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Introduction[1]

This paper provides an overview of the Advertising Producer Price Index released by the Italian National Statistical Institute (Istat). The index is calculated with quarterly survey data and is one of the newest indices planned and produced.

Paragraph 1 describes the industry and the market conditions and compares different classifications, also giving a focus on digital advertising; Paragraph 2 presents the pricing measure; Paragraph 3 concludes with a brief measurement evaluation.

1. Description and characteristics of the industry

1.1 Definition of the industry

The Advertising (ads) sector is part of professional, scientific and technical activities.

According to OECD glossary, "Advertising helps manufacturers, differentiate their products and provides information about products to consumers. As information, advertising provides many benefits to consumers. Price advertising, for example, lowers market prices. Advertising that tells consumers about the existence of new products facilitates entry. On the other hand, by contributing to product differentiation, advertising may create market power by raising barriers to entry".

Advertising and market research is the division 73 (2-digit level) of sector M, *Professional, scientific and technical activities*, of ATECO 2007, the Italian Classification of Economic Activities. This division includes the design and creation of ads by advertising agencies; media placement (television, radio, magazines, newspapers, brochures, catalogues, banners) including the purchase and sale of ads space; outdoor ads on billboard, ads on public transportation and showrooms' design. The 73 division takes account of market research and public opinion polling too.

In ATECO 2007, division 73 has the same structure of NACE Rev. 2, the Classification of Economic Activities used in the European Union (Table 1 and Table 2).

Table 1 – ATECO 2007 structure

Structure	Ateco 2007	Definition
Sector	M	Professional, scientific and technical activities
Division	73	Advertising and market research
Group	731	Advertising
Class	7311	Advertising agencies
Category	73110	Advertising agencies
Class	7312	Media representation
Category	73120	Media representation
Group	732	Market research and public opinion polling
Class	7320	Market research and public opinion polling
Category	73200	Market research and public opinion polling

Table 2 – NACE Rev. 2 structure

Structure	NACE Rev. 2	Definition
Sector	M	Professional, scientific and technical activities
Division	73	Advertising and market research
Group	731	Advertising
Class	7311	Advertising agencies
Class	7312	Media representation
Group	732	Market research and public opinion polling
Class	7320	Market research and public opinion polling

Moreover, ATECO, NACE and ISIC Rev. 4 (International Standard Industrial Classification of All Economic Activities) are aligned except for group 731, *Advertising*, that in ATECO and NACE is split across two classes, 7311 and 7312, instead for ISIC it has only one class (Table 3).

NAICS 2017 (North American Industry Classification System) corresponds to ISIC and NACE down to 4-digits; at lower levels it divides into eight industries (Table 4). ANZSIC 2006 (Australian and New Zealand Standard Industrial Classification) has fewer levels (Table 5).

Table 3 – ISIC Rev. 4 structure

Structure	ISIC Rev.4	Definition
Sector	M	Professional, scientific and technical activities
Division	73	Advertising and market research
Group	731	Advertising
Class	7310	Advertising
Group	732	Market research and public opinion polling
Class	7320	Market research and public opinion polling

Table 4 – NAICS 2017 structure

Structure	NAICS 2017	Definition
Sector	54	Professional, scientific and technical services
Subsector	541	Professional, scientific and technical services
Group	5418	Advertising, Public Relations, and Related Services
Industry	54181	Advertising agencies
Industry	54182	Public relations agencies
Industry	54183	Media buying agencies
Industry	54184	Media representatives
Industry	54185	Outdoor Advertising
Industry	54186	Direct Mail Advertising
Industry	54187	Advertising material distribution services
Industry	54189	Other Services Related to Advertising

Table 5 – ANZSIC 2006 structure

| Structure	ANZSIC 2006	Definition
Division	M	Professional, scientific and technical services
Subdivision	69	Professional, scientific and technical services
Group	694	Advertising Services
Class	6940	Advertising Services
Group	695	Market Research and Statistical Services
Class	6950	Market Research and Statistical Services

1.2 Market conditions and constraints

In Italy, according to Structural Business Statistics (SBS), industry 73, *Advertising and market research*, is dominated by class 7311, *Advertising agencies,* in terms of enterprises, employees and turnover. *Advertising agencies* and *Media representation* (7311 and 7312) cover over 80% of the industry for each of the three variables, exactly 82.9% for enterprises, 84.2% for employees and for 90.2% for turnover. Table 6 below summarizes the breakdown of the industry by market share and employment size.

Table 6 - Percentage of Enterprises, Employees, Turnover by ATECO code, year 2016, (Source: SBS - Istat)

ATECO 2007	% Enterprises	% Employees	% Turnover
7311 - Advertising agencies	72.6	73.7	47.0
7312 - Media representation	10.3	10.5	43.2
7320 - Market research and opinion polling	17.1	15.8	9.7
Total	100.0	100.0	100.0

In the period 2008-2016, the number of enterprises in class code 7311 is constant while the trend of employees and turnover decreases in the first four years and after 2012 increases. In the same period turnover in class code 7312 grows only from 2009 to 2011 while the trend of enterprises end employees is enough stable till 2013, when it shows a slight decrease (Figure 1).

Figure 1 - Advertising agencies (7311) and Media representation (7312): Time series 2008-2016 - Enterprises, Employees, Turnover (Source: SBS - Istat)

7311 - Advertising agencies   7312 - Media representation
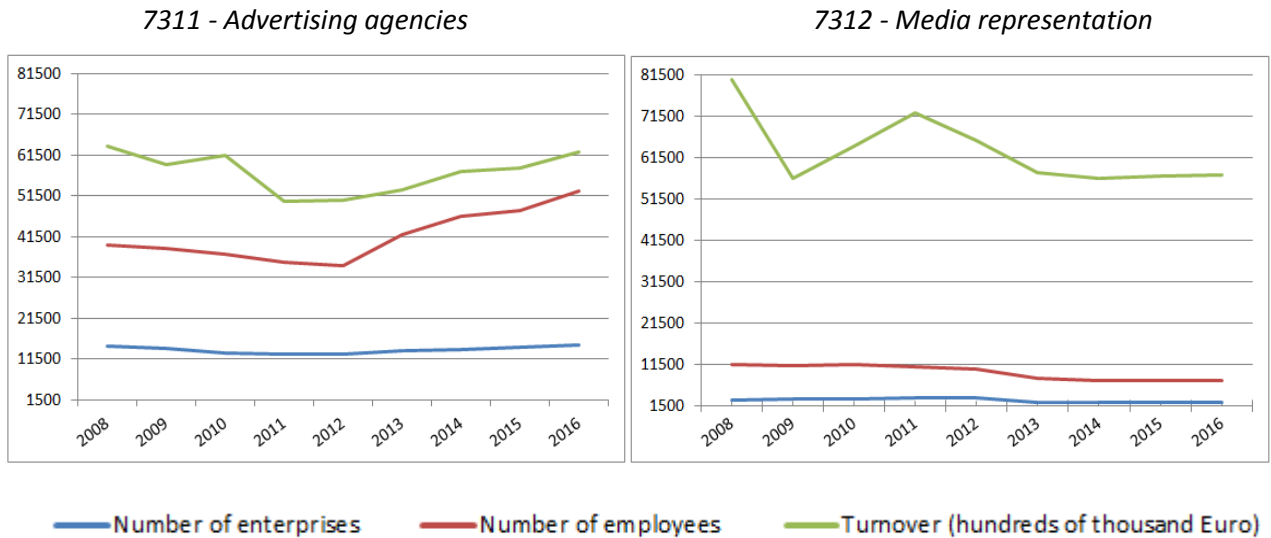
In class code 7311, *Advertising agencies*, the vast majority (68.4%) of the enterprises have less than 2 employees and generate 13.9% of total turnover. Large enterprises represent less than 5%, however their turnover is the biggest (58.1%). There is a similar situation for class code 7312, *Media representation*, where nearly 70% of enterprises, that have less than 2 employees, generate 3.0% of total turnover. On the other hand, large enterprises (5.5%) produce about 87.5% of total turnover (Table 7).

This industry is characterised by few but important big units and the percentage distributions of enterprises by number of employees for 7311 and 7312 are similar (Figure 2).

Table 7 – Enterprises and their turnover classified by number of employees - ATECO 7311 and 7312, year 2016 (Source: SBS – Istat)

Employees	7311 - Advertising agencies		7312 Media representation	
	% Enterprises	% Turnover	% Enterprises	% Turnover
0-1	68.4	13.9	70.1	3.0
2-9	26.8	28.0	24.4	9.6
≥10	4.8	58.1	5.5	87.5
Total	100.0	100.0	100.0	100.0

Figure 2 - Percentage of enterprises by ATECO class and number of employees, year 2016 (Source: SBS - Istat)
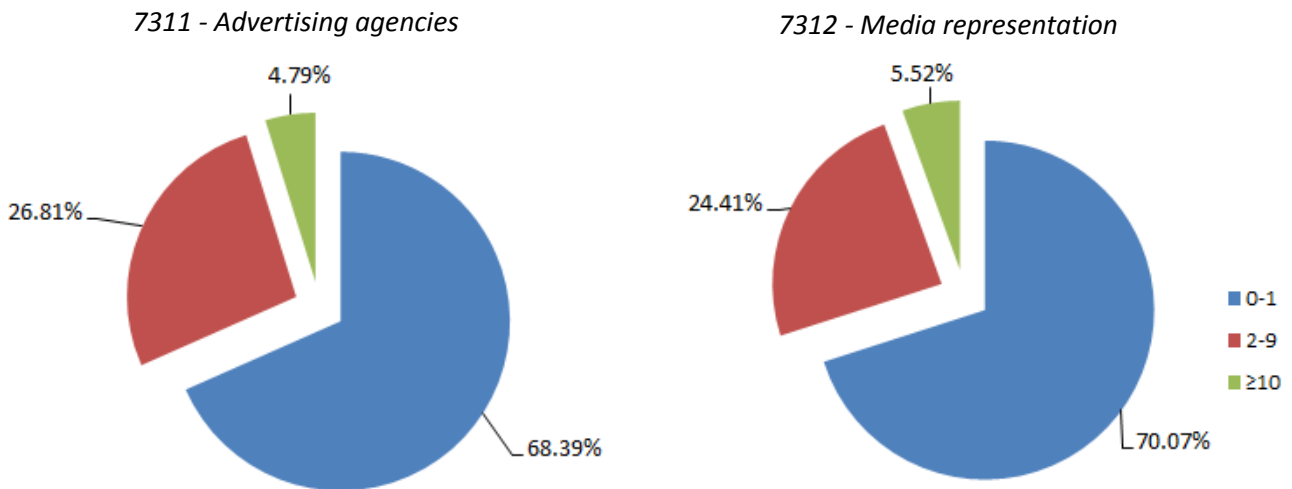
1.3. Specific characteristics of the industry

1.3.1 General framework

Advertising is a form of paid communication commissioned by a subject to offer ideas and products and to influence the choices of the target audience regarding a given good or model of behavior.

When ads has an economic purpose it is called *commercial advertising*; if it is aimed at achieving public utility objectives it is called *non-commercial advertising*. Besides, commercial advertising divides into *corporate advertising* and *product advertising*. The first is an institutional ads, promoting the work of public and private organizations; the second is used for increasing demand for a product or a specific brand. In particular, in this case, *pioneering ads* informs the public of the existence of a new product and has the aim of creating demand in the initial phase of the product life cycle; *comparative ads* persuades the users to choose a brand over a competitor.

Advertising is done through an *advertising campaign*: a set of a coordinated messages, supported by a common creative idea, disseminated on one or more media.

The ads campaign involves different actors:
- the *advertiser*: the company that wants to advertise;
- the *advertising agency*: the company that sets up and creates the advertising campaign;
- the *media center/agency*: the company that deals with strategy, planning and acquisition of advertising spaces;
- the *media marketer*: the responsible for selling the spaces made available by publishers (TV, radio, etc.);
- the *publisher*: the company that sells ads space.

In case of *traditional advertising*, the creation of an ads campaign (Figure 3) begins with a *briefing meeting* between the advertiser's marketing team, or consultants, and the advertising agency that agree on the *brief* - the document containing information regarding the objectives of the campaign - the budget, the target, the timing, etc. Then the creative team of the advertising agency creates and produces the ads messages and the media center elaborates and executes the media plan. Based on the brief, the advertising agency has the task of elaborating the communication strategy (*copy strategy*), while the media center deals with the planning of the advertising campaign on the media (*media planning*). The media center is responsible for elaborating and realizing the best media plan for a specific advertising campaign, that is able to transmit the advertising message to the right target of users, at the most opportune moment, with the most suitable media and the appropriate frequency. The media center acts as an intermediary between ads agencies and media marketers, which, finally, place advertising in the media, reaching users.

*Figure 3 – Actors in traditional advertising*
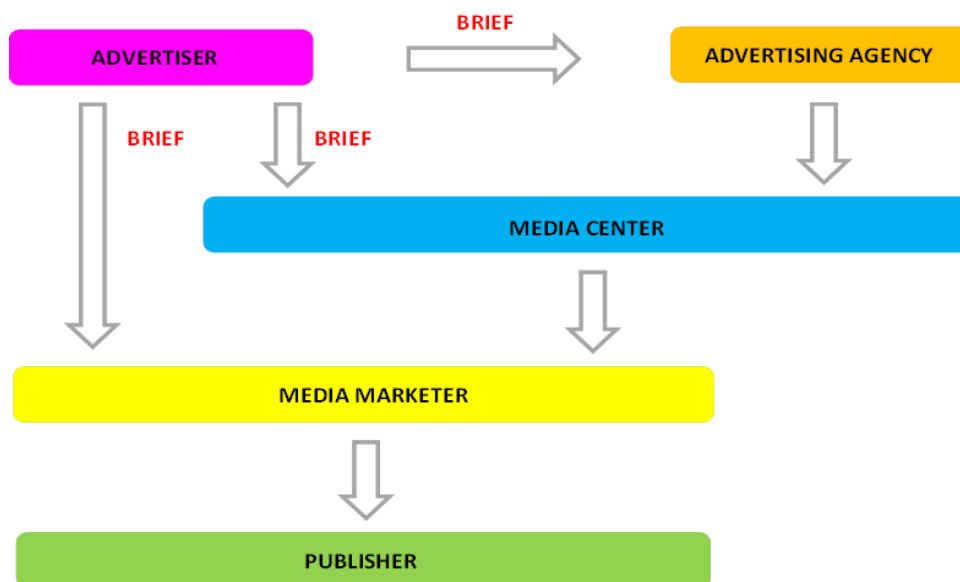
Alternatively, in the previous activity flow the advertiser can choose one of the following options:
- can directly interact with a media center, since nowadays many media centers can produce agency communication's services too;
- can directly interact with a media marketer, that owns an external or external media center, which also takes care of the ads planning.

In case of *digital advertising*, the ads campaign (Figure 4) begins with a *briefing meeting* between the advertiser's marketing team, or consultants, and the web agency, or the IT expert, or the e-Commerce expert. The web agency deals with both ads design activities, design and implementation of websites and web applications, promotion and web-marketing activities. The IT expert is specialized in the development of platforms and applications for digital

communication. The e-Commerce expert is specialized in the development of e-Commerce platforms. These actors interact with online ads marketers or mobile ads marketers, which, finally, place advertising in the new media (web digital channels, mobile channels, direct marketers, social media, etc.).

Figure 4 – Actors in digital advertising
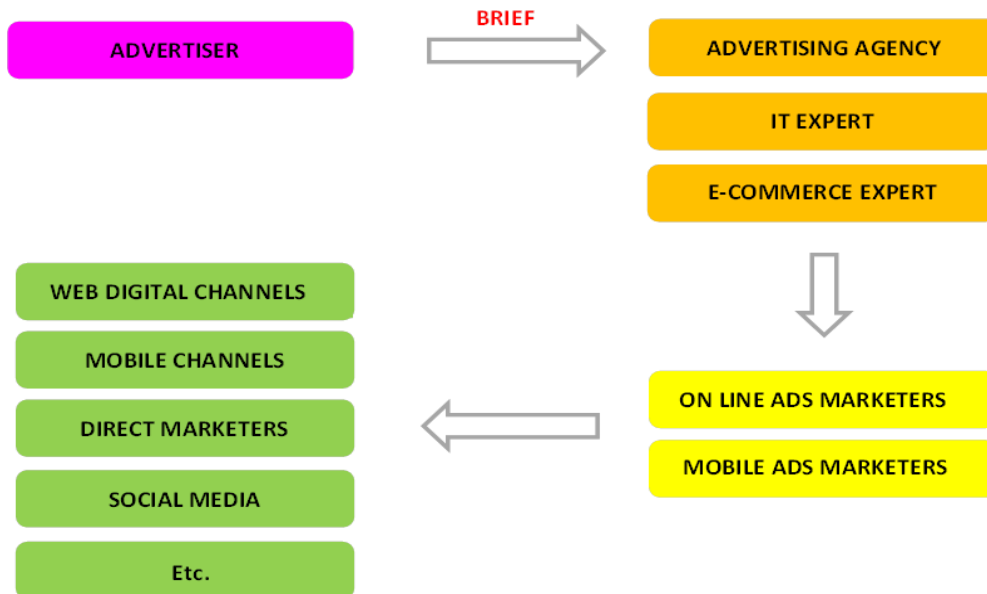
Ads messages can reach users through several media that have their own specificities and are more or less effective, according to both the brief's objectives and the ads campaign.

The traditional media (radio, television, press, cinema and billboards) coexist with the so-called new media, or digital media, the result of both technological developments and convergence between media, information technology and telecommunications.

The following most important features characterize traditional and digital media:

- Radio: is ideal for messages where audio is important because it lacks the visual component. Its credibility depends on the listeners' loyalty. It allows a direct interaction with listeners.
- Television: is expensive but useful for large-scale brand image campaigns. It is a type of evocative advertising.
- Press: is an authoritative media. It can be expensive if spread nationally and internationally, however it provides a good target segmentation.
- Billboard: is localized, contextual and not expensive. It is ideal for events and stores. The new dynamic billboards allow a lot of freedom of expression.
- Digital media are interactive (the user can have an active role); customizable (the same ads message can be calibrated on different users' segments); measurable (users' interactivity versus an ads message can be measured).

1.3.2 A focus on digital advertising

Digital ads is every advertising action conveyed through digital communication channels. It divides into four main categories:

1 - *Display advertising*: advertising on portals, news or editorial sites, vertical sites, social networks and blogs, e-shopping sites. It mainly includes banners and videos, both in-stream and out-stream. It allows communication through innovative and impactful formats. The display ads campaigns' planning is similar to the one used for classic media: the value of an ads space is determined taking account of the audience, the positioning of the site on the web, the length of the message, the format and size of the ads, the importance given to the brand.

2 - *Search engine advertising*: advertising on search engines. This process leads sites to appear among the first results of the SERP[2], attracting as many visitors as possible, and tracking down potential customers. It divides into *keyword advertising* and *contextual advertising*, depending on whether the paid connection to the advertiser's site is in the search engine's SERPs (in special ads spaces or in spaces outside the search engines). The search operates on the so-called affiliate marketing. More precisely, there are two figures: the advertiser, who wants to promote his online business, and the publisher, who participates in the affiliate program by including on his website, in addition to his own content, the advertiser's ads content. Both share the affiliate platform as a means of making payments.

3 - *Classified advertising*: the purchase of visibility on trading sites or online directories and within catalogs and search engines on portals and on e-Commerce sites. There are lists that contain ads classified by sector or product category. They can contain only text or include a logo or an image and have a border surrounding the ads text.

4 - *Email advertising*: also known as *direct email marketing*, any form of advertising in newsletters and emails sent to third-party databases. These activities are usually conducted by an opt-in system. Each publisher has a different way of placing ads within emails. However, three main advertising formats exist: display banners, native advertising and sponsored emails. In particular, ads banners are present in our e-mail and normally include images, videos or text strings that transmit a marketing message. Such ads originates by the users' interests intercepted by their visits to other websites. Native advertising, instead, means ads that it is so closely harmonized with the design and content of a page, and consistent with the behavior of the platform, that leads the user to think that it is an integral part of it.

In Italy, about a quarter of the display ads market is made of the so-called *programmatic ads*: real time purchasing and selling of automated digital advertising spaces. For example, a user accesses a page of any website on which the publisher, owner of the site, has put an ads space that he wants to sell in programmatic. In the time of a few milliseconds the automated platform system will assign that space to an investor interested in that user who will see his ads message

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[2] Search Engine Results Page: where the position of a link corresponds to the relevance that the search engine assigns to the document corresponding to this link, in relation to the object of the search.

appear thanks to a series of variables and algorithms. In this way, publishers can maximize the sale of a space and investors can differentiate their investments.

The digital ads compared to the traditional one has different advantages, for example:
- it allows to create campaigns aimed at a target audience;
- campaigns can be easily monitored in real time, allowing to understand if it is better increasing the budget or suspending the campaign;
- a lot of channels are used to communicate a message and several campaigns can be created by splitting the investments.

Many online advertising models exist, each responding to specific needs and therefore different payment/price models exist too. Among these:
- Flat Rate (FR): a default amount is paid for a certain amount of time, regardless of the number of impressions, clicks or whatever[3];
- Cost per Click (CPC);
- Cost per Thousand (CPT): a model based on the payment of 1.000 impressions;
- Cost per Action (CPA): the advertiser pays only when the user performs a specific action;
- Cost per Visitor (CPV); the publisher pays when the visitor arrives on the website to which the ads refers;
- Cost per View (CPV), the publisher pays for each individual ads display (pop ups, etc.)
- Cost per Lead (CPL): as the acronym says, the payment occurs when a user turns into a lead after filling out a form, or subscribes to a newsletter;
- Cost per Sale (CPS): the publisher pays only when a sale has occurred or the buyer has completed the purchase.

Each type of payment characterizes an ads format, for example:

1 - *Display advertising*

The advertising space allocation is managed by media marketers that sell to advertisers the spaces they have in concession (sites, portals, social networks, communities). Usually ads spaces' sales use CPC, CPT or FC. Some examples of display ads campaigns are:

(i) *Affiliation campaigns* allow to publish ads (banners, videos, pop ups, etc.) in spaces sold by publishers (websites or portals). Intermediaries manage the affiliation program and are paid only when a user performs an action on the advertiser's site, for example buying something. Google AdSense, for example, is one of the best-known affiliate program for publishers, made available free of charge by Google, that allows to earn money by placing advertising on someone's own site. AdSense makes ads appear on the page the visitor is viewing. Every click on an ads is remunerated.

(ii) *Remarketing campaigns* aim at retaining users by offering ads only to customers who have already successfully completed an action on the advertiser's site. This model is not managed only by specialized agencies or dealers but each advertisers can use it through direct e-mail marketing.

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[3] Impressions are the number of times the advertisement is displayed. Clicks are the number of times the user clicks on one's sponsorship.

(iii) *Retargeting campaigns* are campaign in which ads is shown only to the users who have previously had interest in an advertiser's site offering them new purchasing opportunities. The intermediaries manage a network of advertisers and publishers.

(iv) *Programmatic campaigns* allow the advertiser to reach only users corresponding to his target. The value of each space always refers to visitors: each view is called an impression and is counted and processed. It refers to the use of software whose purpose is to decide when, where and how to place ads according to the value of the user's profile. For example, ads assignment can be done through an auction mechanism in real time (Real Time Bidding or RTB) and the actor that presents the highest bid generally pays an amount equivalent to the second highest bid on the auction (second price auction). The advantage of this system is that ads space costs less than other forms of display marketing. The payment method is CPT.

2 - *Search engine advertising*

The price of the keywords related to the ads can vary a lot depending on the competitiveness for the assignment of the keywords and on the position of the ads in the results' search page (top, right or bottom of page). A very common payment method is the CPC. The ads assignment system includes an auction in which any advertiser can participate by establishing a maximum bid. If the advertiser wins the auction, his ads will be published on the search engine for the keyword in the auction. With this payment model, the advertiser pays only when the customer clicks on the ads. Even if no one clicks, the ads will anyway appear in the search for the keyword, making the advertiser earn a free impression.

3 - *Classified advertising*

It is usually charged per letter, line or column. It has a low cost if compared to other forms of advertising.

4 - *Email advertising*

It has not a direct payment, i.e., sending emails doesn't need to be paid but a pre-investment must be done for creating a list of targeted emails addresses to which sending emails, as long as the user is subscribed to the list.

Different advertising models exist, essentially based on four parameters: the method (the way ads spaces are booked), the price, the participation (the way a seller sells to one or more buyers), the space allocation (the right of the advertiser to purchase ads space in a guaranteed manner). For example:

- The *Reservation model*, known as traditional, in which the sales of the spaces are similar to the ones of paper spaces: the media center contacts the ads agencies one by one (one-to-one participation) and books ads spaces and digital contents on the publishers' sites, which usually offer packages of ads space in relation to budget ranges. Space allocation is guaranteed and the price is static.

- The *Programmatic guaranteed model* is very similar to the reservation one. The media center agree on the price, impressions and timing with the ads agency. The advertiser can control over the campaigns and can decide any change or adjustment thanks to programmatic

technologies. It is characterized by one-to-one participation, space allocation is guaranteed, the price is static.

- The *Preferred deal model* is a programmatic method and is the most advantageous negotiation method for an advertiser who wants to ensure control over the ads space he buys. The negotiation price is pre-agreed between the media center and the ads agency, with no target of budget and impressions. It is characterized by one-to-one participation, space allocation is not guaranteed, the price is static. It is often used for retargeting.

- The *Private market place method* has several benefits for the advertiser, starting with the opportunity to buy packages of ads space presented by the publisher in the ads exchange. All the buyers who own an invitation can access to the package (one to few participation). The invitation consists of a deal ID, pre-set by the publisher and provided to advertisers who are interested in buying specific inventory packages. It's like an invitation to a private auction. Firstly, more buyers have the same deal ID, which means that to buy a space, buyers have to compete in the ads exchange (space allocation is not guaranteed). Secondly, the ads exchange does not provide guarantees of either price or pre-set impressions, but everything happens in real time. The auction winner is the buyer who offers the most to buy the impressions, but he pays the second highest price of the auction (dynamic price). Lately, ads exchanges are frequently using the first price auction model, replacing the second highest price model.

- The *Open RTB model* where prices are defined by offers in the open market (open auction), where all buyers have the opportunity to buy spaces in the publisher's ads exchange. The main logic is the second highest price + 1 US cent dollar, called the second highest bid + 1 cent. Some ads exchanges are switching to the first price auction model. Publisher has a series of access protection tools, such as minimum auction prices and blacklists and whitelists. The blacklist protects the publisher by blocking unwanted buyers. Advertisers may also decide to avoid buying at certain sites. Unlike blacklisting, which follows the logic 'all but the excluded' the whitelist is based on 'exclude all but a few'. The buyer has the right to choose only the sites or networks or ads exchanges where to provide ads and exclude all others. The delivery of impressions, budgets and prices are not guaranteed, but decided in real time based on the offers (dynamic price).

1.3.3 Some recent figures on advertising by media in Italy

According to a study conducted in Italy by the Digital Innovation Observatories of Politecnico[4] of Milano, spread also by IAB[5], data shows a declining media market, with a 2% decrease at the end of 2018 and a further decrease of 2% estimated for 2019.

In particular, the market divides into TV (54%), Press (22%), Internet (21%) and Radio (3%). Internet ads slows down too, confirming the decreasing of the total ads market.

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[4] Politecnico of Milano is a scientific-technological University that trains engineers, architects and industrial designers.

[5] IAB Italia is the most important Association in the field of digital advertising worldwide and represents the entire supply chain of the interactive communication market in Italy.

Besides, basing on 2019 forecasts, the sector consisting only of advertising and sales of media online content could exceed the entire print sector in paper copies, but the growth will be slower. In fact, if at the end of 2018, the ads value was 2.98 billion, with an increase of 11% compared to 2017, the first results of 2019 show a lower growth that could be below 10%, with an overall market that will settle at about 3.2 billion.

In detail, referring to the expected growth in 2019-2023, data show that the Display ads grows by 14% and is worth 1.9 billion. In this context, Video ads is the master, with over 900 million, a value that will exceed that of the Banner thanks, above all, to the Social Networks. Search ads grows by 9% and is worth over 850 million. Classified and e-Commerce ads closed the 2018 to 224 million in total (+ 6%). For 2019, growth should be higher thanks to e-Commerce ads initiatives on large portals. Finally, Email ads is constant at around 30 million.

2. Measurement of SPPI

2.1 General framework

Istat developed the Italian Advertising producer price index in 2015-2016. It is one of the last indices produced. Referring to industry 731, it covers the activities of media centers and media marketers, excluding the creative activity carried on by advertising agencies and digital ads.

2.2 Measurement issues and description of pricing method

The Advertising SPPI is calculated with data collected by a quarterly business survey. The index has an industry based structure. The questionnaire is an online questionnaire and asks every enterprise the following data, referring to:
- annual business to business total turnover as well as turnover for each media, referred to the previous year. The first is used to weight each enterprise in the total sector index, the second to weight price indices for each media inside each enterprise;
- quarterly business to business turnovers and volumes for each media, used to calculate unit values relatives, proxy of price relatives.

In order to choose enterprises, a stratified sample of enterprises by turnover is used, with PPS[6] sampling in each stratum. Large companies are integrally sampled.

The Advertising SPPI is a chained Laspeyres price index and the basket of services, the sample of units and the weights are annually updated.

The unit value method is the type of pricing method used for measuring the price in this industry. The turnover and the respective quantity are collected by each media and then a unit value is calculated to produce the elementary index for each media in each enterprise.

The intermediation services and the sales of advertising space on the most important media in terms of investments (Television, Radio, Newspapers, Magazines) represent the observation field.

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[6] Population Proportional to Size.

For a question of cost incurred in the design of the questionnaire and because of insufficient available human resources, advertising creation and digital advertising were excluded and are still out of the index.

In order to measure the advertising price change, taking account of both pure price change and quality change, quality adjustments are planned for each media's price. In particular, minutes or television appearances for television, minutes or airplay for radio, pages both for newspapers and magazines, are the types of unit of measure provided in the questionnaire and used to treat quality adjustments. Moreover, the voice 'other' is considered for every media to allow each enterprise inserting its own advertisement's unit of measure to be used for the same scope.

The quality adjustment frequency in the index is low, this means that, over time, marketers and media centers constantly use the same unit of measure for selling ads space on the traditional media considered in the survey.

3 Evaluation of measurement

According to the OECD *Methodological guide for developing producer price indices* (2005), when using the unit value method, service output should be sub-divided into homogeneous sub-sets for which value and quantity data can be collected. However, in practice the homogeneity requirement is rarely fully met even with a detailed sub-division of output. Nevertheless, the method sometimes is the best available alternative to others.

In the case of the Italian advertising activity, the unit value method gives an index strongly affected by seasonality because the turnover of the sector is clearly seasonal and the service output is sub-divided only into few classes, represented by the different media. The classes are too large and probably not so homogeneous inside. Without doubt, data collection should be done at a lower level, observing, for example, one or more specific sales for each media and not the total ads sold into each media itself.

The good news is that Istat is re-engineering the survey of producer prices on services and this will allow to obtain prices at a lower level of detail for the advertising sector too.

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