The Impact of Television and Short Message Service Advertising on Customer Behaviour and Brand Attitude

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Abstract

Marketing, advertising, and communications processes have changed to strategically capitalize on an increasingly digitally transformed, technologically empowered, globally interconnected consumer, or what service-dominant logic refers to as actors that are resource integrators. Customers are co-creators of value in the collaborative or sharing economy, and seek to actively reap the benefits of new knowledge growing at an exponential rate. However, developing models of customer behavior, especially the influence of a new kind of advertising based on the integrated use of television, web, and social networks, is a challenge. Our study starts from a preliminary empirical observation of the impact of television cooking shows on the variations of potential demand (queries on Google) and the purchase of branded/unbranded culinary products used on the show. Neural networks were used to determine significant correlations, which resulted in an operative Marketing 3.0 model. This model clearly explicates this impact factor on the consumer-purchasing process generated by a new mode of creating information and communications technology–based communication.

Keywords: Customer behavior, knowledge management, online advertising, smart consumer, value co-creation

1. Introduction

Many studies agree that direct influence on sales advertising is possible only under specific circumstances, that is, when all other variables remain unchanged. Using the metaphor of the "distorted mirror" in his analysis of advertising's extra-economic influences, Pollay [34] clarifies that far from existing only in the commercial sphere, advertising also influences other contexts, such as mentalities, education, and culture. Advertising is a com- plex phenomenon that arises mostly from commercial needs and is consid- ered an important tool through which enterprises can legitimate their recognition and appreciation among customers. The downside is that advertising messages often interfere with other cognitive fields, not only because of their ubiquity, linguistic features, and content but also because of the feelings they elicit, their motivational triggers, and—not least—the pressures they exert on the means by which the messages are disseminated.

The need to recognize these elements derives from the complexity of evaluating their presence in the economic field, and, more widely, in media management and in our individual and social lives.

In most cases, the criteria used to evaluate the efficacy of advertising should not be tracked on the basis of consumer behavior. Rather, these criteria should be based on the preceding stage—for example, the knowledge or notoriety of a product or an enterprise, which reflects the attitude that advertising has managed to create.

According to Reeves's classic study, "many mistakes can be made by evaluating a campaign only by its sells" [38, p. 6]. Many scholars and experts have formulated "theories" or "models" to explain the process of advertising and, consequently, the context of the advertising. The first and best known of these theories is AIDA, an acronym for the initials of the four terms that describe the essential phases of the process to be promoted through advertising: attention, interest, desire, and action [4, 13]. In general, we can assume that theories and models help launch campaigns for consumer goods even if they do not offer certain results because of their inability to group modalities of advertising under a single law.

Therefore, most hypotheses draw on the results of inducement studies, and advertising constitutes the most-studied form of inducement. Such studies generally emphasize that any persuasive initiative must be viewed from an overall perspective in which many other factors intervene, including persuasive stimuli and the recipient's reaction to them. In this context, it is much more difficult to change individual behaviors than to change individual attitudes. Thus, the main purpose of persuasive communication becomes persuading people to act based on attitudes (which are based on conscience), on the assumption that attitudes can produce compliant behavior [21].

The idea of the omnipotence of advertising became obsolete long ago and has been replaced by the belief that the more advertising communication obtains consistent results, the more it can leverage the considerations of individuals' material, objective, and rational natures and their psychological, affective, and emotional needs.

According to an interpretative model that exalts the development of a brand's image and products based on the recognition that—within today's highly undifferentiated market in which many products are hardly distinguishable from each other—the consumer becomes more and more induced to buy the image of the product

rather than the product itself [33], the concepts of product image and brand image are increasingly becoming core landmarks of the persuasive action attributed to advertising.

Some scholars [5, 9, 25] emphasize the validity of this orientation to highlight the unconscious motivation underlying consumer behavior.

Ideologically, advertising does not aim to create doubts but to create certainties. The question thus arises as to what these certainties actually are. If we look at advertising as a whole rather than as individual messages, we have to admit that advertising pushes people to acquire what they feel they can and must have and that the possession of advertised goods is a source of pleasure, security, and social recognition [26].

Advertising can, in fact, exert a highly ideological influence that, from Baudrillard's perspective [1], transmits the norms and fundamental values of social living. This transmission of norms and values is also achieved through the desirability of not only the products themselves but also the contexts in which they are shown (e.g., TV shows). Therefore, based on the contributions of a significantly large group of scholars in the human and social sciences, a frame of effects is being developed for advertising. In other words, advertising selectively reinforces values that can be easily communicated and bound to products; it promotes materialism as a means of pursuing happiness; it supports status research and strengthens social stereotypes, myopia, self-seeking, excessive interest in sexuality, and conformism; and at the same time, it provokes cynicism, insecurity, and discontent [34].

Within the ambit of communication strategies, advertising is therefore used to attract the consumer's eye and to influence buying decisions. TV commercials remain the most authoritative, influential, and persuasive means of advertising compared to other media such as radio, journals, magazines, and the Internet. All media tend to employ well-known testimonials, presenters, persuasive messages, and audiovisual effects in perfect combination, producing a lively exposition of products and facilities, particularly in transmissions such as cooking shows in which unbranded pro- ducts are not necessarily "communicated."

Reactions to television commercials seem to be stronger compared to any other traditional forms of media. In trying to reach consumers, advertisers find the use of television more effective than other media because the conveyed message, direct or indirect, has a great impact on people's daily lives [23], thus stimulating their reflection.

The popularity of the TV medium and its context certainly improve the efficiency of advertising by creating similarity and attraction to promote buying behavior [22, 37]. Furthermore, the efficiency of communicative action is measured in terms of attitude against the brand/product or in terms of purchase intent [12].

Despite the fragmentation of today's means of communication, the proliferation of online formats has not eroded trust in traditional paid-advertising channels (offline). Television, newspapers, and magazines remain reliable advertising formats. Six out of ten people say they trust commercials on television (63 percent), in newspapers (60 percent), and in magazines (58 percent). The number of people who trust advertising in newspapers (60 percent) and magazines (58 percent) has decreased slightly. Compared to two years ago, these formats have lost one and two percentage points, respectively, as Table 1 shows [27].

The efficiency of the advertising of branded products is a clear and generally accepted concept. In this respect, the so-called Rosenthal effect [39] is emblematic. Feeling pleasure and satisfaction in the use of a good/service linked to a certain brand provokes expectations and consolidation, which positively influences consumer perceptions of the good/service as well as consumer choice. This means that the formulation of a preference for a good/service/product or a certain brand rests on objective factors as well as on information possessed by the subject, such as advertising campaigns and direct experiences of consumption that have led to the building of trust bonds with a certain brand [14, 16, 17].

Marketing, in general, and advertising, in particular, can use traditional techniques to exploit both cognitive and emotional mechanisms based on.

Table 1. Percent of Respondents Who Completely or Somewhat Trust Different Advertising (ADS) Formats, by Region, %.

	Asia-Pacific	Europe	Africa Middle East	Latin America	North America
Recommendations from people I know	85	78	85	88	82
Branded websites	78	54	76	75	61
Editorial content, such as newspaper articles	71	52	71	74	63
Consumer opinions posted on line	70	60	71	63	66
Ads on TV	68	45	70	72	63
Brand sponsorships	67	43	73	70	57
Ads in newspapers	63	44	69	72	65
Ads in magazines	62	43	65	70	62
Billboards and other outdoor advertising	60	40	64	63	57
E-mails I signed up for	60	41	59	65	64
TV program product placements	60	35	64	64	53
Ads before movies	59	38	57	62	56
Ads on radio	54	41	62	68	60
Online videos ads	53	33	55	52	47
Ads on mobile devices	50	26	49	48	39
Ads on social networks	50	32	57	54	42
Ads served in search engine results	50	36	52	58	49
Online banner ads	48	27	49	46	41
Text ads on mobile phones	42	22	41	39	37

Notes: Source: Nielsen Global Trust in Advertising Survey, Q1 2015.

Human decision making and behavior. Thus, positive effects for unknown products can also be determined. Daily interaction (with other people but also with what we read or watch on television—such as cooking shows) sets in motion processes that are largely automatic and unconscious. These eventually reach our consciousness in the form of emotions, urging us to buy a product/ service even though it has no mass recognition [42]. Emotional stimuli can influence purchase intent in either of two ways [45]:

- Directly (affective transfer): when advertising stirs positive emotions, people also judge the advertised product more positively and hence will be more prone to buy it; or
- Indirectly (cognitive flexibility): positive emotions do not influence judgment of the product but do influence the credibility of the advertising itself. Consequently, people will be more willing to be persuaded by the content of an advertisement.

Experimental studies in America and Korea have also verified that, in commercials that use rational appeals, efficiency depends on the force and credibility of the arguments used. With emotional appeals, viewers determine their judgments of the commercial and of the product advertised. Therefore, researchers have proved that emotions—including those of tele- vision transmissions in which the products are presented and not necessarily branded—can be used to bypass or at least "sweeten" the viewers rational control of the arguments used to promote a product [18].

In today's society, the ubiquity of digital technology, the proliferation of apps, and the new culture of service are creating a novel communication and advertising environment in which marketing processes are undergoing modification by more active users/consumers [20]. Clients, therefore, are becoming co-creators of value in the collaborative and sharing economy [35, 43]. In this sense, an updated analytical perspective requires a new vision as well as innovative models and approaches driven by information and communication technologies (ICT) models that embrace the typical phenomena of the knowledge society of the present day.

Practically speaking, technology penetrates and disrupts consumption, rendering it productive and creative. With new technological trends, both consumer behavior and modalities of commerce (e.g., blended commerce) have been revolutionized. Analog TV has been transformed into digital and then projected into the 2.0 world [32]. Consumer-atomized, generic and private conventional television has been replaced by collective live participatory and collaborative television, an area in which to socialize, externalize, combine, and internalize new knowledge. Television viewing has now become highly interactive and uses several sources: TV, PCs, smartphones, tablets and, frequently, all of these sources together at the same time [36]. Simultaneous multiple activities—for example, viewing and commenting in real time, or TV 2.0—has become a reality, and TV is no longer just leisure entertainment. According to a Nielsen survey conducted in 2013, 80 percent of TV users who have an MPD (Music Player Daemon) or a UMPC (Ultra Mobile PC), access a "second screen" while watching television. They continue to watch television, and the MPD is accessed via the web. Two-thirds of the 80 percent of TV viewers who simultaneously access the web look for content that has to do with what they are watching,

while 40 percent do so in real time, either when they are interested in some particular content or to find specific information. Our study is conducted in the contexts of established theories and overwhelming innovation.

In this respect, the objective of our work is to propose a model we call "marketing-oriented cyberspace" (M@SECI). Inspired by the model of the transfer of socialization, externalization, combination, and internalization (SECI) knowledge, our model creates a sort of traditional real-virtual space that intends to clearly explicate the impact of new TV formats—hybridized by new technologies in the field of advertising—on consumer buying processes that are generated through a new way of understanding communication. This "new kind of advertising" is capable of generating further competitive advantages for enterprises that can feasibly plan, in a transparent way, the presence of products of interest in TV programs designed according to the M@SECI model.

2. Preliminary Research Question

Our study proceeds from a preliminary empirical observation of the impact of TV broadcasts that make use of hybrid formats. We focus on cooking shows that feature products (which are often brandless) and their potential influence on demand (Google queries), in particular:

1. We consider a type of TV program that can also be accessed via the web and social networks: the popular cooking show (PCS-TV). This program, which is primarily a reality TV show, involves advertising of different methods, foods, wines, and kitchen appliances. In particular, it references so-called special products. In this sense, emphasis is on the customized format that is retailed for one or more agencies or territories. This reflects how television is changing, not only from the perspective of genre, style, and language but also, and above all, from the perspective of content.

2. Taking into account non-branded products, the term "special" refers to products that are not merely generic or that do not fall under the category of ingredients in routine use, for example, flour, sugar, salt, eggs. The foods that are the object of our study differs from the above- mentioned category primarily with respect to the absence of brand names. "Special," in our case, refers to the presence of some differentiating feature that attracts attention and arouses curiosity on the part of the viewer. Examples of such products include local products, protected designation of origin (PDO) products, protected geographical indication (PGI) products (e.g., Tropea Onions); products from other cultures; products with beneficial properties for health and similar; products not ubiquitous on the market; and products not well known or used.

3. Following the broadcast of a PCS-TV program, the products presented during the broadcast, even without a brand, seem to be searched for on Google.

In practice, we have observed a series of peaks in Google Trends for certain products during the days when the show is broadcast and in the days following the presentation of the product. Google studies [24, 40] highlight that television is a catalyst for starting research on the web and that experts involved in marketing should respond in some way to the research carried out by users. This means that searches are indications of the potential demand for certain products at points of sale.

At this stage, we propose the following preliminary research questions: In the field of food and agricultural products, can a television program with no specific commercial purposes cause a variation in the trend of Google queries about the product? Can the program disseminate knowledge to influence viewers (regardless of the commercials that intersperse phases of transmission) using a channel accessed via the web, which is open and connected to social networks (e.g., Facebook), by sharing and launching the product proposed in the show?

To verify the correlation proposed in the research question(s), we have selected a representative broadcast, a sample of the products presented, a significant temporal period, and the related series on Google Trends. To achieve our goal, we made use of neural networks (NNs) [15].

This technique is now well established and currently used by many scientific communities in various fields (medicine, ecology, etc.) to demonstrate correlations between phenomena. Moreover, many operative instruments implement the technique (MatLab, SAP, etc.).

First, we chose the type of program to analyze by evaluating the format of several television programs and the inherent characteristics of the format. We also evaluated the means and methods of dissemination of different types of transmissions, including The Test of the Cook, Easy Reader, Blu Line, and Green Line. In these TV programs, such as the La Prova del Cuoco, we considered features that would make them adaptable to each country or continent. They all have in common the experiential entertainment format, with emphasis on products that are not necessarily branded. As specified above, out of the various program types that focus on travel, cars, plants, food, and so on, we felt that a good source of data for analysis was in television cooking shows. Among the PCS-TV shows taken into consideration, we focused on programs with a high audience rating. From our analysis, the most successful program from the point of view of available information was La Prova del Cuoco (in English, Ready, Steady, Cook). In particular, La Prova del Cuoco is present on Facebook, Twitter, and YouTube. Figure 1 shows the program's historical trend on Facebook, obtained by monitoring the official pages

of La Prova del Cuoco. The y-axis shows (as a percentage of the maximum value) the interactions of users with respect to the Facebook page of La Prova del Cuoco and the contents published in it.
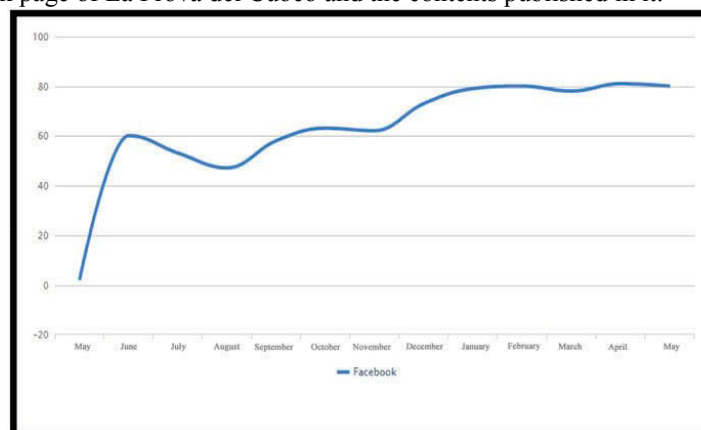

Figure 1. Analysis of the Popularity and Interaction of Data from Facebook in Recent Months

Some examples of broadcasts with a similar format in individual countries include:

- Blu Line—Rai 1, for the promotion of Italian seashores and their (gastronomic) specializations;
- Green Line—Rai 1, for the promotion of agricultural production chains;
- Easy Driver—Rai 1, which promotes Italian artistic and scenic sites through promotions of cars and motorcycles;
- Ready, Steady, Cook—broadcast on the BBC (UK), from which the Italian version, La Prova del Cuoco, on Rai 1 (Italy) derives;
- Inspiring Chef: il gusto dell'arte—Sky Arte (Italy), which takes viewers on a trip to discover their own territory and to search for typical ingredients symbolizing a certain place, followed by a guided visit to areas of artistic or other interest to the chef;
- Pane e Salame—Alice TV (Italy);
- Discovery Travel & Living—channel 426 on Sky (Italy);
- Gordon's Great Escape—Channel 4 (UK), United States and Rai 5 (Italy);
- Melaverde—Canale 5 (Italy), for the promotion of local cultures and artisan products;
- Hell's Kitchen—Italy, Portugal, Australia, Hungary, Denmark, Norway, Sweden; Brazil, Japan, United Kingdom, Slovenia, Israel, Mexico, Korea, Ireland, and Finland;
- Selected products.

The products selected either had particular characteristics or were ingredients not classified as "too general."We then searched to create a sample that would represent the various categories of "specifics" found and would create a good mix from the standpoint of product characteristics. The pro- ducts had denominations, various features, and some form of brand. We then selected the products most used in the TV program that provided all the required information. The final product selections satisfied all the above considerations and led to a qualitative selection of the items to be included in the sample. The following were selected:

- Tropea onion (PGI product featured in Italian cuisine);
- Rainbow trout (not a generic product and not well known);
- Ginger (not very popular, Asian origins, beneficial properties);
- Leeks (similar to onions, but more unusual);
- Turmeric (Asian spice, not very well-known).

Data were collected within a time interval of five years to define the data set for the correlation analysis:

- Date: information essential to place the broadcast in time and, consequently, to be able to correlate the same query on Google later;
- Period: information essential to determine whether the interest in the presentation of a product is related to the time of year when the broadcast is on the air;
- Product in the title: data indicating the increased exposure of the product and its importance as an ingredient in the recipe;
- Average frequency observed: as noted previously, this is required to determine the frequency with which a product is mentioned;
- Professional level of chef is estimated because the reputation and professionalism of the chef preparing the recipe may affect viewer perceptions of the product;
- Presence on the web: spread on the Web of a particular recipe may justify, to a certain extent, the increased interest of the viewer in searching for information about the recipe and its ingredients.

Table 2 shows the data set on the product, selecting only the most relevant data for the period of the past five years.

Table 2. Data set on the Tropea Onion: Data collection on Google Trends

Year	Date of broadcast	Period	Product in the title	Average frequency observed	Chef level	Web presence
2014	October 30,2014	5	1	3	1	1
	October 22,2014 2014	0	1	3	4	1
	March 18, 2014	0	1	3	1	0
2013	October 30,2013	0	1	3	3	1
2012	October 30,2012	0	1	3	3	1
	October 24,2012	0	1	3	4	0
	September 9,2012	0	0	5	4	1
	June 5, 2012	0	1	3	2	1
	April 23, 2012	0	1	3	3	1
2011	September 16, 2011	0	1	4	N	1
	May 18, 2011	0	1	3	1	0
	March 22, 2011	0	1	4	3	0
2010	December 18,2010	1	0	5	2	1
	May 15, 2010	0	1	3	3	1
	April 22, 2010	0	1	3	N	1
	March 17, 2010	0	1	3	3	1

Note: N= none.

Figure 2 is a graphical representation of data from Google Trends related to the Tropea Onion.

The y-axis in Figure 2 represents the research interest (as a percentage relative to the highest point on the graph). A value of 100 indicates the higher search term frequency, 50 is half of the research, and 0 indicates a lower search term rate of 1 percent compared to the higher search frequency.
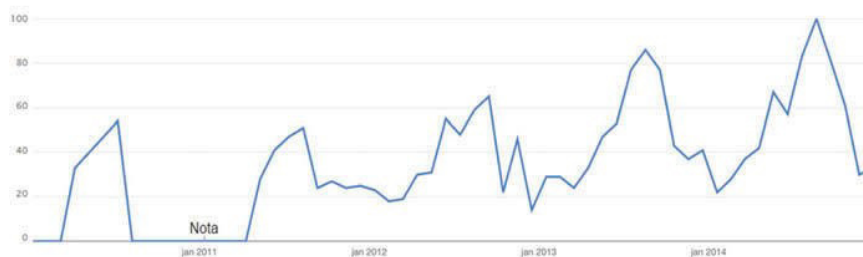

Figure 2. Google Trends, Tropea Onion, 2010–2014

The aim of the experiments was to identify and build a model that allowed the identification of a relationship between specific items of information. In this case, the correlation between items of information detectable from PCS-TV in relation to a particular product (represented by the data set presented previously) and the interest in this product can be observed from the Google Trends graphs.

We used neural networks for this experiment. Numerous learning techniques for NNs are available. Given the nature of the problem, we chose to use a guided learning technique, which is based on a specific learning method known as back propagation. The back propagation algorithm for a multilevel neural network (usually referred to as multilayer perception, or MLP) is presented briefly in the following steps:
1. Initialize the weights of the network in the event with real values ranging from –1 to 1.
2. Repeat for all patterns of the training set until the error falls below a certain threshold, then perform steps 3 and 4.
3. Calculate the error output.
4. Upgrade all connections, starting from output levels and going back up to the level input.

The items mentioned above characterizing the specific television program (date, period, product in the title, average frequency observed, professional level of chef, presence on the web) were taken as input data for five products (Tropea [red] onion, ginger, turmeric, rainbow trout, leek), and changes in the Google trends regarding the number of searches carried out on the products were used as output data. The latter were retrieved for all occurrences of the broadcasts to constitute a set on which to conduct a training set for a neural network. Part of this training set, used as the testing set, verified the outcomes of learning or checked whether the neural network had learned the correlations correctly—in other words, whether it was able to make correct estimates.
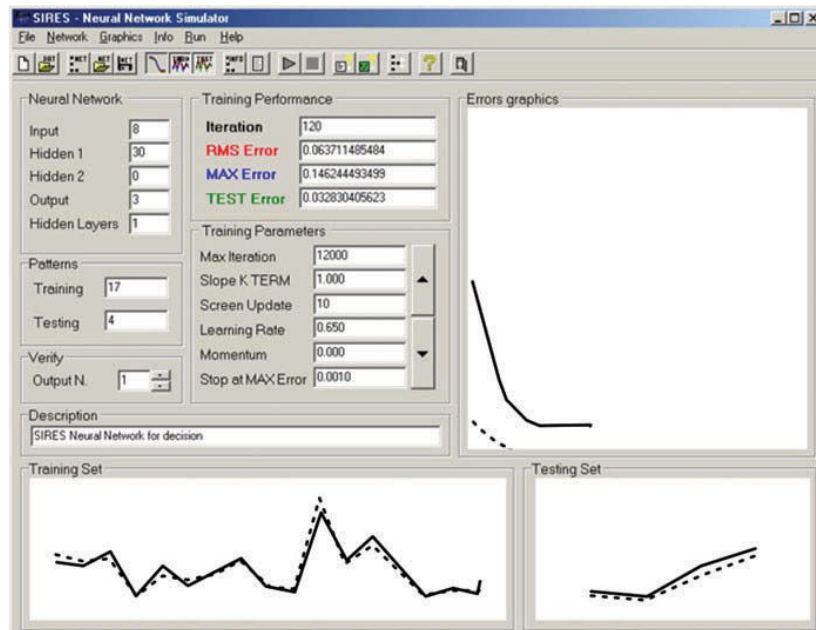
Figure 3. Neural Network Simulator Interface

We used a simulator [3] (shown in Figure 3) developed by Sergio Miranda (scientific-technical coordinator of the University of Salerno and an expert in artificial intelligence) that enables the creation and training of neural models and keeps them available as decision-making supports. It also allows observations of the behavior of the network in an online session, that is, during learning, so that off-line, that is, when learning is complete, the network is ready to make estimates. We performed several suitable experiments to determine the best network configuration to use. It was observed that the simulator enables network training with 0, 1, or 2 layers of hidden neurons and with a number from 1 to 50 neurons by level.

Figure 4 shows the behavior of the network, as observed graphically:
• The trend of the error functions (average, maximum, and related to the testing in September);
• The behavior of the network on the training set; and
• The behavior of the network on testing in September.

It should be noted that with the testing set, the network makes a pure estimate because each pattern takes only input and desired output.

As for the testing set, only the last two available patterns were selected. The configuration, which produced particularly positive results, consists of 8 input neurons, two hidden layers of 12 neurons each and 3 output neurons.
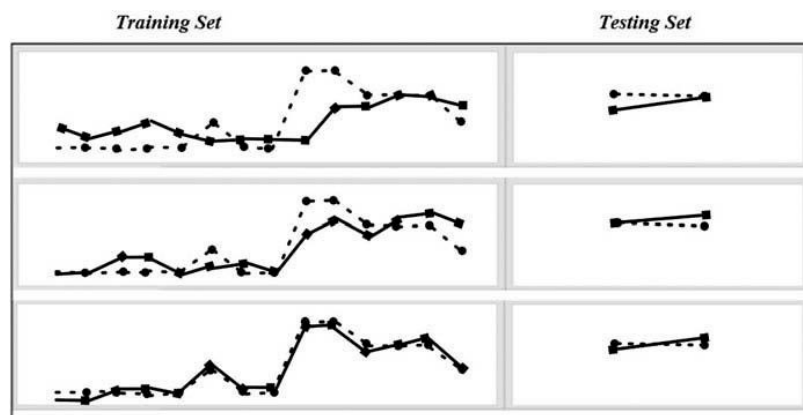

Figure 4. The Network Behavior (Solid Line) Observed on Output When Ascertaining Data Related to the Product "Tropea Onion" Approaches the Target (Dashed Line) Described in the Training Set (Left) and Can Also Reproduce it in the Testing Set (Right)

After 25,000 iterations, the root mean square (RMS) error assessed on all three outputs was identified on the training set as below 0.01 percent, while for the testing set it was below 10 percent. This means that the trained system was unable to estimate the three parameters chosen as outputs with a reliability rate in excess of 90 percent.

Obviously, the results obtained can be verified by means of any other commercial neural network tool by

configuring the neural network and the data set as described above.

Similar results demonstrating the existence of the correlation have also been obtained by means of a fuzzy functional network technique [11].

The positive results of the preliminary research question are a crucial factor in the context of the modern economy and the knowledge society, as influences on the consumer and on corporate competitive advantage are factors that most characterize the life and dynamics of the markets. We are currently experiencing a massive and pervasive technological revolution that is sweeping away some forms of media, such as TV (the advertising channel for widespread dissemination) and newspapers. The spread of digital technology, the advent of innovative applications, and the new culture of value co-creation favored by the spreading of the network are helping to redesign the structure of media and introduce new approaches to advertising, through which marketing processes themselves are being overwhelmed. Flat processes such as those foreseen by the Enterprise 2.0 paradigm [2] are becoming increasingly characterized by active user-consumers. The convergence of different media (e.g., TV as a space for cooperation and interaction, TV and web multichannel approaches, the Internet of Things used in the context of the Smart City and Smart Retail [6, 7, 31], access to the web at all times and in all places) is contributing to a dynamic and previously unimaginable value chain and to the redefinition of a gentle and non-violent use of media. In other words, there is "no more zapping but customization" [19, p.65]. Users define and share with others their personal histories as spectators or viewers, at the same time becoming both critics and producers, cocreating value from a service science perspective [8, 41]. In practice, technology penetrates and disrupts consumption, rendering it productive and creative. As mentioned above, the 2.0 paradigm, having overwhelmed companies, initially transformed analog TV into digital and then projected it into the 2.0 world. Atomized, generic, and private conventional television has now been replaced by collective live television that is both participatory and collaborative, creating an area in which to socialize, externalize, com- bine, and internalize new knowledge. Television viewing has now become highly interactive and includes several sources: TV, PCs, smartphones, tablets, and frequently all sources together at the same time. Simultaneous multiple activities—for example, viewing and commenting in real time, or TV 2.0—has become a reality, and TV is no longer just leisurely entertainment. Our study is set in this context of solid history and established theories, as well as in a context of overwhelming innovation.

3. Conclusion

Our study, by using the neural networks approach and starting from a preliminary empirical observation, has shown that a correlation exists between unbranded products presented in broadcasts with hybrid formats (TV, web, social networks) and the positive variations in trends on Google. Following an initial review of popular program formats and a qualitatively representative sample of many similar programs, our model appears to be of great interest with regard to effects on consumer behavior as con- firmed from Google Trends. After further validation with different pro- grams, such as those focused on cars, soft drinks, gardening, and so on, and after directly assessing the impact on sales, the model and guidelines set out in this work could become a useful reference for a certain type of advertising.

We strongly believe that our model, which is also perfectly consistent with the logic of value co-creation [46] of service-dominant logic, explicates this impact factor on the buying process of television consumers. We propose a format in which non-branded products are explicitly and implicitly represented and become the property of buying stimulus conditions as a result of the emotional moment "experienced" by viewers/potential clients.

Therefore, this study affirms "a new kind of advertising," which is in a position to contribute to the construction of differential competitive advantage, even for products that do not yet have the strength of a brand. The implications are different: the M@SECI model certainly allows us to do television advertising in innovative ways through a strong emotional participation format. This constitutes a lever for the planning of television communication strategies for products of interest that are not necessarily branded, with lower costs for businesses. These businesses are usually of small or micro size and are holders of niche products with high spatial gradient specificity and excellent productivity.

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