0	0.0%	4	3.3%
Medium	3	2.5%	30	25.0 %	4	3.3%	37	30.9%
Low	0	0.0%	25	20.8 %	54	45.0%	79	65.8%
sum of Columns	7	5.8%	55	45.8 %	58	48.4%	120	100%

Chi - square =100.337

Degree of freedom =4

Significance = 0.000

Table (7) shows that the value of Chi - square = 100.337 when the degree of freedom = 4 and Significance = 0.000; and that the tabular value of Chi - square (critical value) at 4 degrees of freedom and level of significance = 0.000 and the tabular value of Chi - square (critical value) at 4 degrees of freedom and level of significance of 5% = 9.488 in comparison; it turns out that the computed value of Chi – square = 100,337 which is greater than the tabular value of Chi – square = 9.488. Accordingly, the null hypothesis is rejected and the alternative hypothesis is accepted as the research hypothesis. As a result, at the significance level, there is a statistically significant effect at the significance level (0.05) of climate changes on digital marketing operations.

Summarization of Results

1. The arithmetic mean of the extent to which governments and relief organizations are aware of the nature of climate change is (3.29), which is at a medium degree of application.
2. The arithmetic mean of the risks of climate change through digital marketing was (3.16), which is at a medium application degree.
3. There is a statistically significant effect at the significance level (0.05) of climate changes on digital marketing operations.

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Recommendations

1. Supporting facilities and centers for monitoring climate change and continuing to apply modern concepts in digital marketing
2. Developing strategic plans for digital marketing in line with the evolution of climate changes that predict a new world
3. Working to increase the number of specialists in the fields of digital marketing, and to employ those Coordination with countries, governments and relief organizations to develop plans and strategies that contribute to limiting the severity of climate change and according to modern mechanisms related to digital marketing and e-government.
4. Paying attention to digital marketing, by linking all climate change monitoring centers to an electronic network, in addition to providing a comprehensive database on climate changes that occur on the surface of the planet who have experience in the field of climate change and its connection to digital marketing.

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