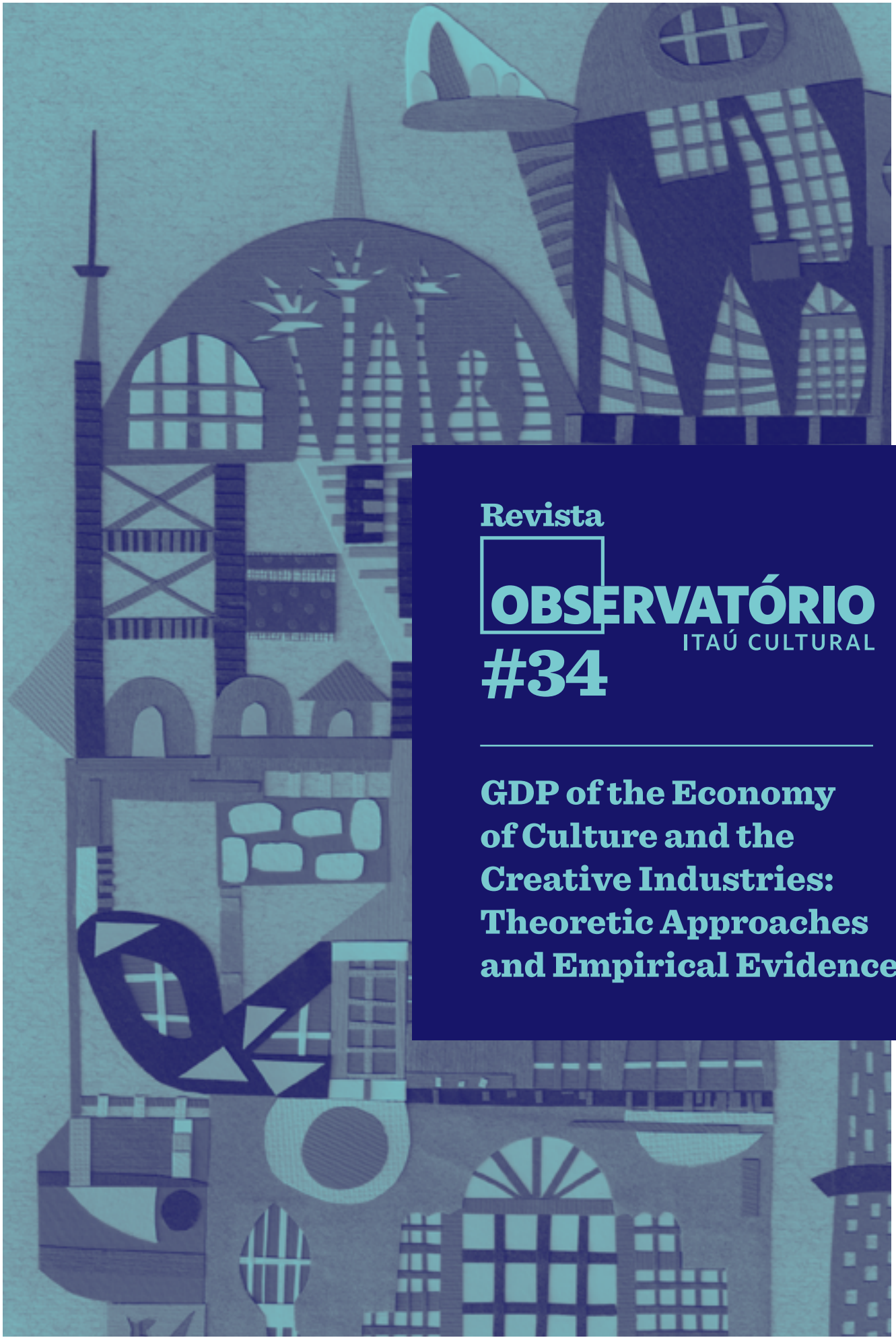

Revista

OBSERVATÓRIO

ITAÚ CULTURAL

#34

GDP of the Economy of Culture and the Creative Industries: Theoretic Approaches and Empirical Evidence

Memória e Pesquisa | Itaú Cultural

Itaú Cultural

Revista Observatório 34 : PIB da Economia da Cultura e das Indústrias Criativas: abordagens teóricas e evidências empíricas / organização Itaú Cultural. - São Paulo : Itaú Cultural , 2023.
il. ; PDF.

ISBN: 978-65-88878-73-6

1.Economia da Cultura. 2.Indústrias Criativas. 3.PIB - Produto Interno Bruto. 4.Cultura e Tecnologia. I. Instituto Itaú Cultural. II. Fundação Itaú para Educação e Cultura. III. Observatório Itaú Cultural. IV. Título.
CDD 330

Bibliotecária Ana Luisa Constantino dos Santos CRB-8/10076

ISSN 2447-7036
ISBN ISBN: 978-65-88878-73-6
DOI: https://www.doi.org/10.53343/100521.34
contact: observatorio@itaucultural.org.br

Indigo | Image by Adriano Catenzaro

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ISSN 2447-7036
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Itaú Cultural is part of the Fundação Itaú para Educação e Cultura.
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Revista OBS 34 | GDP of the Economy of Culture and the Creative Industries: Theoretic Approaches and Empirical Evidence

In this issue, the *Revista Observatório Itaú Cultural* discusses the process of constructing a methodology for calculating the GDP of the economy of culture and the creative industries (ECCI) in Brazil, an initiative of the Observatório Itaú Cultural.

The current issue features articles by international researchers who were consulted during the process and presents the results of the Delphi research study, carried out in two rounds with national researchers. It moreover presents an interview conducted by Flávia Oliveira with Leandro Valiati, one of the researchers who led this process, which underscores the importance of calculating a GDP for the sector, which sources and indicators were considered, and the tangible and intangible impacts of the cultural and creative sector, which is among the ten most important sectors of the Brazilian economy.

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Institutional Introduction

Established in 2006 with the aim of spreading knowledge about issues related to management, economics and cultural policies, the Observatório Itaú Cultural collects, systematizes, elucidates, disseminates, and reflects on information about the cultural and creative sectors, acting as a space for supporting the development of cultural policies.

Since its outset, guided by Fundação Itaú's public spirit in the production and dissemination of knowledge, the Observatório Itaú Cultural has promoted actions that spotlight the sector, through initiatives focused on research (including analyses of economic sectors, as well as the Cultural Habits survey, in partnership with the Instituto Datafolha), and training, with emphasis on the Cátedra Olavo Setubal – a partnership between Itaú Cultural (IC) and the Institute of Advanced Studies of the University of São Paulo (IEA / USP) – the Specialization Course in Cultural Management and Policies carried out with the University of Girona (Spain), the first of its kind in Brazil, and its distance learning (EAD) program.

In tandem with the advances in the culture and creative industries, which are increasingly impacting the economies of countries, the Observatório is entering a new phase in its history. In view of the essential role played by data and evidence in decision-making in the public and private sectors, in 2020 two important complementary initiatives were launched: the Observatório Itaú Cultural Data Panel, a platform that systematizes data and publications on the labor market and the business sector, as well as public spending on culture and international trade; and the professional master's degree program in economics and policy of the culture and creative industries, a partnership between IC and the Federal University of Rio Grande do Sul (UFRGS).

In light of the challenge of producing reliable and internationally comparable economic data and estimates for measuring the cultural and creative sectors in Brazil, the organization is taking on a new commitment by proposing a project for constructing the GDP of the economy of culture and creative industries in Brazil. The process of developing this indicator and the results achieved are presented in the articles published in this 34th issue of the *Revista Observatório*.

In furthering IC's mission and commitment to producing and providing access to data and information on the cultural and creative sectors, we hope that this new initiative, in permanent dialogue with national and international experts, will foster the deepening of an organic space for research, training, and reflection on the cultural sector, contributing to critical thought concerning the formulation of cultural policies, while, above all, opening new possibilities for research and promoting debate in our field.

Enjoy the reading!

Eduardo Saron
President of Fundação Itaú

Antera 09 | Image by Adriano Catenzaro

Letter to the Reader

The production of reliable economic data and estimates for measuring the creative economy have been a challenge in Brazil. There have been many advances in recent years, including the Observatório Itaú Cultural Data Panel. We still do not, however, have an internationally recognizable integrated indicator able to provide a broad public with a simplified, direct and understandable measurement of the creative economy's impact. To arrive at a reliable estimate of this number, the Observatório proposed a project for constructing the GDP of the culture and the creative industries (CCI) economic sector in Brazil. The results of this process are presented in this issue.

The first article, by Danilo Miranda, underscores not only the importance of improving the methodologies to account for the economic impact of culture in Brazil, to measure it and to make it visible, but also the relevance of studies such as the one carried out by the Observatório Itaú Cultural, for the formulation of more ambitious and well-structured public and institutional policies for the sector.

The second article reports on the consulting provided by national and international specialists concerning the best methods for measuring the creative economy as a whole and the specificities of this economic sector in Brazil. The contributions by national specialists were collected using the Delphi method and incorporated into the calculation. The collaborations of the international specialists were partially integrated and generated another four articles for this edition, which discuss how to measure the innovations brought by digital technologies.

The digital frontiers are explored based on different perspectives and approaches, posing questions that range from the measuring of e-commerce flows to the valuation of digital property and products offered free of charge, as well as questions about cultural participation in digital ecosystems. Each of the articles presents reflections that shed light on a broad research agenda. A discussion about this intercrossing of approaches is also presented in a complementary article.

Finally, we present the detailed methodology in the first numbers of the GDP of the CCI economic sector in Brazil. We consider these numbers as initial ones for being the outcome of a continuing effort of collective construction, which tends to be refined and improved according to the dynamic development of the creative economy and the obtainment or availability of new data.

Enjoy the reading!

Catavento Pesquisas and the Observatório Itaú Cultural

Antera 16 | Image by Adriano Catenzaro

Measuring to Valorize, Valorizing to Measure

DANILO SANTOS DE MIRANDA

As a cultural manager, I will begin these introductory remarks by pointing to the strategic nature of the initiative aimed at expanding and improving the ways of measuring the contributions of the cultural and creative industries (CCI) sector to the Brazilian gross domestic product (GDP).

It is important to note, however, that we must give broader consideration to the importance of the cultural and creative activities for human and social development in Brazil, in light of the opportunities for sensitization, critical thinking, education, and invention that they provide. Without this fundamental consideration, committed to the existential and emancipatory driver of culture, it is not possible to advocate for the relevance of this sector in the lives of Brazilian citizens – given its intrinsic value.

Coupled with this, there is moreover a tripartite equation which, despite its apparent tautology, makes a huge difference when it is taken seriously: (1) the valorization of the cultural and creative sectors is subordinated to their ability to *influence* people's lives; (2) the gauging of this influence depends on *how* it is measured in its various dimensions, that is, on the tools used for this measurement; and (3) finally – and this is the main contribution of this magazine – there is a tendency for these sectors be *more highly valued* when achievements can be measured more broadly and with greater accuracy.

It is known that these achievements affect people's lives in terms of enjoyment, information, entertainment, and symbolic development. Their impact, however, also extends to the economic sphere, since the cultural and creative activities involve strong financial vectors, reflecting a change in consumption patterns, whose emphasis is increasingly shifting from products to services.

This shift is of utmost importance to the Serviço Social do Comércio (Sesc), the entity in which I serve as the director of the São Paulo Regional Department, insofar as this institution is precisely involved in the commerce of goods, services, and tourism sector, which is benefitted by these structural changes.

For a clearer understanding of the sectors in question, it helps to consider them broken down into the following macro-areas: architecture, the performing arts, the visual arts, handicrafts, cinema, design, publishing, fashion, museums, music, heritage, advertising, radio broadcasting, information technology, and television. These realms are especially amenable to the application of nonreproductive, antimechanistic and necessarily creative, interpretative and innovative logics.

There is a widespread perception that the cultural and creative industries play a significant role in the Brazilian economy, due to their ability to drive markets at

the local, regional, and national levels, generating income, employment, and other monetary benefits. On the other hand, there is a need for more intense efforts and improved methodologies for measuring these effects. And this is what the research presented here explores in a proactive way.

This problematization is essential for gaining a more accurate perception of the dynamics of the sectors in question and for formulating more ambitious and well-structured public and institutional policies regarding this area. When the various gains generated by the cultural and creative activities are better understood and seen more clearly, this decisively benefits their development and, consequently, the economic development of Brazil as a whole.

When the various gains generated by the cultural and creative activities are better understood and seen more clearly, this decisively benefits their development and, consequently, the economic development of Brazil as a whole.

This bold investigation is focused precisely on this point: how to measure the economic impact of culture in Brazil and make this impact more visible? To this end, the research works on a specific possibility for measuring the contribution of the cultural and creative sectors to the nation's GDP, based on a new combination of data sources.

The study makes use of a calculation method seldom used in the economics of culture and the so-called creative industries, relying on other sources than those commonly cited in the specialized literature. For example, in the context of statistical and economic surveys, the culture satellite account is the first that comes to mind. Used by many countries around the world, this tool was tested in Brazil, but did not yield the desired results.

Other efforts have been carried out in Brazil, with only partial success in estimating the effects of the cultural and creative sectors on the economy. These tools tend to take the approach of impact studies but have limited scope. The present study, therefore, was aimed at enhancing the methods by which these activities are accounted for, presenting a new model for calculating the contribution of these sectors to Brazil's GDP, demonstrating not only how significant this contribution already is, but also how much greater it could be.

The study also discusses the ways existing databases should be improved and made more available, in order to patch methodological flaws and glitches in the analyzed sectors. For purposes of illustration, calculating the GDP of a sector requires financial data on transactions, taxes, and incomes, as well as information on the respective levels of disaggregation in this data, which is often limited due to the informal labor arrangements commonly found in the cultural and creative production areas, thus making it harder to measure.

Moreover, the level of disaggregation present in the national accounts often prevents cultural and creative activity from being measured separately from the other activities. New forms of data collection and management, along with the improvement of existing ones, are therefore necessary to allow for effective financial measurement of the sector. To this end, the study adopts an innovative approach

and resorts to little-used databases, making it worthy of attention and of further development by other researchers and managers.

This is where the accountability reports of the Rouanet Law (Federal Law for the Incentive of Culture) arise as a linchpin of the investigation, as they mirror income from cultural and creative activities and reflectd particularities regarding their economic consequences. The study makes use of nearly 15 years of Rouanet Law accountability reports, spanning from 2009 to 2022. It also makes innovative use of data from other surveys to capture income generated through digital means, while managing to include informal activity in the calculations.

This is where the accountability reports of the Rouanet Law (Federal Law for the Incentive of Culture) arise as a linchpin of the investigation, as they mirror income from cultural and creative activities and reflectd particularities regarding their economic consequences.

It does this by using a mathematical formula as a prospective basis for measurement, which reflects (A) the weight of the cultural and creative sectors in Brazil's GDP, (B) the wage mass of the workers in these sectors, (C) the profit mass and (D) royalties, income from digitization, copyrights and rentals, as well as (E) methods which correct for the effects of informal economic activity.

The data from the Rouanet Law accountability reports allows for the visualization of countless economic activities and hiring models, making it a good way to calculate funds allocated to projects, salaries, temporary and supplementary contracts, as well as rentals of material and technical resources, all of which are essential for measuring such a multifaceted sector.

The calculations of the wage mass and profit mass are based on various research studies and databases, some of which are published by the Brazilian Institute of Geography and Statistics (IBGE). The study covers a large part of the formal companies in the sectors in question, thus avoiding distortions caused by informal economic activity. This concern is important for the cultural field, especially after the onset of the COVID-19 pandemic in 2020, with the ensuing exponential rise in job precariousness.

The combination of various databases is aimed at providing more effective national coverage, resulting in more accurate measurements of the sectors under consideration. This is an achievement of the study, which through its use of a range of sources points to a possible mosaic that is representative of our reality. The research presented here proposes a new way to calculate the GDP of the cultural and creative industry sectors through the use of unusual databases and the introduction of variables used here for the first time. Through these means, it provides results that are more consistent with the reality of these sectors.

This is a praiseworthy effort, as it provides valuable methodological resources to the sectors in which we play an integral role. Interlinked means were used in order to cope with the complexity of aspects in the field studied, which defy rigorous and predictable analysis: informality, unpaid work, a wide gap be-

tween the remunerations paid to renowned names in comparison to those of others, many professionals working second jobs, etc. Thinking about a complex reality on the basis of sophisticated tools is the main merit of the contribution presented here. OBS

HOW TO CITE THIS ARTICLE

MIRANDA, Danilo Santos de. "Mensurar para valorizar, valorizar para mensurar." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

DANILO SANTOS DE MIRANDA

is the regional director of Sesc São Paulo. An expert in cultural action, he holds degrees in philosophy and social sciences, and has completed further studies at Pontifícia Universidade Católica (PUC) and the Fundação Getulio Vargas (FGV) in São Paulo, as well as at the Management Development Institute in Lausanne, Switzerland. He served as chair of the Steering Committee of the World Cultural Forum in 2004 and as the Brazilian Commissioner for the Year of France in Brazil in 2009. He also serves on the board of various Brazilian organizations.

Cabana | Image by Adriano Catenzaro

The Process of Constructing the GDP of the Economy of Culture and the Creative Industries

GUSTAVO MÖLLER, KARINA RUIZ, LEANDRO VALIATI AND FILIPE DA SILVA LANG

ABSTRACT

This article summarizes the process of constructing the GDP of the culture and creative industries (CCI) economic sector, which was divided into two main phases. The first consisted of workshops with national specialists to consult with them about new trends in the sector. The second was also a consultation with national specialists, through the Delphi methodology, seeking to define which national specificities are relevant to this measurement. All the results indicated here were considered in the final calculation presented in this issue. The specific contribution of the international specialists is presented in the other articles.

INTRODUCTION

Culture and creativity are not only the greatest expressions of the unique nature of a people, but also a symbolic cornerstone of society, therefore influencing the various dimensions of the social relationships established in a territory (MILAN *et al.*, 2019). So it is not surprising that this is the fundamental object of study of the contemporary social sciences, appearing in the key discussions proposed mainly by anthropology and sociology. Specifically, regarding the economic field, the debate is more recent: the question of culture and creativity has entered the field of economics due not only to its potential for dynamizing economic activity but also to the rise of new patterns of consumption along with technological paradigms have led our societies to increasingly valorize the consumption of intangible goods and services, which possess a subjective value, instead of physical products.

Creativity arises as an alternative for the generation of income, employment and wealth. Culture and creativity become relevant in the context of economic studies from the moment they begin to have economic value.

The growing concern for the importance of cultural and creative economic activity is in part related to the decline of the importance of the traditional industries, to unemployment in those areas, and to the generalized economic decline (OAKLEY, 2004). Creativity arises as an alternative for the generation of income, employment and wealth. Culture and creativity become relevant in the context of economic studies from the moment they begin to have economic value.

The economy of culture and the creative industries has therefore been gaining prominence in the literature and in the eyes of public policy makers, as per capita incomes increase and patterns of consumption migrate from products to services (RODRIK, 2016; BUCKLEY; MAJUMDAR, 2018). This structural change reveals the huge potential of a sector that was previously marginalized or un-

dervalued by economists. This greater attention on the sector is causing countries to develop research studies and statistical centers to better understand the potential of the cultural and creative industries (CCI) for the generation of income, jobs and linkages.

In this sense, GDP is one of the main indicators used internationally for comparison between economies, having also been used as a proxy for the "health" of the economy of countries, regions and federative units, among other spatial units. This statement is also valid for economic sectors – that is, the GDP of a given sector, or that sector's contribution to the national GDP, helps to know its importance and potential. Therefore, the sectorial GDP is a key indicator for the development of sectorial policies, and, depending on the sector's relevance, it can also be used to foster development at the national level.

GDP is one of the main indicators used internationally for comparison between economies, having also been used as a proxy for the "health" of the economy of countries.

At the same time, when we talk about a sector as dynamic as that of the creative industries, we must pay attention to its specificities when calculating its sectorial GDP. Thinking about the creative economy in developing countries involves a series of specific challenges, such as economic diversification and the generation of quality employment. As stated by Reis (2008, p. 20), this is a central issue to define:

not how to measure, but rather what to measure: finding the characteristics of the creative economy adequate for each country or region, identifying its competitive advantages, its uniqueness, its cultural dynamics and processes, the networks of value created and the potential added value of the intangibleness of its products and services.

To discover what these specificities are in the case of Brazil, we used a structured method involving two sorts of consultations carried out in parallel. The first was carried out with four international specialists, who were invited to participate in two discussion workshops about the creative sectors. At those workshops, they presented the main points they believe are essential for studying the sector currently and in the future, and were invited to make proposals that could capture what is not being measured in the CCI sector by the traditional techniques. The methodologies they formulated to aid in the calculation of GDP are presented in articles in this issue of the magazine.

The second series of consultations was carried out with national specialists to ascertain the specificities of the CCI sector in Brazil. In this context, the Delphi methodology was used to allow for a wider range of responses. Delphi is a qualitative analysis method recognized as a scientific instrument for obtaining knowledge from specialists. It allows for the structuring of communication processes in order to obtain solutions to complex problems, even if the individuals selected are geographically distant (LINSTONE; TUROFF, 2002; GRISHAM, 2009; OKOLI; PAWLOWSKI, 2004). To this end, the Delphi method is structured in a series of interactions mediated by the researchers, in two or more rounds of data collec-

tion. While the results obtained by these rounds are explored in the third section of this article, in the next section we summarize the results obtained from the international specialists.

INTERNATIONAL SPECIALISTS: METHODOLOGICAL CONTRIBUTIONS

The meetings with international specialists were focused on discussion about methods for measuring the GDP of the CCI sector, as well as their limitations. Stated in a nutshell, in the economic sciences, the GDP of the country or region represents the production of all the productive units of the economy (public and private companies that produce goods and provide services, freelance workers, government, etc.) in a given period (yearly, quarterly, in general), at market prices. Traditionally, GDP is measured through the macroeconomic identity of national accounting in which the income, product and expenditure approaches, by definition, produce the same result. In other words, the national account system (NAS) establishes that GDP can be measured either by the sum of all the incomes, the products (through their monetary values), or the expenditures (or costs) of a country.

Thinking about the creative economy in developing countries involves a series of specific challenges, such as economic diversification and the generation of quality employment

For the creative sector in general, this method of calculation often does not capture the sector's more innovative dynamics. For this project, we brought together four specialists from different regions of the world and with different specialties, to discuss with them and gather their ideas concerning possible values generated by the creative sector that are not necessarily captured in the traditional calculations.[1]

Two immersive meetings were held in the months of March and June 2022. In the first meeting, the research team presented to the specialists the data available on the official Brazilian databases, the analysis on the first Delphi round with national specialists, and the division of the selected sectorial categories, which is available at and based on the Observatório Itaú Cultural Data Panel. The difficulty in measuring the values generated based on the changes in the digital field were the central point of the discussion, a consensus among the specialists. In a direct and unspecific way, four large impacts of the sector's digitization were underscored, along with the difficulties they pose for measurement.

First, the structural transition in the widest sense, which affects more than one aspect of our daily life: our increasing everyday experience in "virtual worlds" and the products and services that are generated specifically for them. A very clear example is the metaverse, in which traditional services, such as architecture, can be adapted to be provided directly in the construction of entirely digital buildings, as well as the creation of artifacts (through NFTs), whose value lies within a completely innovative context. This entire trend of potential new flows is difficult to measure and, at the same time, hard to classify in terms of our current understanding of economic activities.

Second, the impact on the business models and the rise of the digital ecosystem that goes beyond the focus on the sale of a specific product/service, extracting

value from the relationships established in the ecosystems. This phenomenon is related to the fact that, to produce a certain product, decisions that would not be considered rational from the viewpoint of classical economics are taken in light of the potential for augmenting consumption through digital engagement. In this phenomenon, the produced content related to a main product is not directly monetizable, but becomes fundamental for the creation of economic value. The sale of a cultural service or product is tied to the creation of contents that do not necessarily have value in and of themselves, but are nevertheless fundamental in the overall whole. Measuring the value of this content that is not monetizable is a great challenge.

The structural transition in the widest sense, which affects more than one aspect of our daily life: our increasing everyday experience in "virtual worlds" and the products and services that are generated specifically for them.

Third, the digital commerce of the creative sectors is directly affected in two ways. First, the export/import of cultural goods/services can take place through platforms that are, in principle, free, such as YouTube. The only way to measure the value of content provided free of charge is very imprecise and normally linked to the advertisements inserted in it. The ability to estimate the value of this export, however, remains diffuse, in the absence of data on actual consumption. Another point in relation to digital commerce has to do with the platforms themselves on which this commerce takes place and how this flow can be better accounted for. Despite different perspectives, the challenges that arise are related, since it is necessary to know what paths these flows take in order to better measure them.

Last but not least, is a point partially related to the third one, which is how the digital revolution created collective databases of shared knowledge that are not monetized, such as Wikipedia, but which generate value through their use. Ultimately, the challenge here involves not only the measurement of the costs of these benefits but also the measurement of the value generated for their users. The difference in relation to the third point is that these bases arise from collective action and were not necessarily conceived with commercial aims.

The discussions mentioned above led to proposals by the specialists we consulted, which would help to overcome some of these problems that must be solved in order to measure the digital portion of the GDP of the CCI sector. These proposals were discussed in a second meeting and, later, transformed into articles that are presented in this issue. The discussions also served as a basis for methodological decisions for the inclusion of other remunerations in the calculation of the GDP of the CCI sector.

NATIONAL SPECIALISTS: METHODOLOGICAL CONTRIBUTIONS AND SUMMARY OF THE EFFORT

The national specialists were consulted by means of the Delphi method in two rounds of data collection: the first, of an exploratory character, consisted of the application of an open questionnaire, filled out through online, voluntary, individual and anonymous participation. The questionnaire was composed of three open questions, to be answered without any restrictions in regard to time or length. The

first question asked which Brazilian specificities should be considered in the calculation; the second question was about the aspects to be considered when defining the activities to be covered in the calculation; while the third asked which indicators the interviewees considered essential. The questionnaire remained open for 46 days, between February 3 and March 20, 2022, and received input from 25 specialists selected and invited by the Observatório.

How the digital revolution created collective databases of shared knowledge that are not monetized, such as Wikipedia, but which generate value through their use.

These responses, analyzed by a content analysis procedure based on Sampaio and Lycarião (2021) and Bardin (2010), and supported by a review of the literature,[2] were summarized in 14 statements that composed the closed questionnaire applied in the second round of data collection, seeking for the verification of consensuses through the Likert scale of responses, which range from 1 (totally disagree) to 5 (totally agree), with 3 as the neutral point (neither agree nor disagree). The structure of the statements proposed through this procedure, taking into consideration the described thematic analysis, is presented in Table 1, below.

Table 1. Structure of the instrument for the second round of the Delphi method

Approach	Dimension
What to measure	Informal work
	Local development
	International trade
	Productivity and technological innovation
	Social inequality
	Democratization
	Well-being and quality of life
	Environmental sustainability
	Mapping of agents and production chains
How to measure	Territoriality
	External factors
	Sectors
	Comparability
	Diversity

Source: developed by the authors themselves.

This questionnaire, also filled out through voluntary, individual, anonymous and online participation, was kept open for 28 days, between April 29 and May 26, 2022, and received input from 41 specialists. These responses were analyzed initially according to Scott (2006), considering the degree of agreement as the frequency of "Totally agree" and "Agree" and exploring the variations in the frequencies verified on the Likert scale. To complement this analysis, other elements of descriptive statistics were also used, such as the mean and standard deviation.

One of the possible disadvantages of the Delphi methodology lies in the risk of obtaining false consensuses. Among other factors, this risk is linked to the definition of a group of overly homogeneous interviewees. With the aim of remedying this possible bias, in the second round the questionnaire had questions that allowed

for the construction of the interviewees' profile. In this regard, it should be noted that there was an absence of self-declared black and indigenous participants, and the majority of participants were from Brazil's Southeast Region (59%), with lower representation from other regions. On the other hand, there was a similar proportion of participating men (51%) and women (41%), diversity in regard to professional profile, and an age range that reflects the profile of specialists proposed by the initiative – concentrated in the age bands ranging from 35 to 45 (24%), 46 to 60 (39%) and 61 and over (29%).

All of the respondents indicated the need to include information on informal work and aspects related to it.

The analysis of the responses obtained in the second round of the method shows that, despite the larger number of interviewees, the themes that stood out during the first round were also those with the greatest degree of agreement in the second. First, the specialists indicated the need to capture information about informal work in the sector. All of the respondents indicated the need to include information on informal work and aspects related to it, such as the intermittency of work and the polyvalence of creative workers. Second, the need to measure the entire economy, extending beyond the central realities. Recognizing Brazil's continental size, it is necessary to create tools that can take in the multiple regional and local Brazilian realities, considering factors such as the diversity of expressions and artistic-cultural activities present, and the existence of different arrangements and costs between regions. Third, the specialists pointed to the need for a more accurate understanding of the socioeconomic dynamics of the Brazilian cultural sector. According to the specialists, an economic measurement of the sector must capture information about the processes related to social inequality in Brazil, especially in regard to the democratization of access and of cultural production, disparities of gender and race/color, social mobility, and the concentration and/or distribution of income. Finally, another significant concern was that it must be possible to carry out the measurement on a frequent, periodic basis, generating historical series that allow for an understanding of the economic dimension of the Brazilian cultural sector through time.

Even though there were different degrees of agreement among the specialists, all of the themes that emerged at the beginning of the research clearly continued being relevant for the measurement of GDP. Its measurement is thus understood by the interviewees as a necessary challenge for understanding the economic dimension of Brazilian culture, providing an indicator that can help to guide future actions and policies for the sector. And, consistent with the interviewees' recommendations, the measurement tools that will be constructed should be used recurrently and periodically to allow for not just a single snapshot, but also the continuous monitoring of the sector's dynamics.

FINAL CONSIDERATIONS

The aim of this article was to present an overview of the methodological construction of the GDP of the economy of culture and the creative industries to introduce the public to the work that the team carried out. The main aim was to demonstrate that the methodological choices and focuses are based on discussions with national and international specialists with expertise in the sector, and that every effort was made to consider all the points raised.

We note that all the discussions by the international specialists in regard to the digital transformations were very pertinent, clearly showing the relevance of the restructuring we went through. It should be noted, however, that only a few of the contributions have already been inserted in the calculation, since to do so will require further research. In relation to the national experts, we emphasize that it was possible to gather data to satisfy a good part of the concerns raised, mainly in regard to informal work and job precarity in the sector, the regional and social specificities, and the need for the methodology to be replicated on a frequent, periodic basis. The details on the calculation of this GDP are given in this issue's final article. OBS

HOW TO CITE THIS ARTICLE
MÖLLER, Gustavo *et al*. "O processo de construção do PIB da Economia da Cultura e das Indústrias Criativas." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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NOTES

1. The specialists, who also authored articles in this issue, are Diana Marcela Rey (Colombia), Pier Luigi Sacco (Italy), François Moreau (France) and Trilce Navarrete (born in Mexico City and a resident of the Netherlands).
2. The qualitative analysis of the answers was carried out through content analysis. Additionally, the approach characterized by Linstone and Turoff (2002) as Lockean was used, with the aim of understanding the possible positions of commitment. This approach proved to be suited to the themes in which the

interviewees' responses had a low level of conflict or indicated a search for intermediary positions. Based on these cases and with the aim of not overlooking methodological differences important for the research, the statements about how to measure the suggested themes were developed.

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Brainstorm | Image by Adriano Catenzaro

The Creative Economy in the E-Commerce Scene

DIANA MARCELA REY

ABSTRACT

Before 2020, when we thought about the relationship between e-commerce and the creative economy, it was Netflix, iTunes or Amazon that came to mind. The two ecosystems, however, were already correlated in ways that went beyond these examples even before 2020, when the global market was profoundly transformed.

At that moment, the extensive network of players in the creative sector was forced to gain an understanding of the logic underlying B2B, B2C, C2C, B2G, and G2C[1] transactions, to interact with new and old digital intermediaries (marketplaces, payment portals, digital wallets, etc.), and to offer their customer an omnichannel experience. Therefore, today, any proposal aimed at measuring the economic contribution of creative goods and services must consider both offline and online channels (platforms, online stores, social networks, etc.) in order to accurately portray the creative economy.

Taking up this challenge, the present article presents a holistic analysis of the literature concerning the creative economy in the e-commerce field, reviews the key indicators used to measure e-commerce, and defines the main technical provisions that should be included as a data source when calculating the gross domestic product (GDP) of Brazil's culture and creative industries, which are included in the MCC-ENET study carried out by the Brazilian Chamber of Digital Economy and the company Neotrust. The present article should be understood as an initial basis for the definition of a consistent research agenda for this yet unexplored field: statistics on e-commerce for the creative economy. In 2019, Brazilian e-commerce[2] grew by 16% in relation to 2018.[3] The following year, the yearly increase was 41%, thus showing how quickly small and medium-sized enterprises (SMEs) entered the digital environment as a means to survive during the COVID-19 pandemic. On the other hand, the year 2020 was not an easy one for the creative economy[4] (CE). Restrictions imposed worldwide on human circulation caused a reduction of approximately 20% to 40% in the revenue of the cultural and creative industries in various countries, according to the United Nations Educational, Scientific, and Cultural Organization (UNESCO).[5]

In this complex scenario, the SMEs in the creative industries strengthened their online presence, they took up the challenge to understand the e-commerce ecosystem, and they adopted a new paradigm: providing the customer with an omnichannel[6] experience. The relationship between the creative economy and e-commerce, however, is not new. The pre-2020 literature reflects the presence of a broad gamut of creative industries that marketed their products by means of specialized platforms (online marketplaces) and online stores, even though the terminology, vicissitudes, and challenges of e-commerce were still imperceptible to the interested parties and public policymakers.

In order to gain an understanding of these contradictions, the present article considers three questions: How did the CE become integrated with e-commerce? Which challenges strengthened the links between these two ecosystems? What sorts of monetary indicators should be measured in order to capture the economic flow of the creative products marketed through e-commerce channels?

The answers are presented in three parts. The first analyzes the literature concerning the CE in the e-commerce area and identifies conceptual factors relevant for an interdisciplinary agenda. The second underscores the key indicators that can be used to measure e-commerce. The third sets forth some guidelines for estimating the volume of economic transactions in which creative products are purchased in online stores.

FROM PLATFORMIZATION TO RESILIENCE

The literature concerning the use of e-commerce strategies in the creative economy is still fragmented. Up to now, the studies on this topic have been focused on three perspectives: the platformization of cultural production, the use of digital technologies, and recently, the literature concerning resilience.

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The expansion of Google, Apple, Facebook, Amazon, and Microsoft, a group of companies known as Gafam, has kindled interest in the platformization of cultural content. The literature concerning this phenomenon has been focused on calling attention to the benefits of heightened visibility of the CE and on raising awareness about the counterproductive effects that arise when the online cultural supply is concentrated in a few portals.

In line with the positive side of this viewpoint, in 2012, Eang[7] outlined three benefits of platforms for the publishing sector: (i) they provide quick access to niche products and items that are hard to find in physical distribution networks; (ii) they lengthen the lifespan of cultural products insofar as platforms – unlike physical networks, which are closely linked to the sale of trending products – allow for the offering of products still existing from older contexts; and (iii) they provide physical bookstores with solutions for managing the growing inventory of cultural products.

On the other hand, the critical view of platformization has called attention to the adverse effects on media plurality brought about by marketing strategies like Spotify, pointing to the need ensure the independence of cultural producers and to prevent the owners of these companies from having too much influence. Poell and Nieborg pointed to the problematic situations brought about by this e-commerce channel. In their words: "contingent cultural commodities are inherently platform dependent, their producers are effectively complicit in accepting economic mechanisms, managerial strategies, and governance frameworks and infrastructures that equal disproportionality, dependency, and inequality."

It is interesting to note that research in regard to platformization has pointed out the negative repercussions of online marketplaces and stores in the CE sector

even while it has contributed to developing the second perspective set forth in this analysis of the literature: the use of digital technologies for promoting new practices of cocreation, coproduction, and consumption between artists and audiences. From the viewpoint of digital skills, Leng Li[8] summarized three positive effects that arose from the rapid adoption of information technologies by SMEs. First, this enabled the creative industries to customize products, offering them as exclusive items. Second, by using technology, creative companies can target customer segments (wealthy fans) and revenue models (premium prices or prices differentiated on an exclusive basis), and finally, digital management of personalized relationships with their customers allows for efficient production and the delivery of products to various public segments.

By using technology, creative companies can target customer segments (wealthy fans) and revenue models (premium prices or prices differentiated on an exclusive basis).

Later, the growing opportunities for SMEs in the digital environment spurred Abbasi, Vassilopoulou, and Stergioulas to study the development of roadmaps for the technology of the creative industries between 2013 and 2016 and to propose key recommendations for better use of emerging technologies by the sectors of architecture, design, digital gaming, media, and e-book publishing. The year 2020 was crucial for catapulting the literature concerning this topic, as technology was essential for SMEs to survive during the period of restrictions imposed by the COVID-19 pandemic (KHLYSTOVA; KALYUZHNOVA; BELITSKI, 2022). Generally, this approach led to intensified study into how technology transforms the business model in the CE to improve the offline customer experience; while, on other hand, it undervalued the analysis of how the CE network is adopting the Internet of Things (IoT), wearables, 5G, big data analytics,[9] and three-dimensional (3D) technologies for monetizing its cultural production through e-commerce.

The continuing consequences of the pandemic led to the resurgence of literature concerning resilience, which sought to demonstrate how most small businesses and freelancers in the creative economy were struggling to adapt to the changes, especially underscoring adverse effects felt by libraries, museums, and the entertainment industries (AGOSTINO; ARNABOLDI; LAMPIS, 2020).

The creative economy has traditionally been characterized as being resilient to external crises. This approach highlighted how the highly advanced skills and abilities that the creative economy developed to understand rapid technological advancement allowed for the transformation of obsolete fields of work into creative occupations, in a significant example of resilience (CAREY; FLORISSON; GILES).[10] This phenomenon has also been mapped by cultural entities and international organizations. In 2018, the Arts Council of England presented an extensive report on resilience in the creative economy based on an analysis of more than a thousand surveys on this topic. They found that long-term resilience in the cultural sector requires that organizations be adaptable, and pointed to an incompatibility between the activities that people consider essential for increasing resilience and those that their organizations are actually carrying out in practice, either due to a lack of economic resources or because they would require tools that are not yet available. In the last two years, the United Nations Conference

on Trade and Development (UNCTAD), the Inter-American Development Bank (IDB), UNESCO, and the British Council have published extensive documentation that demonstrates how the impact of COVID-19 has varied significantly in different countries and creative subsectors.

Based on the Brazilian context, Barreto and Todesco carried out one of the few studies that demonstrate the direct relationship between e-commerce and the EC's resilience. They discuss how the Brazilian Service of Support for Micro and Small Enterprises (SEBRAE)[11] reported in 2020 that "SMEs in the creative industry (cultural industries), tourism, academies, and the food industry suffered negative financial impacts of more than 69%."[12] The study moreover pointed out that "the sales were promoted directly on the social media (Instagram, Facebook, WhatsApp), the payment transactions took place through apps provided by their banks, and some SMEs, for the first time, paid for online advertising."[13]

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Beyond these three perspectives, the literature contains constant reflections on the direct correlation between the CE value chain and the models, methods, economic players, and phases of e-commerce. No research was found concerning how B2B, B2C, and C2C, including G2B and G2Ca marketing models, are used in the CE context. Likewise, no interdisciplinary study was found concerning the challenges of adapting payment methods (digital wallets) and payment channels (portals) in ways that are suitable to the CE market. Furthermore, no study was found in regard to the structural problems common to both ecosystems and their effects on their respective value chains, in light of the fact that they are led by SMEs that operate mainly informally, as micro, home-based businesses. But an even more incredible finding is that there is no visible discussion of omnichannel experiences in the CE, which is all the more surprising in view of the constant demand for creative agents to monetize their cultural activities online.

The absence of literature on this topic is undoubtably explained by a lack of knowledge regarding the language, tools, and challenges of e-commerce. Future research should address these issues from an interdisciplinary perspective and take a broader geographical perspective to report on how the CE has adapted to the omnichannel approach. This possibility for integrating communication channels, payment methods, and virtual and physical spaces where agents in the value chain can come together is not a small challenge for the creative networks. The omnichannel experience requires intense transformations in the business model and in the use of technology, with repercussions that can be crucial for creating, producing, and distributing creative products and ensuring access to them.

While the literature is advancing in this direction, the present article points to how the still incipient but effective path offered by the e-commerce statistics should not be ignored.

E-COMMERCE STATISTICS FOR THE CREATIVE ECONOMY

The first e-commerce indicators were developed in 1999, adding a field of investigation to the existing sectoral research. For example, in the United States, the US Census Bureau started an intensive program in 2000 to begin filling the gaps in e-commerce data, relying on annual surveys of the manufacturing, trade, services, and retail sectors as primary sources.[14]

Worldwide, however, the development of statistical operations designed specifically to capture economic flows through online channels has been mainly spearheaded by private consulting firms as well as research and survey companies, such as Nielsen, Gallup, and the Gartner Group. Their research tools, however, have been highly controversial since their methods of sampling and panel selection often do not necessarily represent the diversity of industries in the online market.

In Latin America, as early as 2010, national statistical agencies and chambers of e-commerce began to present data on this transversal industry. The National Institute of Statistics, Geography, and Informatics of Mexico computed the gross value-added of e-commerce for the period spanning from 2013 to 2020. In Argentina, the National Chamber of E-Commerce has published annual data since 2010. Meanwhile, in Brazil, the challenge was taken up by two private-sector players: Webshoppers/Ebit and the Brazilian Chamber of Digital Economy. They each publish annual data on this theme.

The MCC-ENET study funded by the Brazilian Chamber of Digital Economy and carried out by Neotrust presented the most accurate database for measuring e-commerce in the creative economy and its contribution to the GDP of the Brazilian cultural and creative industry sector.

Our analysis of the indicators reported, the categories covered, and the level of data disaggregation of both methodologies revealed that the MCC-ENET study funded by the Brazilian Chamber of Digital Economy and carried out by Neotrust presented the most accurate database for measuring e-commerce in the creative economy and its contribution to the GDP of the Brazilian cultural and creative industry sector. We contacted the company in July 2022 with the aim of exploring the possibility of reporting sales of creative products in terms of three indicators: the average order value (AOV), the number of online retail sales, and the revenue of online sales – a proposal that Neotrust considered technically feasible. If the Observatório Itaú Cultural deems that the inclusion of this data source is appropriate, the following technical specifications should be considered:

- The MCC-ENET study treats on products sold on a formal or informal basis by online marketplaces and online stores within the Brazilian territory. This scope of analysis presents two limitations. First, the data do not consider the value of products ordered through the social networks and paid for digitally by means of a digital wallet or online bank transfer, and therefore does not consider the peculiarities of omnichannel strategy as it is deployed in the CE. Moreover, the data from 2018 to 2021 does not include information on Mercado Livre, one of the biggest platforms for online purchases in the Brazilian market. Second, the database does not include information on the economic flows involved in the trade of goods and services acquired by

Brazilians from international establishments – which means that the data can be used for future purposes, under any condition, to compose a Supply-Use Table, according to the methodology of the National Accounts System employed by the Brazilian Institute of Geography and Statistics (IBGE).

- To identify products in its database the study uses version 2 of the international Central Product Classification system (CPC),[15] at the five-digit level of disaggregation. Therefore, when drawing up the list of creative products the Observatório should add at least three keywords to the CPC code, not only to obtain better search parameters but also to ensure that the reported data effectively correspond to creative products. For example, crocheted table runners are a classic product sold on the Brazilian market. While certain online stores classify this product under code 62532 (bed, table and bath linen, curtains, net curtains, and diverse household articles of textile materials), others classify it under code 28190 (other knitted or crocheted fabrics). Therefore, the project should use the code 62532 in the product list while adding the keywords *fabrics*, *handmade*, and *handicraft* to ensure that the information can be included.
- Double counting of data should be avoided. As we pointed out in the analysis of the literature, omnichannel practices are becoming increasingly common in this economic sector, and online marketplaces and online stores tend to interact with their customers by phone, chat apps, online platforms, or in person. It is therefore very likely that the MCC-ENET study includes data furnished by establishments that lack two separate accounting units – one for e-commerce and another for their physical sales. As a result, the MCC-ENET study may report inaccurate sales figures and include physical sales, which are traditionally captured by other data sources. To prevent this situation from occurring, the report should include data originating exclusively from online marketplaces and online stores. In exceptional cases, data provided by establishments with accounts exclusively for their online channel should be considered.
- Finally, before using data furnished by the "Revenue from e-commerce sales" indicator, a special product-by-product statistical treatment should be applied, considering that this indicator is calculated based on the price paid by the purchaser. For their part, the other sources for calculating the indicator tend to be at basic prices. Therefore, the "average order value" and "number of retail e-commerce sales" indicators are crucially important when revenue from online sales is compared to that arising from offline sales, offering important data for statistical analysis.

In accordance with these technical recommendations, a special statistical treatment must be performed for each product, thus limiting the data available for measuring the monetary flows arising from online sales of creative products. Even so, the pilot exercise is a forward-looking task carried out with the aim to measure data that is currently invisible in the creative economy and to propose a roadmap for filling gaps in the information, improving the system by which data is recorded and parameterized in the MCC-ENET database, and formulating an agenda for future research in the sector. OBS

HOW TO CITE THIS ARTICLE
REY, Diana M. "Economia criativa no cenário de comércio eletrônico." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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NOTES

1. B2B: business-to-business; B2C: business-to-consumer; C2C: consumer-to-consumer; B2G: business-to-government; G2B: government to business.
2. For purposes of this work, we consider that "an e-commerce transaction is the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders" (OECD, 2011, p. 72).
3. Data published in the report *Ebit Webshoppers*. Available at: https://www.mobiletime.com.br/wp-content/uploads/2021/03/Webshoppers_43.pdf. Retrieved on July 30, 2022.
4. The creative economy can be defined as "a set of knowledge-based economic activities with a development dimension and cross-cutting linkages at the macro and micro levels to the overall economy; [...] considering that the heart of the creative economy are the creative industries" (UNCTAD, 2022, p. 5).
5. UNESCO. *Indústrias culturais e criativas diante da Covid-19: uma perspectiva de impacto econômico*, p. 6, 2021.
6. The challenge of omnichannel is "an emerging approach to retailing that responds to the changing nature of how customers shop in alternation between online and offline shops, and the increasing use of digital devices (e.g. smartphones and tablets)," (HICKMAN; KHAROUF; SEKHON, 2020).
7. EANG, Bora. *Le commerce* électronique *de biens culturels: contributions empiriques. Economies et finances.* Télécom ParisTech, 2012. French.
8. Leng Li selected more than 80 case studies for analyzing the adoption of digital technologies. As a general conclusion, he discovered that in most cases digital technologies were used to expand or automate, rather than transform, their business model constructions.
9. *Internet of things*: a network of objects that have sensors, software, and other technology to exchange data and communicate with each other; wearables are technological devices worn as accessories or clothing; *5G*: refers to the fifth generation of mobile network technology. It allows for faster downloads and uploads and has greater coverage; *big data*

analytics: a technology that allows for the processing of structured data, the identification of behavioral patterns, the discovery of correlations and market trends, and knowledge concerning consumer preferences.

10. To the degree where the three authors stated, in 2019, that "we should in coming years see continued rises in the workforce share of creative occupations – as long as skills supply can match growing demands" in response to market challenges.

11. The data are in the report *O impacto da pandemia do coronavírus nas pequenas empresas*, 3rd edition, published on May 5, 2020.

12. KLEIN, Barreto; TABESCO, José. "Crise da Covid-19 e respostas das PMEs: o papel da transformação digital." *Knowl. Process Manag.*, p. 120, 2021.

13. *Ibid.*, p. 122.

14. In 2017, John Murphy and Andrew Baer presented a paper at the 32nd Meeting of the Voorburg Group on Service Statistics in New Delhi, India, to describe the development of this subject. The title of that paper is "Overview of E-Commerce Statistics United States Census Bureau."

15. This is the International standardized product classification defined by the United Nations Statistics Division with the aim of facilitating the identification of products and ensuring the use of standard terms in national accounting systems.

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Estrutura 2 | Image by Adriano Catenzaro

Accounting for Free Digital Cultural Goods in the GDP of the Economy of Culture and Creative Industries: Methodological Considerations

FRANÇOIS MOREAU

ABSTRACT

Since they are offered free of charge to consumers, despite their growing importance the digital creative and cultural goods and services are hardly being considered at all in the statistics of the national accounts, or in the statistics of gross domestic product (GDP). The present article reviews methodological approaches that can allow legislators and economists to overcome this disadvantage through the use of inexpensive and easy tools, with a focus on the benefits generated by free digital goods and services.

The 1980s and 1990s were marked by the "culmination of interest in the economic contribution of culture and cultural industries and new approaches for understanding the relationship between culture and economic development" (UNESCO, 2009). Since the first decade of the 21st century, there has been a growing sense of the value of the social and economic importance of the cultural and creative industry (CCI) sector. This sector is becoming one of the most dynamic segments of the global economy. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), the cultural and creative industries provide around 3% of global GDP and 30 million jobs worldwide. Throsby (2010) emphasizes that valuating the contribution of the CCI sector to GDP requires the capture of all the contributions – both direct and indirect, including those induced in other industries.

Thus, according to a recent survey headed up by the International Federation of the Phonographic Industry (OXFORD ECONOMICS, 2020), the contribution of the music sector to the GDP of Europe is € 37.6 billion, 46% of which are generated by the sector itself, in the economic activity of the recording and editing studios (direct impact). The indirect impact corresponds to 28% of the expenditures by the music sector on inputs in the form of goods and services supplied by the rest of the economy. The remaining 26% of the total impact refers to the induced impact, that is, the payment of wages by the companies in the music sector and throughout its supply chain.

MEASURING THE COST OF FREE GOODS AND PUBLIC GOODS

However, the main problem in measuring the CCI sector's contribution to GDP is linked to the fact that it is hard for GDP to capture the value of economic transactions not made at market prices. The benefits of unpaid consumption are completely overlooked in the national accounts (SOBOLEWSKI, 2021). Even so, CCI

sector services are made available as public goods (they receive public subsidies on the price paid by the consumers, which do not reflect the real costs) or as services provided free of charge together with advertising.

Basically, there are two possible methods for calculating the use value of free services: revealed preference (RP) or stated preference (SP). The revealed preference uses data from real demand. For example, the hedonistic value measurement model estimates the value of a characteristic of a good that has not yet been attributed a value, comparing the differences of prices between products and services that either include or lack that unmeasured characteristic (for example, a cultural heritage's impact on surrounding real estate prices). There are, however, a number of limitations to the RP methods: they do not allow for the consideration of option value and nonuse value,[1] they require the collection of a great deal of data, and are subject to problems of confusion or multicollinearity[2] (WILLIS, 2014). The SP methods overcome these limitations by deriving preferences and parameters of use value based on choices of consumers stated in a survey. The two main approaches are contingent valuation, based on responses to questions that ask people to report a value for specific hypothetical benefits [willingness to pay (WTP)] or specific hypothetical loss [willingness to accept (WTA)], and conjoint analysis, which collects data on preference or choice between alternatives of multiple attributes.

Digital cultural and creative goods give rise to a strange paradox in terms of measuring the economic importance to their contribution to GDP. Although the digitization of these goods is considered extremely important for reducing the barriers faced by socially and geographically disadvantaged individuals in regard to access to culture, even in the best of cases the digital goods are nevertheless often overlooked or underrepresented in calculations of GDP.

The methods of stated preference are currently considered a dominant approach in nonmarketing valuations (SOBOLEWSKI, 2021), and among them contingent valuation is by far the most popular, as it allows for the reproduction of a hypothetical market in which the good in question can be "traded" (MITCHELL; CARSON, 1989). The hypothetical nature of the choices used for revealing preferences is the main target of criticism (SOBOLEWSKI, 2021).[3] However, a program of methodological work spanning two decades with the aim of reducing hypothetical bias and improving the format of the research helped to refine the extraction protocols (for example, JOHNSTON et al,, 2017).

HOW TO MEASURE THE ECONOMIC CONTRIBUTION OF DIGITAL GOODS?

Digital cultural and creative goods give rise to a strange paradox in terms of measuring the economic importance to their contribution to GDP. Although the digitization of these goods is considered extremely important for reducing the barriers faced by socially and geographically disadvantaged individuals in regard to access to culture, even in the best of cases the digital goods are nevertheless often overlooked or underrepresented in calculations of GDP. Although these activities do in fact generate a great surplus for the consumer, they are nevertheless invisible on the income statement of companies. Thus, the participation of information technology (IT) in GDP has remained at around 5% throughout the last four decades (BRYNJOLFSSON; COLLIS, 2020).

While free goods have always existed and the question of considering them in GDP is not new, in the digital era what was once an exception has become common. Due to the growth of the digital sector, this is the moment to finally arrive at a workable solution to this problem. For many cultural goods, as well as for the social media and news media, the digital era has provided the context where the marginal cost[4] of producing an additional version of the good is nearly zero. Demand is no longer monetized according to the sale of a rival good[5] (at a price far above the marginal cost). Rather, either consumers obtain the digital project free of charge, while tolerating some advertising, or they pay a fixed fee to benefit from unlimited access to a large catalog of content. Advertising revenue, however, is a poor predictor of consumer satisfaction (SPENCE; OWEN, 1977). A platform can obtain the same advertising revenue from two viewers while they report widely differing valuations of the content and, therefore, a very different surplus. Likewise, people can obtain a large value from content that does not generate much advertising, such as Wikipedia or email (BRYNJOLFSSON; COLLIS, 2019).[6]

There are two alternatives. First, estimate the value of a good or service based on the time it takes to consume it. Second, estimate the amount of money that a consumer would request in return for giving up access to a digital good or service for a given period of time. Goolsbee and Klenow (2006) began their line of research based on the value of time. They emphasize that, although the use of Internet generates only limited monetary costs, it is an activity that consumes a lot of time. Accounting for the opportunity costs of leisure time, they make use of studies that indicate the distribution of time among various activities and the monetary value of those activities to estimate the value of Internet. They estimated the monthly value of Internet use for North American consumers at approximately US$ 300. In the same line, Brynjolfsson and Oh (2012), extending the data on the time spent in Internet since 2002, developed a new structure to quantify the gain in well-being brought by free goods and services on Internet. They compared the two conventional approaches for measuring gains of well-being, that is, one model based on time and the other based on money, and discovered that, in the period from 2007 to 2011, the average incremental gain of well-being from free digital services on Internet was approximately US$106 billion per year (around 0.74% of annual GDP). On the other hand, depending only on money-based expenditures results in significantly lower estimates of gains to well-being, approximately US$ 4.2 billion, which is around 1/25 of the estimate derived from the value of time.

They compared the two conventional approaches for measuring gains of well-being, that is, one model based on time and the other based on money, and discovered that, in the period from 2007 to 2011, the average incremental gain of well-being from free digital services on Internet was approximately US$106 billion per year (around 0.74% of annual GDP).

The second alternative is derived from contingent valuation. It seeks to measure the benefits (the surplus) that consumers obtain from free digital products and services. Unlike GDP, which is relatively easy to valuate, because it is reflected on the income statements of companies and in the expenditures of consumers, the surplus is not directly observable. Fortunately, the digital revolution not only ushered in hard-to-measure challenges, but also created new and powerful measurement tools (BRYNJOLFSSON; COLLIS, 2019). Brynjolfsson et al. (2019a, 2019b) propose an original method in

which they use techniques of digital research to carry out massive experiments in online choice examining the preferences of hundreds of thousands of consumers. Through this method they were able to estimate the consumer's surplus for a wide range of goods, including the free ones that are not included in GDP statistics. More precisely, their method consists in asking the participants to make choices: "Would you rather lose access to Wikipedia or to Facebook for one month? "Would you give up Wikipedia for a month for $10?? How about $100?..." To control the hypothetical aspect and ensure that people have revealed their true preferences, they followed-up with experiments in which the participants really must give up a service before receiving a remuneration (BRYNJOLFSSON; COLLIS, 2019). Box 1, below, illustrates this methodology with the case of valuating the benefits generated by Facebook.

Box 1: How to valuate the benefits generated by Facebook?

"To measure the consumer surplus generated by Facebook, we recruited a representative sample of the platform's U.S.-based users and offered them varying amounts of money to give it up for a month. To verify the responses, some participants were randomly selected to actually receive payments and forgo the service for the month. We temporarily added them as Facebook friends – with their permission, of course – to confirm that they didn't log in for that month.

Some 20% of the users agreed to stop using the service for as little as $1; an equal proportion refused to give it up for less than $1,000. The median compensation our Facebook users were willing to accept to give up the service for one month was $48. On the basis of the survey and the follow-up experiment, we estimate that U.S. consumers have derived $231 billion in value from Facebook since its inception in 2004.

[...] One might think that the value generated by Facebook is accounted for in GDP through its advertising revenues. However, our estimates indicate that the platform generates a median consumer surplus of about $500 per person annually in the United States, and at least that much for users in Europe. In contrast, average revenue per user is only around $140 per year in United States and $44 per year in Europe. In other words, Facebook operates one of the most advanced advertising platforms, yet its ad revenues represent only a fraction of the total consumer surplus it generates."

Source: Brynjolfsson and Collis.

his method can also be used to valuate the benefits from digital goods that generate income with fees and subscriptions from users. According to Spotify's annual financial statements, its annual ARPU (average revenue per user) in the United States is approximately US$ 26 (pooling both free and fee-paying users). Brynjolfsson et al. (2019a) estimated the annual valuation of the average users of the United States of music services at US$ 168 (around six times more). Likewise, users paid between US$ 120 and US$ 240 per year for video streaming services such as Netflix, Hulu and HBO, while the aforementioned study estimated that the consumer surplus generated by these services is five to ten times what users pay to access them (annual valuation of US$1,173).

Based on this approach, Brynjolfsson et al. (2019b) developed a new unit of measure for valuating the GDP of free products based on the calculation of benefits instead of costs; they call it GDP-B. For example, they estimate that the total benefits of Facebook have increased the growth of GDP by 0.05 to 0.11 percentage points per year on average in the United States since 2004.

CONCLUSION

PIB-B is an alternative unit of measure that can complement the traditional structure of GDP, quantifying the contributions to consumer well-being by free cultural and creative digital goods and other noncommercial cultural goods and services (free live music, dance...). This approach is relatively inexpensive and easy to implement periodically in a representative sample of consumers. "[Conducting] large-scale surveys asking respondents how much they'd need to be paid to give up a given good for a certain period of time and then validate those results by running smaller-scale studies with real monetary incentives" can be a pragmatic way to measure the contribution to economic activity by goods and services that otherwise remain completely or largely outside the scope of traditional measurement tools (BRYNJOLFSSON; COLLIS, 2019). OBS

HOW TO CITE THIS ARTICLE

MOREAU, François. "Contabilização de bens culturais digitais gratuitos no PIB da Economia da Cultura e das Indústrias Criativas: considerações metodológicas." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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NOTAS

1. Option value refers to the possibility of benefiting from a good or service in the future; nonuse value involves existence value (just knowing that the good exists without consuming it) or bequest value (preserving the good for future generations).
2. Multicollinearity is a statistical problem in which two or more explanatory variables present high intercorrelation (or "perfect" intercorrelation). B in this case, it is impossible to establish the true relationship/effect of these explanatory variables in relation to a variable of interest, which one is seeking to explain. E in the presence of multicollinearity, therefore, it is said that the estimations of the model are statistically imprecise (GUJARATI; PORTER, 2011).
3. Other limitations of the methods of stated preference most notably include (MITCHELL; CARSON, 1989; BATEMAN *et al.*, 2002): strategic behavior (as a parasitic behavior), anchoring bias (the order in which the possible choices are presented influences the valuation) and information bias (how the question is framed influences the valuation).
4. The production or acquisition cost of an additional unit of a given product and/or service (PINDYCK; RUBINFELD, 2013).
5. In economics, goods can be classified as rivalrous (or nonrivalrous) and excludable (or

nonexcludable). A given good is a rivalrous good when its consumption by someone reduces its available quantity for the rest of society. A good is said to be excludable when it is possible, at a low cost, to ensure that certain people do not have access to it. Public goods are simultaneously nonrivalrous and nonexcludable, as the marginal cost of furnishing such goods to an additional person is zero, and no one can be excluded from the possibility of accessing them. (PINDYCK; RUBINFELD, 2013).

6. To illustrate the difficulties of the GDP completely accounting for the digital innovations, there are few better examples than the increase of Wikipedia. Hardcover encyclopedias such as *Britannica* and *Universalis* used to cost several thousand dollars, meaning that their clients consider that they were worth at least this much. On the other hand, Wikipedia is a free service with many more articles and a nearly equivalent quality. The increase of Wikipedia has led to a decrease in worldwide GDP since the early 2010s, after the failure of the printed encyclopedia and consumers were prevented from buying new hard-copy editions. According to Brynjolfsson and Collis (2019), the average value that North American consumers attribute to the free service offered by Wikipedia is approximately US$150. Therefore, the GDP of the United States is underestimated by more than US$40 billion.

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Crises são números | Image by Adriano Catenzaro

Digital Cultural Participation As an Element of Production

TRILCE NAVARRETE

INTRODUCTION

Concerning the question of which indicators can be considered essential for measuring the contribution and/or impacts of culture on a nation's economy, the first step is to define the scope of "culture." The present text is focused on digital heritage, which refers to the native digital and digitized content produced by heritage institutions, including libraries, archives, museums and archaeological sites.

Digital heritage can include a representation of an object, such as a photo or 3D model, but can also include additional information about the object, its history, its management, technical processes or associated documentation. Considering digital heritage based on this holistic approach will allow for a better understanding of the contribution of the cultural sector beyond the uses related to heritage.

There is no international consensus about what constitutes digital heritage or about the best way to account for it. Various studies aimed at measuring the contribution of digital heritage to the economy have been carried out using approaches based on income and expenditures. In Europe, the Enumerate project carried out a survey of statistical data about the digitization of cultural heritage to form a basis for strategic decision-making about investments in the area. Its data, however, were reported in percentage terms rather than in absolute numbers, thus generating methodological challenges. [1] Moreover, experimental statistics were produced by Eurostat [2] concerning the popularity of cultural heritage sites. To this end, the study surveyed the number of visitors to the Wikipedia pages of a thousand UNESCO world heritage sites, while disregarding pages that reutilized the content of those same heritage sites or the institutions that administer them.[3]

The heritage institutions are increasingly opting to publish their data with open licenses to encourage their reuse in order to generate value from a generally subsidized investment.

An alternative is to consider the contribution of digital heritage based on the income generated by its digitization. Data obtained by this sort of calculation, however, is not yet available. There does not yet exist a Spotify of digital heritage. The heritage institutions are increasingly opting to publish their data with open licenses to encourage their reuse in order to generate value from a generally subsidized investment. Instead of income, a measure of reuse could serve as an indicator of the value of available digital heritage. Measuring the value based on use carries the risk of simplifying the consumer's choice based on ease of access or popularity. Nevertheless, usage is a metric that is worth exploring, especially when linked to the creation of new products and services.

As regards reuse, a large part of the new production is produced by individual consumers or by crowds, in videos posted on YouTube and on TikTok, or any other sort of social media,[4] with a part of the production being made by robots.[5] The production and reuse of heritage content within or outside the heritage context can be considered part of the cultural participation of the new generations.

The present text suggests that the contribution by the public should be considered as a production input, focusing on the case of the museum, but with potential application to archives, libraries and other cultural institutions. The contributions can be identified based on either a general consumer or on academic institutions, research centers, or private industries, resulting in specific innovations or simply contributing to an infrastructure of global knowledge. This approach would yield data that are comparable between regions and would avoid the volatility of services and the native hardware of current digital practice, while also allowing for the capture of regional and local dynamics. [6]

CULTURAL PARTICIPATION

The younger generations are participating more actively in cultural activities. There is a simplistic notion about cultural participation that identifies it solely with a museum visit. A recent report by the Ministry of Culture of the Netherlands about the state of digital heritage (KEMMAN, *et al.*, 2021) identified 77,724 distinct visitors engaged for at least three minutes on the websites of 176 Dutch museums in 2020. This partial record is important for the development of statistics on digital heritage and cultural participation. It is hoped that the statistics can eventually cover the digital presence of museums in other online environments, such as social media and geographic and thematic portals.

77,724 distinct visitors engaged for at least three minutes on the websites of 176 Dutch museums in 2020.

Entrance into the physical exhibition or onto the museum's website is a simple mode of involvement with the institution. Yet participation has many other expressions, including financial donation or the donation of time to carry out various activities (ATECA-AMSTOY; GOROSTIAGA, 2020). The term *crowdsourcing* refers to the participation of consumers in the effort of developing new products and services, rather than using in-house resources (NAVARRETE, 2020). Their participation can have various levels in regard to the complexity and skills required to assume different forms of management, allowing for centralized or decentralized authority, open or closed participation, and a spectrum of relationships between the participant and the museum.

The participation that leads to a contribution of inputs can be characterized as either *crowdfunding* (financial contribution), the generation of ideas (research and development as an input), aggregated efforts (generally micro tasks), or open collaborations (for example, coproduction, coownership, comanagement) (NAVARRETE, 2020). The open collaborations are generally coordinated by the heritage institution, but there are other examples without apparent central coordination, like that of the world's largest collection of 3D heritage (in which photogrammetry is used to capture and model real buildings), VR (virtual reality) and AR (augmented reality), found on the SketchFab platform.

The information concerning the contributions to these global platforms – on in which the content of the 3D, VR and AR heritage is made available free of charge when furnished by heritage institutions or for a small fee when furnished by private parties – is nowhere broken down on a country-by-country basis. Considering the national contribution of these portals, it would eventually be possible to make comparisons between countries in regard to their respective digital skills, production of intellectual capital, innovation in their creative industries, and income generation. This could be done based on the volume of content made available by sources within a given geographic region or by selecting national profiles.[7]

Considering cultural participation as a production input requires museums and heritage institutions to change their production process to allow for contributions from external and collective sources. An example is the Amsterdam City Archive, which redesigned its production process to receive external contributions. The work carried out by these external collaborators throughout a year and a half was equivalent to the productivity of a staff team working full-time for 18 years (HOLTMAN; VAN ZEELAND, 2019).

What measure could capture this coordinated collective contribution? Calculating the number of hours dedicated to the activities, and to the production achieved, can provide an initial overview of this sort of participation. This can be compared to the production of the in-house team to estimate the equivalent time the same production would take when carried out by full-time staff workers, particularly when the participation takes place on an institutional website or portal. Digital technology allows all the transactions to be registered, and it is up to the museum or coordinating institution to review the registered data in order to analyze the scale of the participation and contribution.

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When the data are produced on websites owned by private companies, as is the case of all the social media platforms, and as the size of the data increases exponentially, the coordinated efforts to collect and analyze the content produced by the consumer can be a viable strategy. Alternatively, agreements can be made with the private platform to deliver some sort of usage report.

Besides the contributions made by participating members of the public, the collaboration of other research centers and institutes of higher learning has generally been ignored. It is well-known that students constitute a skilled workforce during internships and provide valuable results in the form of dissertations and recommendations for the heritage institutions. Likewise, many academic projects make use of the vast databases of museums in research studies concerning history, information science or other disciplines. After all, the museums possess various sorts of collections, and their objects are polysemic, offering various sorts of information depending on the viewer's context (NAVARRETE; MACKENZIE OWEN, 2016).

Other private-sector and public-sector companies can also participate in the creation and acquisition of value. Google is an example with a long track record

of acquiring value from heritage collections, through the Google Books project (which includes vast collections of text in its systems), through the Google Art project (advancing image recognition), as well as through simulation, and, more recently, the Aria[8] project, which uses sound and 3D configurations to furnish its machine-generated services. The consumers of Google services benefit from its better results at the same time that they provide inputs to the learning system.

The museums are important contributors to the economy of information, because they furnish quality, structured, diversified, reliable and sustainable content that can be used by individuals or machines. Nevertheless, few museums are aware of the value of their information as a raw material, and they lack strategies for dealing with this question.

The perception of the value of information is changing the way that consumers interact with services and the way that companies operate. Although information used to be collected for internal use and subsequent decision-making, successful companies are now becoming increasingly involved in data exchange ecosystems to extract information from multiple sources and to allow them to provide more personalized service to their consumers, developing reliable data management to strengthen the interested parties (WEF, 2020).

For the museums, this means linking the information on collections to a structured network to disseminate this content, thus enhancing their services. The environments of collaborative information have greater value, as do also the individuals and the companies able to connect sets of data. There are few museums in the world with the resources and vision to use data collection for improving their services. One example is the Rijksmuseum, in Amsterdam, which recently joined forces with an independent researcher to identify a series of photographs in the collection using reverse image search, which is a process of finding information to identify images by locating similar images online. [9] Once the images are identified, their reuse value increases exponentially. This process contributes to a sustainable creation of value around the data, by developing, linking and expanding the information available to everyone.

For the museums, this means linking the information on collections to a structured network to disseminate this content, thus enhancing their services.

How to calculate such contributions? When an external individual participates in the creation of knowledge, this is enough for him or her to be inserted in Rijksmuseum's production process, improving its database. This contribution can be calculated similarly to that of any other collaborator, regardless of whether he or she is remunerated for the hours of work and type of production. Moreover, this contribution expands the available information on collections for the entire heritage sector and beyond it, facilitating the reuse of the information beyond the institution of the museum.[10] In other words, cultural participation can also contribute to expanding the reference model that composes the global knowledge infrastructure, to which the museums are key contributors. This is an important point, as it demands a different approach to measuring the economic dimension of cultural participation.

Measuring the economic contribution brought by the construction of an infrastructure of knowledge, which can be used by anyone to create hybrid, personalized, omnipresent, participative, shared and fragmented systems, for education, leisure or work, would follow a method similar to that of accounting for any other sort of infrastructure. The infrastructures are an element of production which allow all individuals and companies to carry out their work.

Examples can be found in companies that use artificial intelligence solutions, such as Google, fed by the information infrastructure. An example from the museum sector is the CHIM project, aimed at developing a chatbot for museums. It uses the database of the collections to allow a robot to talk with the museum visitor about the works on display. [11]

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Considering that the museums contribute to the creation of a national and eventually global knowledge infrastructure, and that the new mode of participation is based on cocreation, a series of challenges arises in regard to legislation, necessary for optimizing coownership. The most important and relevant challenge for this discussion is the development of indicators regarding the contribution by museums and heritage institutions. As discussed previously, one way of measuring the scope of the contribution is to look at participation as a production input.

Given the challenge of organizing the data and making it available, one option is to focus on an organized environment in which a sufficient number of participants are engaged in the reuse and coproduction of data using the databases of digital museums. One of the global environments available for research is Wikipedia. The following section presents an example of the contribution by Brazilian museums in the construction of knowledge in the Portuguese version of Wikipedia.[12]

BRAZILIAN WIKIPEDIA

To explain the role of the museums and heritage institutions as providers of the raw material in a knowledge infrastructure, we can consider the use of the content of museums on Wikipedia for measuring the size of the economy of culture. The raw material under consideration consists of the digital materials available online that can be reused like Lego pieces for the production of new products and services, in this case, for the illustration of encyclopedia articles. Previous studies have documented the potential size of the reach and reuse of a museum's content when it is made available in Wikipedia articles (NAVARRETE; VILLAESPESA, 2021; NAVARRETE; BOROWIECKI, 2016), even in the absence of any previous systematic study for estimating the economic contribution in and of itself.

Investment in the digitization of collections is significant. It is estimated that European heritage institutions spend on average € 450,000 annually on the curatorship of digital collections (NAUTA *et al.*, 2017). The digitization of collections includes a digital reproduction and basic metadata for the general identification of that reproduction, coupled with the positioning of the object within the institu-

tion's conceptual structure using standard thesauri or contextual documentation. The use of this investment for internal purposes is partially accounted for in the museum's production, in the form of publications, exhibitions and research studies. The external use of the investment, for developing new products and services outside the museum, can be accounted for by the surplus of data produced by the editors and readers of Wikipedia.

Analyzing the Portuguese edition of Wikipedia can serve as an example. There are 1,778 identified paintings belonging to 79 collections located in Brazil, of which 1,410 have a specific Wikipedia article. The Museu Coleção Paulista has more than 500 paintings illustrating articles in Wikipedia, thus being the Brazilian collection with the largest presence on this platform, followed by the Museu Histórico Nacional, with 350 paintings, the Museu de Arte de São Paulo (MASP), with 220 paintings, and the Pinacoteca do Estado de São Paulo, with 220 paintings.

These museums contribute to the infrastructure of national knowledge, making their production available for everyone to consult and reuse. The articles can be illustrated by the institution itself, by a Wikipedia editor, or by members of the general public. The contribution to the infrastructure of Brazilian knowledge can be measured based on the participation of Brazilian users, who represent more than 70% of the users of the Portuguese edition of Wikipedia.

The popularity of the articles can be seen in the number of views of the respective collections. MASP receives nearly 550 thousand views per month, followed by the Museu Imperial, with 300 thousand views, and by the Pinacoteca do Estado de São Paulo, with 270 thousand views. Beyond the ten most viewed collections, the rest of the paintings identified illustrate articles that receive less than 50 thousand visits per month.

This brief review of paintings in Brazilian museums used for illustrating the Portuguese version of Wikipedia were based on works identified in WikiData, the global network that feeds most of the large data projects. Taking a further step, a national policy could suggest the publication of collections in WikiData using a minimum quantity of keywords in the "description" field to identify the painting, as well as the use of other terms, such as the Iconclass[13] code, to increase the capacity of collections to be located and reused. Such measures would contribute to the spread of quality information about the heritage, while increasing digital literacy, expanding cultural vocabulary, and generally enriching cultural consumption online.

CONCLUSIONS

The digital technologies facilitate hybrid access to heritage information that can potentially become the new form of cultural participation: personalized, interactive, omnipresent and in a network. The younger generations (under 24 years old) are involved in a sort of active participation that generally involves cocreation (KEMMAN *et al.*, 2021).

A new set of measures can consider the economic dimension of culture as (1) the provision of quality data available for reuse with the aim of creating new products

The digital technologies facilitate hybrid access to heritage information that can potentially become the new form of cultural participation: personalized, interactive, omnipresent and in a network.

and services, as well as (2) the contribution to an infrastructure of knowledge that allows a sustainable creation of value around data related to culture, thus developing, connecting, enriching and expanding the information available to everyone. While the first approach can be focused on the production of the institutions related to heritage, the second approach would more clearly need to rely on the active participation of consumers in the recovery of content related to heritage, particularly beyond a cultural environment.

The availability of such evidence, to document the extension of the reuse of the digital heritage data as a form of cultural participation can shed light on the potential role of museums as providers of primary resources in the economy of information.

Finally, governments can stimulate the development of an infrastructure of digital heritage for the advance of social, digital, cultural and economic capital, encouraging the use of basic standards and organized vocabularies to facilitate the search and reuse of information.

Digital technology can allow museums and other heritage institutions to innovate in the provision of services that can provide participative operational models that contribute to the common goods of culture and of knowledge, for everyone. OBS

HOW TO CITE THIS ARTICLE
NAVARRETE, Trilce. "Participação cultural digital como elemento de produção." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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NOTES

1. Available at: https://en.wikipedia.org/wiki/Enumerate_(project). Retrieved on March 13, 2023.
2. Eurostat: the European Union agency responsible for producing statistical data.
3. Available at: https://ec.europa.eu/eurostat/web/experimental-statistics/world-heritage-sites. Retrieved on March 13, 2023.
4. The best-known social media platforms have millions of users worldwide. There is no description of how much content related to heritage is directly available, from heritage institutions, or indirectly, from heritage participants. Facebook, along with WhatsApp, Instagram and Facebook Messenger, have the largest share of users (https://en.wikipedia.org/wiki/Social_media).
5. One example is the collection of robots posting in the name of famous artists developed by Andrei Taraschuk: https://twitter.com/i/lists/976556889981906945.
6. Software is run natively when it is run directly in the computer's hardware, rather than through emulation or the intervention of another program. This is the normal way that most normal computer programs are run in a system.
7. In 2017, the Dutch Internet had 9 million registered domains, of which 5.7 million were domains with the .nl ending, and less than 1.6 million were websites. From 2007 to 2022, the Netherlands National Library archived 21,000 websites, with 37 terabytes of data divided into 21 collections. Available at: https://lab.kb.nl/dataset/historical-growth-kb-web-archive; https://kia.pleio.nl/groups/view/1997dd74-cb58-420c-9056-85d1194729b9/kennisplatform-webarchivering/blog/view/37e90f80-0364-44a0-91ee-538d9040b246/vijftien-jaar-webarchivering-bij-kb-nationale-bibliotheek-2007-2022. Retrieved on: November 9, 2022.
8. Aria is a project developed by Facebook Reality Labs to help researchers build the software and hardware needed for future augmented reality headsets.
9. Available at: https://www.bellingcat.com/resources/2022/08/09/using-new-tech-to-investigate-old-photographs/. Retrieved on March 13, 2023.
10. The example given, the reverse image searches carried out for photographs in the collection of the Rijksmuseum, in Amsterdam, identified inconsistencies in the dating of collections found in other large museums, including those of the Getty Museum, the National Portrait Gallery, in London, and the Metropolitan Museum of Art, in New York. The use of standards for linking data allows institutions to update the information in their collections in response to changes in the documentation.
11. Available at: https://www.dfki.de/en/web/research/projects-and-publications/projects-overview/project/chim. Retrieved on March 12, 2023.
12. Available at: https://en.wikipedia.org/wiki/Portuguese_Wikipedia. Retrieved on March 12, 2023.
13. A library classification system specialized in art and iconography. It was conceived by Dutch writer and art historian Henri van de Waal, and developed by a group of scholars after his death, in 1972.

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Iglu | Image by Adriano Catenzaro

Cultural Participation in the Digital Era. What to Measure and Why?

PIER LUIGI SACCO

ABSTRACT
Cultural participation through digital media is often considered to be more inclusive than the traditional predigital participation. There is, however, an overoptimistic expectation in relation to the ability of digital tools and platforms to enlarge the production pool of cultural content. Current digital media, including the social networks aimed mainly at the creation of plug-and-play content,[1] reflect a predigital logic of the broadcasting of content by a creative elite. We must consider new forms of digital participation couched in collective creation as transformational paradigms for social and behavioral change.

CULTURAL PARTICIPATION IN THE DIGITAL AGE: A TRUE REVOLUTION?

It is widely believed that the digital age has brought about a profound revolution in cultural participation. Although in predigital times there was a wide gap between producers and users of culture and creative contents, with the two roles strictly separated by complex institutional arrangements – such as gatekeeping practices by which a small group controls access to resources and opportunities, through the sponsorship and market selection for the cultural and creative industries – it seems that now, the production and dissemination of contents by digital tools has definitively done away with these barriers (SACCO; FERILLI; TAVANO BLESSI, 2018). Nevertheless, the power of digital platforms to allow for more active forms of cultural participation has remained mostly untapped, due to how the current digital platforms largely replicate the logic of the predigital media.

Essentially, the producers of creative content in the social networks are operating as disseminators of their own ego: that is, they transmit content that is related to themselves – their persona, experiences, tastes, opinions, etc. (HUMPHREYS, 2018). The social networks can therefore be seen as a giant collection of personal television channels (in a network) which reproduce, each with its own twists and on a different scale, the logic of certain formats of traditional television and, generally, the predigital media. Not by chance, the revenue model underlying these personal channels is clearly derived from the traditional channels of the cultural industry: maximizing the audience to sell "eyeballs" to the advertisers (generally with the mediation of the digital platform that makes the content accessible) or they themselves become an integral part of the advertising value chain (RUNDIN; COLLIANDER, 2021). Constructing this audience requires specific media strategies unlike those of the predigital media, since they involve forms

The producers of creative content in the social networks are operating as disseminators of their own ego.

of parasocial[2] relationships with followers (LOU, 2021). These relationships are more substantial than the unidirectional relationships allowed by the predigital media, which can only operate as the psychological projections of the public on the celebrities (CLAESSENS; VAN DEN BULCK, 2015). But since this difference is not significant enough to activate a true bidirectional communication,[3] the digital ecosystems reproduce to a large extent the asymmetry between a relatively restricted number of content providers and a very large pool or passive audience (*lurkers*) (SUN; RAU; MA, 2014).

These considerations are reflected in the preliminary results of research studies that have investigated the degree of inclusiveness offered by the production of cultural and creative content on different digital platforms. In this regard, the so-called 90-9-1 rule is broadly accepted: 90% of the pool of users consists of lurkers who basically do not post any content of their own, limiting their participation with giving a "like," commenting on, or sharing content produced by others; 9% post some content of their own and receive relatively little attention; while 1% of the superusers attract most of the attention, with their content receiving the maximum exposure and circulation (BAEZA-YATES; SAEZ-TRUMPER, 2015). This distribution clearly reflects the structure of inequality that prevails in the traditional media, the main novelty being a buffer of content creators with a limited reach that would normally be filtered by the traditional selection mechanisms of the predigital content industries, and which finds some space now. However, essentially, the digital content ecosystems are driven by the contents posted by the 1% elite of superusers, very similar to what took place before the advent of digital production and dissemination tools which, at least theoretically, give everyone a chance to participate in the creative conversations. To what degree do the real analyses of the digital content platforms confirm or contradict this trend?

The digital content ecosystems are driven by the contents posted by the 1% elite of superusers.

Our research group is currently investigating three different platforms: Wikipedia, TikTok and Twitch. Wikipedia, the digital and open equivalent to an encyclopedia, seems to be the most selective platform among the three, as the requirements to write or edit an encyclopedia article are high in terms of knowledge and specialization, regardless of whether the article is about a complex scientific notion or the biography of a rock singer: in every case, it involves the selection and analysis of multiple sources, clear, impartial and logically consistent writing, and so on. On the other hand, TikTok is a platform based on the production of short videos that offers every sort of online resource and plug-in to allow practically all the users to become video producers, if they so desire. In this case, the requirements for active participation seem much less stringent, due not only to the user-friendly production tools but also to the fact that any video theme is allowed and does not need to fill any specific content requirement beyond being engaging and attractive to the viewers. For its part, Twitch is a platform which, despite hosting various sorts of content, is essentially dedicated to videogame culture, and its most consumed content category is the livestreamings of users while in the process of playing a game. In this case, the production of content coincides with the gamer's live performance. Clearly there are many different levels of ability at playing a given game. And yet to become a user, that is, to play a videogame, it does not matter how skillful one is; it is some-

thing that does not involve any barrier, except to learn the rules of the game, to become familiar with the interface and commands. There is not even any barrier in the form of long sessions of editing to refine the content, as in the case of TikTok videos. It is, literally, a plug-and-play cultural production experience. Here we imagine, therefore, that the implicit barriers to active participation are less mandatory than for Wikipedia. Consequently, it can be expected that for any given platform, the more it facilitates access to cultural production, the broader its level of active participation.

Another important dimension to consider, beyond the technical barriers to cultural production, are the motivations for production. A key element in this sense are the social incentives for production, that is, the level of attention/approval resulting from the release of a given content (VOGEL *et al.*, 2014). Also here, the three platforms differ significantly in regard to the sorts of social incentives they offer. In the case of Wikipedia, although the contribution by specific users can be traced, no entry is really "signed" by anyone, so the only real recognition that a contributor can receive is the reputation and approval among peers, that is, among other people with enough knowledge about Wikipedia to be able to perceive and evaluate the contribution of specific users. In the case of TikTok, the situation is the inverse, since the content is highly personalized, and its visibility is controlled and regulated by sophisticated algorithms, which give visibility to the superstars belonging to the elite of superusers, but also to relatively unknown users. In the case of Twitch, no system of recommendation has ever been implemented, with the specific aim of preventing stardom guided by algorithms manipulated by users for their own benefit. We would therefore hope that, in the three cases, the platforms were designed in a way that avoids the excessive prevalence of a restricted number of superusers. In the case of Wikipedia, due to how the contributions are not immediately visible; in the case of TikTok, because the algorithm also promotes the content of secondary users; in the case of Twitch, because there is no algorithm at play that can be manipulated.

The promise of a digitally mediated massive cultural participation is, therefore, still – and fundamentally – largely unfulfilled.

When we look at the results or our study, which has been completed and is in the last stages of preparations to be published, we see that all three platforms are characterized by a basic division between a small elite of superusers, a larger contingent of minor collaborators, and a great majority of passive lurkers. It therefore seems that the large difference in active digital participation is not a direct consequence of the technical difficulties of producing content, nor of the potential social incentives for contributing. The promise of a digitally mediated massive cultural participation is, therefore, still – and fundamentally – largely unfulfilled. But why?

FROM THE EXPRESSION OF ONE'S EGO TO COLLECTIVE ACTION

The fact that the posting of some online content is associated with an attractive social reward in terms of attention and approval does not mean there is not an entire spectrum of other rewards related with the posting. Certainly, a given posted content could be attracting little attention and approval, or even a great deal of attention and strong disapproval. For many people, the prospect that their post

may garner an insignificant result can powerfully discourage them from posting it, and even more so if they have experienced that situation in the case of posts by other users (SCIARA *et al.*, 2021). In fact, as more users refrain from posting (and thus forgo the potential social rewards from their activity), the only way to obtain some social reward is to join together with others in the collective appreciation of some popular content provider or join with others in the disapproval or stigmatization of unpopular providers (DUFFY; POOLEY, 2019). In both cases, the typical social dynamics of stardom that prevails in the predigital media is reaffirmed in the digital sphere. In the case of Wikipedia, the psychological barrier is related to not feeling sufficiently skilled to act as a "specialist" and stand up to the critical scrutiny of other specialists. In the case of TikTok, the psychological barrier is to be ignored or criticized by other users in light of the posted content. In the case of Twitch, the psychological barrier is not feeling confident enough to perform in real time in front of a potentially large number of people. Therefore, in most cases, the users simply prefer to remain in the background and enjoy some social rewards as supporters or haters of users with more fame and visibility.

For the reasons we have just explained, however, this logic of participation is actually more derived from the predigital media rather than being truly native to the digital ecosystems. The most notable structural characteristic of the digital ecosystems, which differs from the established predigital logical participation, is its "neo-oral" character (IBRAHIM, 2018). In oral societies, which lack a device for the written transmission of creative content, the only possibility for the circulation of content is by means of memory and reconstitution (ONG, 1988). Consequently, the very notion of authorship and of individual contributions is extremely vague in such contexts, as users inevitably reinvent the content they are transmitting according to how they remember it, what they consider important, what they like the most, and so on. The digital platforms make clear use of writing (and at an unprecedented scale and extension). However, since the written contents (much less images, sounds, etc.) are, with very few exceptions, not printed in a final form that can be controlled and faithfully reproduced, but rather can be manipulated and reposted countless times by other users, this leads to the emergence of a "neo-oral" dimension, in which the role of individual authorship is assigned lower value than the creative role of the collective manipulation of determined contents (AUTHORSHIP CONTESTED, 2015). This is most evident in the case of *memes*, which are intentionally anonymous bits of content designed to be infinitely replicated and manipulated without any form of intellectual property or creative control (GAL; SHIFMAN; KAMPF, 2016). But contents that originally arise in authorial form can also be easily absorbed in processes of collective manipulation in which each user is free to construct on top of the work of others without any concern about the content's original meaning or aesthetic intention (NAVAS, 2014).

These new forms of "collective creative intelligence" are the truly native forms of the digital ecosystems.

These new forms of "collective creative intelligence" are the truly native forms of the digital ecosystems and are based on the deconstruction of the very idea of authorship and intellectual property. When people participate in these anonymous and massive forms of content production online, the incentives and disincentives

to contributions by the author, which still operate strongly on digital platforms as discussed above, are no longer mandatory, and new forms of collective participation arise. An example of this new logic of participation is found in the r/place experiment carried out on Reddit which began on April Fools' Day 2022 (and which replicated a similar experiment carried out in 2017). The aim was to color a large digital screen. Each user could only decide the color of a single pixel at a time, among the rectangle of 4 million on the screen, and there was a fixed time that one needed to wait before being authorized to color another pixel. Clearly, the only way to obtain significant and visible results in this sort of environment was to act in a highly coordinated way with other users. This coordination could allow a large number of users to concentrate on certain parts of the screen to form, for instance, their national flag or their favorite symbol, etc. And this is precisely what the social dynamics spontaneously organized. On the other hand, competition and even conflict could arise between different communities for the control of a portion of the screen. In total, more than 6 million users placed more than 70 million pixels, and the entire screen was covered by a mosaic of images and symbols. The experiment in 2022 enjoyed the participation of six times the number of users in relation to 2017, demonstrating how this new logic of collective action was enlarged over the span of a few years.

MEASURING DIGITALLY MEDIATED PARTICIPATION IN A SIGNIFICANT WAY

If we really want to understand the potential of digitally mediated cultural participation, it makes little sense for us to concentrate on the dissemination of individual egos. The most interesting dynamics is that of collective action. Once people have learned to coordinate on the scale of hundreds of thousands to compose together, for instance, the Brazilian flag on a digital screen, they can likewise coordinate to implement new sorts of circular economies or scrap recycling. When this logic prevails, the reasons preventing people from active participation no longer make sense – and are no longer mandatory. In other words, forms of massive, active digitally mediated cultural participation can become the basis for very complex forms of truly inclusive collective action, which can help governments and societies to face countless challenges from new angles. Instead of measuring participation as a sum of individual behaviors, concentrating on the individual volume of content or level of engagement, it is more useful, therefore, to consider how a certain social pattern of collective action is actually formed, and with which scales of online laws and structures this takes place. In other words, forms of digitally mediated cultural participation should be approached as self-organizing phenomena generated by complex systems (ONYX; LEONARD, 2010).

Forms of digitally mediated cultural participation should be approached as self-organizing phenomena generated by complex systems.

The real dynamics of the system is not driven by a sum of individual behaviors, but is unfolded on the mesoscale through the continuous negotiation of behavioral processes from top to bottom and from bottom to top. This new perspective will allow us to go back to consider culture as a promising industrial sector, interesting for reasons beyond the revenue it generates and the total number of jobs it creates. Culture can return to being what it was for a long time in human history: a pow-

erful social force that shapes collective behavior in ways that allows our societies to face our evolutionary challenges with new tools and approaches. Our growing understanding of biopsychobehavioral circuits, through which human beings respond to cultural stimuli, confirms that there is a profound evolutive logic in regard to the motive for how culture has been forgotten and relegated to a relatively marginal position in the political agenda, despite its great importance for human beings (STERLING, 2020). The time has come for us correct this, and to take digital participation seriously in terms of its measurement and modeling. The design of truly native digital platforms could be the first step in this direction.

HOW TO CITE THIS ARTICLE

SACCO, Pier Luigi. "A participação cultural na era digital. O que medir e por quê?" *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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NOTES

1. Those which do not require previous configuration by the user to operate.
2. A sort of unilateral relationship that an anonymous person maintains with a celebrity.
3. Communication based on the interaction between the emitter and the receptor.

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Estrutura 5 | Image by Adriano Catenzaro

Impacts of Digital Technology on Measurement, Monetization and Participation in the Cultural and Creative Sector

MARCELO MILAN

ABSTRACT

The present article evaluates the contributions of Moreau, Navarrete, Rey and Sacco based on the connecting thread of digital technology. Moreau concentrates on the measurement of creative consumption in conditions where monetary prices are completely lacking. Rey assesses how the creative economy makes use of e-commerce for the circulation of goods and services. Navarrete considers how the museums and digital heritage offer material for new products and for an infrastructure of knowledge. Finally, Sacco considers the limits of cultural participation and shows the changes that are necessary for a digital democracy.

INTRODUCTION

Technology in general, and digital technology in particular, have posed great challenges for the cultural and creative activities and for those who study and write about them. The works evaluated here represent an important sampling of these issues. They all share in common the impacts that the new technologies have brought to creation, production, commercial circulation, access or participation, and to the measurement of those activities in which technology has reduced the monetary cost of reproduction or access to zero. This evaluation is aimed at summarizing and describing the contributions, providing a consistent framework, while furthermore offering some critical comments.

To organize this framework, this work proposes two analytic blocks: the first considers the effects of digital technology on the economic transactions of the cultural and creative activities, pointing to the assumptions that are necessary for e-commerce platforms to facilitate greater circulation of goods and services (Rey) and the valuation problems that are faced when there is no monetary price (Moreau). The second block considers the question of cultural participation and how digital technology modulates it, reproducing predigital elitist models (Sacco) or providing inputs for new products and for the infrastructure of knowledge (Navarrete).

TO MONETIZE OR NOT TO MONETIZE, THAT IS THE QUESTION

Rey's contribution assesses the impact of technology on the marketing of creative goods and services, mainly on e-commerce platforms, making references to the creative economy and providing examples from the cultural sector. She also mentions, however, how the use of digital technologies and platforms encourages cocreation, coproduction, and consumption practices between creators and consumers. Moreover, the adoption of information technology by small and medium-sized enterpris-

es (SMEs) makes personalized products possible, targeted at specific consumer profiles and revenue models, while managing specific customer relationships.

Rey considers the pandemic as an example of a time when SMEs were forced to adapt to the greater need to carry out transactions through e-commerce. In this context, the author refers to the importance of the omnichannel experience in retail, with the convergence of various business models, forms of commerce, and payment methods that form an ecosystem. Rey emphasizes another aspect related to this, which is the resilience of the creative sector, identified by the effort to adapt to crises, with the creation of new skills and capabilities, mainly by means of technology. This ability to adapt is essential for resilience over the long-term. In the author's view, in Brazil, for example, e-commerce has contributed to the resilience of the creative economy.

The use of digital technologies and platforms encourages cocreation, coproduction, and consumption practices between creators and consumers.

Platformization brings other benefits, including greater visibility, although the advantages depend on the specific creative or cultural segment. In the publishing sector, for example, niche products can be accessed more quickly, publications have a longer lifespan, and increasingly larger inventories can be managed at lower cost. Of course, there are also drawbacks to this phenomenon, such as limited access to media, less independence on the part of producers, and decreased plurality in the media, coupled with the influence of platform owners.

Rey's work essentially refers specifically to the question of which part of cultural and creative production can be commercialized electronically, that is, provided on digital platforms, where the technology, in this case, allows not only for the modification of the production and reproduction of goods and services but also their distribution. To clearly consider this contribution in light of Moreau's text, discussed below, it should be noted that this portion of goods and services offered on digital platforms have the nature of private goods, whose characteristics include rivalry in consumption and exclusion of nonpayers via price (the informed price must be paid to acquire the products) (BENHAMOU, 2007; TOLILA, 2007).

As pointed out by Rey, a problem familiar to researchers in the economics of culture and creativity is the limited availability of data. And the literature does not offer solutions to this problem. Despite the various efforts to measure e-commerce worldwide and in Latin America, the statistics do not yet possess detailed breakdowns by economic sector for identifying the weight of the creative economy. Rey discusses the MCC-ENET indicator for measuring e-commerce in Brazil, based on the central system of product classification. The variables considered in the indicator include the average value of orders, the number of e-retail sales, and revenue from e-sales. This indicator, however, is limited since it does not include important retail agents, international transactions, and streaming services. And there is the further problem that some items, such as crocheted products, are hard to classify. Finally, there is the risk that the sales reported by establishments are not properly differentiated in regard to whether they are through traditional channels or digital platforms, or at prices to the buyer versus prices to the producer.

One criticism is that although digital technology facilitates exchanges by overcoming the barrier of physical distance and transportation costs and time, it can also exclude consumers by imposing a condition of access since buyers must have access to connection equipment through which the transaction takes place, thus modifying the "points of sale," and, increasingly, also the means of electronic payment. In other words, carrying out transactions by e-commerce, digital or analog means, in general, involves a high degree of technological inclusion. And it does not solve a fundamental question: the training that is needed to consume cultural goods and services in their different modes of distribution. The easy access provided by digital technologies allows consumers to acquire products with low cultural quality, which could be reflected in a lower volume of commercial transactions of greater symbolic value.

Although digital technology facilitates exchanges by overcoming the barrier of physical distance and transportation costs and time, it can also exclude consumers.

Monetization is not always possible technically, or, mainly, economically.

In relation to Moreau's text, although the title of this section refers to a choice, monetization is not always possible technically, or, mainly, economically. And for there to be commerce in creative goods and services, regardless of the mode of that commerce, there must be a monetary price that is known to the transactors. The e-commerce that Rey considers requires a set of goods and services which have a monetary value. Nevertheless, Moreau's contribution shows that the creative economy is very diverse and includes services – such as Wikipedia and Facebook – that lack a monetary price paid directly by the user or consumer. Therefore, after defining the intellectual property rights, the holders of the rights to distribution (reproduction) decide to offer services free of charge. But are these services without value? Or just without a monetary price? How can they be included in gross domestic product (GDP) or another metric?

Moreau's work discusses the problems faced when measuring the value of creative goods and services with a zero monetary cost to users. In other words, they have a use value (users seek them), but no price (they are consumed without any significant monetary expenditure). Moreau then goes on to present two methods of contingent valuation for valuating the use value of goods and services in the absence of monetary prices, on the basis of consumer or user experience: revealed preferences or stated preferences.

This estimation exercise is generally hypothetical, or sometimes uses methods of experimental economics, as in the case of Facebook, through an experiment involving actual monetary transactions. In this experiment, an exercise was carried out to measure how much users would be willing to receive to stay off Facebook for one month. The results show a very wide range of variability, spanning from $1 to $1,000, with a median value of $48. This can be considered, therefore, as the median value of one month's use of Facebook, used in a different measure of GDP, called GDP-B. It is interesting to note that this median value is less than the cost of three traditional pizzas in New York City, according to the Slice platform.

Moreau shows that the proposed study gives estimates of the so-called consumer surplus value (the difference between the price paid and the minimum price the

consumer would be willing to pay for each ideal quantity to be purchased) for other digital music and video services that far exceed the prices actually paid. That is, even though they do not pay directly for these services, they obtain a huge monetary benefit from them. On the other hand, it is intriguing that even in the case of transactions with known monetary prices, a methodology is applied to estimate the imputed value of these transactions. The results of the Facebook experiment show that the objective revenues that the social network obtains by selling advertising space is lower than the estimated consumer surplus value (in other words, it would be more advantageous for Facebook to charge – if this were possible). However, consumer surplus value is a relationship between price and quantity. And quantity is difficult to measure in the digital world, as it requires the use of the favorite measurement of classical authors in the field of economics: time. In these cases it seems that some measure of time must be used. That is why the research approved by Moreau uses one month as the unit of time. Since daily use of the platform varies over the course of a month, this adds other challenges to the method.

The problem of measurement arises with the intangible, as its reproduction does not require significant costs, neither in terms of money nor time.

In Moreau's work, the case illustrated by Wikipedia is equally interesting, as the online encyclopedia has replaced the voluminous paper and leather-bound encyclopedias, recalling the difference between tangible and intangible (GREFFE, 2015; TOLILA, 2007). The problem of measurement arises with the intangible, as its reproduction does not require significant costs, neither in terms of money nor time.

Moreau's text raises some important points. First, as shown in the seminal paper by Kahnemann and Tversky (1979) on prospect theory, the valuation of "gains" (the use of Facebook) differs from the valuation of "losses" (giving up the use of Facebook for a limited span of time) in absolute terms. These valuations depend on the starting point used as a parameter for purposes of comparison. The experiment did not consider the income and wealth distribution of the participants (participants in the experiment are often attracted by the prospect of receiving extra income, and therefore need money). For the many wealthy people who might be Facebook users, there would be no available value that could dissuade them from using the platform for any period of time. Perhaps only for seconds or nanoseconds. The PIB-B approach also overlooks issues such as addictive behavior, which can distort the user's perception of value. These problems arise from how the estimation method considers only one side of the market: demand, or consumer behavior. But price also involves conditions of production and circulation (commerce). And here, technology makes all the difference. The basic question has to do with the difference between production costs (of the prototype by creative work) and reproduction costs (which can approach zero through the use digital technology, where the work of reproduction is mostly automated and replaced by computing).

From the viewpoint of the social accounting approach, the problem arises in regard to expenditure, since the service is provided free of charge. From a double-entry bookkeeping point of view, the consumer does not pay for the good, so the seller also "sells" it for free. In capitalist economies, however, there are no private goods that are sold for free. And monetary value is a necessary condition for calculating an

overall or aggregated measure of all the different goods and services produced in a given territory and period. An independence therefore arises in regard to the valuation of demand (willingness to pay) in light of the supply (technological conditions of production and distribution or reproduction). Somehow, the value of the service – or at least of the prototype – should be included in the measurement of GDP, as value added and as income for the creators. This question is related to the longstanding controversy about the relationship between well-being and GDP and the alternative indicators such as the Genuine Progress Indicator (GPI), the United Nations' Human Development Index (HDI), or even a happiness metric (FREY, 2009).

There are, furthermore, other estimation methods we can apply to this problem posed by digital technology for measuring the GDP of the cultural and creative industries. There are other "free" services provided in the economy that must be added to GDP. For example, for a long time, the methodology for calculating GDP needed to deal with a similar problem, namely, the question of how to impute a value to public services acquired by consumers through nonmarket contexts, since GDP requires market transactions in order to be calculated. The methodology developed for that problem assigned a value to public services based on the cost of producing them. The same sort of question was faced by feminist economists in regard to the value of unpaid household work, generally performed by women (WARING, 1988). In feminist economics we see that domestic services have enormous value even though they are not remunerated. What would their value be if the services were offered under other conditions, that is, by a professional in the market? The same method is applied to the case of volunteer work in the third sector.

The problem concerning the contribution of inputs can, therefore, be reflected in the price of the goods and services themselves. For example, the values of used goods do not enter repeatedly into the value of GDP when they are traded ("reproduced"), but rather only when they are new (created). A used good can be traded infinitely many times (adjusting for any possible loss in quality) without its value being included in GDP (by the very fact that GDP is defined as new net flows). Only the commission earned by sellers enters the calculation, as an added intermediary service. An identical question arises in the case of imputing value to programming on free-to-air TV. Viewers do not pay anything for these services which, however, have a cost to produce. According to Moreau, the brain time involved in the sale of advertisements, addressed by Tolila (2007), would not correctly capture the value of programming valuated by viewers, as is also the case with Facebook. But estimates of consumer surplus value might not capture it either, in light of the well-known problems of contingent valuation (honesty of responses, nearness in time, etc.).

MODES OF PARTICIPATION (AND OF EXCLUSION)

The other two contributions concern cultural participation in the digital era. The provocative text by Sacco argues that the promise of cultural democracy, more than democratization (SILVA, 2021) through digital technologies, is not being fulfilled. Thus, the revolution in cultural participation is still an unfulfilled promise, as the logic of predigital elitist production still persists on the platforms to "massage the ego" of a few individuals, along with the continuing separation between production and consumption. In most cases, the platforms serve to reproduce specific individual lifestyles in the format of TV channels, with the existence of

personal channels. The digital paradigm creates potential, which has not yet, however, been realized.

Unlike the PIB-B model discussed by Moreau, the revenue model on the platforms, according to Sacco, aims to maximize the audience in order to sell advertising space or to engage in the value chain of the advertising sector. But not everything is just a repeat of the previous model. The novelty arises in the parasocial relationships that occur in the model of the platforms, which is the follower model. However, this change is not enough to give rise to bidirectional communication channels. The digital ecosystems therefore reproduce the asymmetric relationship between a few content providers and many passive followers. Production in this universe is not inclusive. The author estimates that the distribution is typically in the proportions of 90-9-1. That is, 90% of users who only share or comment on the production of others, 9% of users with production but no audience, and 1% of superusers with content that enjoys wide circulation and exposure. So some digital producers do escape the usual criteria or filters of traditional media selection, but inequality prevails. The phenomenon pointed out by Sacco is equivalent to what Benhamou (2016), in the case of heritage, calls the heritage star system.

The digital ecosystems therefore reproduce the asymmetric relationship between a few content providers and many passive followers.

As case studies, Sacco's research team analyzed three platforms: Wikipedia (mentioned in Moreau's work from the viewpoint of open access), Tik Tok, and Twitch. The first demands more knowledge and expertise from the user, making it limited in terms of broad participation. It is, in fact, an encyclopedia for use in research and learning activities that requires rigor. Knowledge requires authority. As Sacco states, writing and editing entries demands that the use of multiple sources, along with the ability to write clear, logical and unbiased text. The specialization of knowledge demands the selection of authors. The same was true for encyclopedias published with the technology developed by Gutenberg. Here, the degree of inclusion should not be valuated by the ability to contribute, but by the ability to access, as analyzed by Moreau, though with a different concern.

In the case of Tik Tok, a platform of short videos, the requirements are less restrictive, due in part to the ready availability of technical resources for video producers. It just takes some patience to acquire the editing knowledge needed to refine the content. Regarding Twitch, a platform that features live performances by video game players, there are practically no barriers to cultural production (as long as the producer knows the rules of the game and how to play it).

Sacco then goes on to evaluate the issue of motivation or social incentives for participation on each of the three platforms: the level of attention or approval of the posted content. In the case of Wikipedia, the approval comes from the (few) peers able to perceive and evaluate the contribution of specific users. On Tik Tok, the content is personalized, and visibility is controlled by an algorithm-based recommendation system. There is some symmetry insofar as it is possible for unknown users to gain an audience, but there is also the possibility of manipulating the system to achieve stardom. On Twitch, there is no algorithm. It would thus be expect-

ed that there are possibilities, in all three cases, for inclusion and greater participation, preventing the overexposure of a minority of content producers.

However, the research conducted by Sacco's team shows that the spirit of the 90-9-1 rule prevails. And why would this be, since there are no significant technical requirements or lack of social incentives? There could be other sorts of rewards, encouraging people to avoid a more active cultural participation. These social rewards could only take the form of joining in on the collective appreciation of something popular (or collectively hating something). There are, therefore, psychological barriers that lead to the reproduction of the predigital star system. On Wikipedia, this involves the feeling of not being capable to contribute and thus receiving criticism from peers. On Tik Tok, the fear is to be ignored or criticized. And, on Twitch, the barrier is not being confident to play in real time in front of a large audience.

Sacco identifies another novelty in this case: a neo-oral revival of the oral tradition in which individual authorship loses importance to the collective (and infinite) recreation (or replication) of materials (memes, for example). This new sort of relationship deconstructs the idea of intellectual property and copyright and leads to a new logic of collective participation. As an example, the article discusses a collaborative art project (pixel art) carried out on the Reddit platform, which required coordination for significant aesthetic results to be achieved. Sacco believes that this collective characteristic is the interesting aspect of the cultural participation mediated by digital technologies, since it removes barriers that would otherwise prevent active cultural participation (and not only that). Lessons learned from that coordination of collective action are then projected onto other fields, such as the circular economy and recycling. And this is not measured by the individual volume of posted content nor by the level of engagement, but rather by different scales and formations of networks. It is a phenomenon of self-organization with powerful sociopolitical implications.

The author thus rejects a microeconomic or additive view of the whole, that is, he does not believe that the aggregate is the mere result of the sum of individual behaviors. He therefore adopts the viewpoint of complex systems. Culture is no longer seen as a branch of industry, but rather as a social force that shapes collective behavior. It is above all an evolutionary trait. What Sacco proposes as typical of digital ecosystems is similar to the bricolage discussed by Cuche (1999). Thus, technological change without accompanying changes in social values and behaviors would be symbolically and essentially empty. Digital participation should be based on collective creation, involving a paradigm shift in regard to social and behavioral patterns.

Digital technology allows hybrid access to information on heritage, which may be the new form of cultural participation: personalized, interactive (cocreation), and in a network.

This view of cultural participation is different from the one proposed by Navarrete, who believes that participation in the digital age should be analyzed in terms of the inputs to cultural production. She notes that (native or digitized) digital heritage includes libraries, archives, museums, and archaeological sites. Technology allows not only for the representation of heritage but also for the provision of information. Digital technology allows hybrid access to information on heritage,

which may be the new form of cultural participation: personalized, interactive (cocreation), and in a network.

However, as in the case of free creative services or e-commerce, there is no consensus on how digital heritage should be defined or measured. Attempts at doing so refer to the same points set forth in Moreau's work: product and expenditure, production and cost, or even the number of visits to pages about heritage sites on Wikipedia. One alternative would be an estimated value based on income, but there are no services to capture the value generated by digitizing heritage. So estimators have considered the reuse of digital heritage for the generation of value, that is, heritage as input for new productions. But this depends on ease of access.

In the case of reuse, the production is carried out by consumers or even robots. Navarrete considers reuse as a measure of the cultural participation of the new generations. The contribution by participants is not limited to consumption, however. There are also research centers or universities with workers ranging from interns to researchers, as well as the industry, best exemplified by Google, with its projects for books and arts that use museum production as an input. This involves innovation or the enhancement of knowledge. Here, participation includes any and all types of contribution and creation. A visit to a museum is considered participation. But what about a visit to the museum's web page? A study in the Netherlands revealed a high volume of visits (and this raises a further question: the substitution of physical visits by virtual ones). There are thus several types and profiles of participation. The one that is characterized as an input by the public includes financing (crowdfunding), research and development or R&D (ideas), and open collaboration (coproduction, coownership, and comanagement).

Just as in the case of creative e-commerce and creative services offered free of charge, there is no accounting for the national contribution by digital heritage to the platforms. According to Navarrete, this measurement could provide some evidence of digital skills, production of intellectual capital, innovation, and income generation. The measures here include content available on the web or the number of hours of contribution, concerning which a digital record is available. Once again, classical economics suggests possible paths.

Navarrete warns, however, that museums need to change their production process to allow contributions from external and collective sources. A legal framework is needed to facilitate coownership, since participation involves cocreation. The museums have valuable information for use as a raw material but lack a strategy for generating value. In this case, the raw material is the digital material that museums make available to illustrate, for example, Wikipedia articles. Investments in the digitization of collections is significant: in Europe, it is around €450,000 per year. But this investment has additional effects when external participants use it for the production of new goods and services. As a model, Navarrete states that many private companies should operate in ecosystems for collaborative exchanges of data and for obtaining information from multiple sources to personalize their services.

Museums must ensure that the information on their collections is connected to structured networks, thus improving their services in the process. For example,

the National Museum of the Netherlands (Rijksmuseum), in Amsterdam, has a project for the identification of old photographs, thus increasing their reuse value by the inclusion of previously unexplored information. This work also benefits the heritage sector as a whole, since the new information can correct mistakes, for example, in the dating of the works. This is an important contribution to the knowledge infrastructure, which is an input to production as is any other infrastructure. The author also refers to the CHIM Project aimed at developing a chatbot for museums. And also to Wikipedia as a system in harmony with publicly available data.

In this latter case, unlike Sacco, Navarrete argues that the digital products of museums are reused in coproductions by a large number of users. To illustrate this, she cites the Brazilian Wikipedia, quantifying the use of content from Brazilian museums on the platform. There are nearly 1,800 paintings from 79 collections on Brazilian Wikipedia, 80% of those paintings being used to illustrate Wikipedia articles. They are identified in the WikiData database and contribute to the knowledge infrastructure in Brazil, with a high number of views of the collections. In this case the suggestion for cultural policy would be to gather and make available additional, summarized information about the works. We thus see that reinforcing the economic dimension of digital heritage and culture requires quality data for reuse and creation (the product) and contributes to an information-based knowledge infrastructure, with active participation by the consumers. Appropriate cultural policy for this reality should provide infrastructure for digital heritage. Navarrete concludes her article by emphasizing that the participatory business model, based on innovations in museum services, is for everyone. As mentioned above, Sacco is more doubtful about this universality, pointing to a number of barriers ranging from technical restrictions typical of Wikipedia to fears of being ignored or criticized.

In conclusion, it is important to underscore some limitations of the proposed approach. The cultural participation of members of the public, who contribute through the provision of input, is often confused with the nature of the institution that receives their contributions, rather than with the type of work done. The entire extended "production chain" that supplies inputs to cultural institutions would be identified as providing cultural participation. An electrician reviewing the electrical wiring of a museum on a volunteer basis would thus be participating in a cultural contribution (rather than making a technical contribution to a cultural institution). Cleaning staff would also provide a cultural contribution by keeping the museum facilities clean. More precisely, we must inquire about the nature of cultural participation from the viewpoint of effective and productive cultural inputs. Is there always an instrumental aim motivating cultural participation, in a relationship between means (inputs) and ends (culture)? Does extrinsic motivation (generation of monetary value) surpass intrinsic (symbolic) motivation? Digital technology actually does change the possibilities of participation. But does it also change willingness to participate in culture?

CONCLUSION

The works evaluated here represent a significant contribution to knowledge concerning the transformations and challenges provided by the new technologies, particularly the digital technologies, for culture and creativity. On the one hand, platforms allow for new forms of circulation of cultural and creative goods and

services, by way of the e-commerce evaluated by Rey. On the other hand, technology provides access to creative services without any monetary expenditure, thus raising questions beyond commerce. How to measure activities provided free of charge to the consumer (but whose production nonetheless incurs a monetary cost)? Moreau points to GDP-B, based on contingent valuation, as a response.

At the same time, the reduced cost provided by new technologies, which at the utmost allow for reproduction at zero monetary cost, indicates a greater capillarity in cultural production. Sacco's study, however, raises doubts about the democratizing potential of the new technologies and their platforms. Navarrete presents a more optimistic outlook, considering the various possibilities for interaction between museums and the public through digitization. These excellent works pose excellent questions, pointing to new possibilities for interpretation and research in the field of cultural and creative economics.

HOW TO CITE THIS ARTICLE

MILAN, Marcelo. "Impactos da tecnologia digital na mensuração, monetização e participação cultural e criativa." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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Taipa | Image by Adriano Catenzaro

The Gross Domestic Product of the Economy of Culture and the Creative Industries: An Income Approach

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ABSTRACT

Gross Domestic Product (GDP) is one of the main indicators used internationally for comparing economies. Thus, looking at a specific sector's contribution to the national GDP helps to gauge its importance in the national economy. The present article introduces a new way of calculating the GDP of the Brazilian cultural and creative industries sector. Rather than the traditional approach focused on the product, the income approach was chosen. This task was carried out based on data from the Continuous National Household Sample Survey (PNADc), the Annual Social Information Report (RAIS), the Serial Assessment Program (PAS), and the Growth Acceleration Program (PAC), along with the official reports on the Rouanet Law and other external sources for estimating the digital sector.

INTRODUCTION

The topic of the creative industries garnered more attention in the late 1980s and 1990s (UNESCO, 2009), after this sector began being broadly considered by UK public policymakers as part of their search for a new dynamic of economic development that could respond to the emergent process of globalization. Unlike the traditional resources (capital, land, and labor) used in the industrial eras, creativity is considered an unlimited resource that can be constantly upgraded through education, work experience, and human interaction (DE JESUS, 2021). In more recent years, the cultural and creative industries (CCI) sector has been gaining increasing prominence in the literature and in the eyes of public policymakers, as per capita incomes are increasing and consumption patterns are shifting from products to services (RODRIK, 2016; BUCKLEY; MAJUMDAR, 2018). This structural change has revealed the enormous potential of a sector previously marginalized or underestimated by economists. Due to the sector's increased relevance, some countries are carrying out research and developing statistics in order to better understand the CCI sector's capacity to generate income, employment and linkages. According to current (2022) UNESCO estimates, culture and creativity contribute 3.1% to the world's GDP and employ 6.2% of the workforce.

Knowing the importance of the cultural and creative activities for the Brazilian economy is essential for providing visibility to this sector and promoting its development, together with that of the entire Brazilian economy.

The thinking is that sectors that create value through creativity hold special potential for generating economic growth, especially in light of the growing impor-

tance of knowledge-based activities. Knowing the importance of the cultural and creative activities for the Brazilian economy is essential for providing visibility to this sector and promoting its development, together with that of the entire Brazilian economy. According to Valiati and Morrone (2014), the cultural and creative sectors play a crucial role in economies and should be included as an integral part of any economic plan aimed at fostering sustainability in the development process.

A survey of the literature reveals various ways to measure the importance of a sector, which can be grouped broadly into measurements of impact and sectorial accounting. Worldwide, countries such as Portugal, France, Spain, Canada, and – specifically in Latin America – Colombia, Costa Rica, Argentina, Chile, and Uruguay have developed the so-called culture satellite account (CSA), with the aim of producing reliable statistics. The CSA includes a range of economic information (value added, intermediate consumption, exports, imports, etc.) with the aim of measuring the economic transactions of certain sectors that are not differentiated in the national accounts. In Brazil, efforts to develop a CSA have been carried out by the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Culture. Unfortunately, this methodological effort has not produced consistent and continuous results. In parallel, other efforts have been developed (Valiati; Fialho, 2017; FGV, 2018; FIRJAN, 2008; FIRJAN, 2022), which have contributed to estimating the CCI sector's contribution to the Brazilian economy.

The studies mentioned above can be considered impact studies; the present article, on the other hand, presents a deeper effort aimed at accounting for cultural activities and creative industries through the calculation of their contribution to GDP. The GDP of a country or region represents the production of all its economic units (public and private firms producing goods and providing services, self-employed workers, government, etc.) in a given period (year, quarter), measured at market prices. GDP is traditionally measured through macroeconomic national accounting in which the income, production, and expenditure approaches, by definition, produce the same calculated result. In other words, the System of National Accounts (SNA) establishes that GDP can be measured by looking at a given country's income, products, or expenditures (or spending). However, since the calculation of the GDP of an economy or sector depends on the availability of financial data on transactions, taxes, incomes, etc., and the level of that data's disaggregation,[1] any informal economic activity economy poses a major limitation for the measurement of certain sectors.

Therefore, attempts aimed at calculating the contribution of cultural activities[2] and creative industries to the GDP in developing countries have differed significantly. This is largely due to the lack of data and the specific nature of these sectors, which can often involve second jobs, informality, and unpaid work. It is thus essential to pay attention to the specific nature of the cultural sector in order to minimize estimation problems. Moreover, the creation of new tools for data collection, and the optimization of others, has become a relevant part of the process for the sector's measurement.

This article is aimed not only at creating a front of research through the use of a new perspective on measuring GDP, but also at providing recommendations for data collectors to ensure a better measurement structure. Thus, the proposed GDP of the

Brazilian cultural and creative industries signals the need to upgrade the database and make it more broadly available, while it also treats on methodological flaws and specific nuances of the sector that have not yet been addressed in the literature.

In keeping with this goal, this article consists of a brief introduction followed by a number of sections. The next section seeks to present the methodological challenges arising from the specific nature of the CCI sector and the chosen methodological approaches. The section after that presents the results of the estimation process, and, finally, the last section presents the conclusions and recommendations for data compilers. It should be noted that the methodological details used in the calculations, along with technical tables, are located in the appendices of this article and will be referenced where relevant.

METHODOLOGY

The calculation of the GDP of an economy or sector depends on the availability of financial data on transactions, taxes, incomes, etc., and that data's level of disaggregation. In the case of the CCI sector, the surveys carried out by statistical institutes do not always capture the sector's nuances. Many of these nuances result in a lack of reliable data needed for a more accurate estimate of the sector.

Due to this precariousness, the researchers' main challenge is to avoid either underestimating or overestimating the sector. Factors that could contribute to underestimation include the nonuniformity of cultural activities; the nonregistry of these activities in international or national classification standards (as is the case, for example, with digital games); the difficulties of measuring secondary activities and remunerations arising from the sector's digitization; the generation of economic value through intangibles; and informal work activity.[3]

On the other hand, overestimation can arise due to a low level of disaggregation, which can lead to the inclusion of activities unrelated to CCI sector in the calculations. We believe that this latter factor is a risk when the contribution of culture and creative industries is measured by value added. The low level of disaggregation in the databases used by researchers, for example, in the data concerning economic activities, tends to result in the capture of more noise during the estimation processes.

In general, GDP has been measured based on the production and expenditure approaches (BURMAN, 1998; MONTOYA; FINAMORE, 2001; CRUZ; TEIXEIRA; GOMES, 2009; GUILHOTO et al., 2011; IBGE, 2004; IBGE, 2016), in which the total contribution of given sectors, at a certain level of disaggregation, allows for GDP to be calculated from the national accounts made available by the IBGE. The present article holds that these calculation methods, even when based on robust data, lead to the capture of noise that can result in the overestimation of values, since the level of disaggregation present in national accounts on a sector-by-sector basis prevents the separation of cultural and creative industry activity from other activities.

To solve this problem, the present article uses an innovative calculation approach aimed at overcoming such methodological difficulties. In light of our survey of the various approaches used by the literature, we argue that the calculation of GDP by

the income method can lead to a more accurate estimate of the contribution to GDP by the cultural and creative industries insofar as this method takes this sector's specific dimensions and characteristics into account. Here, "specific dimensions," refers to the separate and more micro study of the contribution of companies and workers to GDP, while "specific characteristics" refers to the other remunerations found primarily in these sectors and the economic activities they involve.

DELIMITATION OF THE CULTURAL AND CREATIVE INDUSTRIES SECTOR

In addition to the structural difficulties mentioned, another methodological challenge faced by researchers of the economics of the cultural and creative industries is the delimitation of the sector. The various methodologies for such delimiting that are found in the literature can be broadly divided into two approaches, namely, the dynamic and the static. The latter are characterized by the adoption of a fixed structure for the creative sectors; in other words, they consider that creative sectors remain the same regardless of the economy or the employment composition. On the other hand, the dynamic model, the one adopted in this article, considers that economic activities, as well as the sector's composition, can vary from economy to economy and from one period to another. As economies, market structures, and skill requirements change over time, the definition of sectors considered creative in a given country must also change. Through the use of this model, expressed here through the creative intensity model, the present work aims to overcome the difficulties of delimitation and to determine, in accordance with the reality of the Brazilian economy and its structural characteristics, the location of the boundaries of the CCI sector.

As mentioned in the introduction, the topic of the creative industries garnered attention in the late 1990s in the UK. The thinking is that a special potential for economic growth is presented by sectors that generate value through creativity, especially in light of the increasing importance of knowledge-based activities. The British government's pioneering role in this discussion also includes that it was also the first to create a debate on what the main economic activities within the creative industries would be, through its Department of Culture, Media, and Sport (DCMS). Over the years, this classification has become more sophisticated, reflecting a growing flow of creative innovation that extends throughout the economy, beyond activities traditionally recognized as creative industries. The work of Bakhshi, Freeman, and Higgs (2013) set forth a more systematic way of evaluating which sectors could be grouped as intense in regard to creative work.

Following this methodology, the present work adopts an approach that defines the most creative sectors as those with the highest percentage of creative workers. Creative workers are defined as those employed in occupations that involve creation, innovation, and differentiation, which require specific intellectual capabilities on the part of the individual worker to be carried out. In order to identify creative workers objectively, the creative intensity model translates this broad concept into five evaluation criteria.

The first criterion is the worker's ability to generate new processes: that is, to solve problems or achieve goals in an innovative way, through clear and frequent use

of creativity. The second criterion is resistance to mechanization, in the sense that the activity cannot be carried out by a machine. The third criterion is that the function be nonrepetitive and nonuniform. This means that the production process is different each time the activity is performed, depending on the specific needs and contexts of the task. The fourth criterion is that the job makes a creative contribution to the value chain, such that the worker's performance is innovative and/or creative. Finally, the fifth criterion is that the work involves interpretation, not mere transformation. That the worker truly creates and innovates, rather than merely copying, adapting, or changing the form of preexisting things.

The Data Panel of the Observatório Itaú Cultural applied the above-mentioned criteria to the Brazilian reality, more specifically to the observations of the Continuous PNADc,[4] and determined that the following sectors – which will be adopted in the present work – are creative: fashion; artisanal activities; publishing; cinema, radio and TV; music; development of software and digital games; other information technology services; architecture[5]; advertising and business services; design; performing arts; visual arts; and museums and heritage. The activities and occupations that make up each of these sectoral categories can be found in the appendices of this article.

CALCULATION METHODOLOGY

Once the economic activities and sectoral occupations were selected, the following databases were chosen for the calculation: the Annual Social Information Report (RAIS), the National Household Sample Survey (PNADc), the Annual Trade Survey (PAC), Annual Service Survey (PAS), the data of the Central Office for Collection and Distribution (ECAD), the Resource and Use Tables (TRU) from the IBGE for tax accounting, and the historical official reports of the Rouanet Law. We used the RAIS with the aim of capturing the composition of the cultural sector's business fabric, as it covers 97% of formal Brazilian companies. On the other hand, the PNADc data covers both the formal and informal sectors and is used here to measure the dimension of employment, since it allows for the measurement of wage mass and second incomes, while it also captures the sector's informal economic activity. The database is also used here to calibrate the sector's business fabric in regard to informal work. Statistics from the official reports of the Rouanet Law will provide a better understanding of the dimensions not covered by the other two databases, namely the flexibility of intermittent or freelance employment. Table 1 presents a statistical summary of the sample used for each database.

Table 1: Statistical Summary of the Sample

Base	Total	Interest	Excluded	Final sample	Expansion factor
PNAD					
Ocup SCC 1 job	21,222,204	9,012,938	20,884,639	337,565	167,079,643
Ocup SCC 2 job	21,222,204	289,080	21,205,994	16210	7,721,642
RAIS					
Profit	424,462	424,462	60,988	363,474	

Source: developed by the authors themselves.

According to the basic identities used in national accounting, a country's GDP can be calculated by summing up the monetary value of its products, the incomes of its economic agents, or their expenditures. Thus:

$$GDP = GDI = GDE$$

Where GDP is the gross domestic product of the economy calculated by the production approach, GDI is the economic activity measured by the income approach, and GDE is the economic activity measured by the expenditure approach. As discussed earlier, due to various factors, including the low level of disaggregation, the income approach is an underused calculation method, which could be a solution for dealing with the nuances and characteristics of the CCI sector.

Simply stated, in order to calculate GDP using the income approach, it is necessary to account for the remuneration of labor, gross operating surplus (GOS), and taxes on production. To this end, the following variables are considered: wages – income from labor[6]; rents – income from physical facilities; profits – income from the production process; taxes – government income.

The GDP of the CCI sector can be represented as follows:

$$GDP_{CCI} = WM + PM + TAX + OR$$

Where WM, or wage mass, is the sum the employees' salaries in the sector; PM is profit mass, that is, the sum of profits of companies in the sector; TAX is the taxes collected by the government in the sector; and finally, OR is the sum of other remunerations in the sector, such as those arising from digitization and the Rouanet Law. In the following section, we will explore how each of these components was calculated. Details of more specific statistical weightings are presented in the appendices of this text.

WAGE MASS (LABOR REMUNERATION)

As recommended in the literature, due to the high level of informality in the Brazilian economy, the use of the PNADc instead of RAIS to make inferences about the CCI sector is crucial (DA SILVA; ZIVIANI, 2021). RAIS, which covers 97% of formal companies in Brazil, has been used as one of the main tools for measuring the labor market of the creative industries in Brazil. Its use as the main measurement tool for the sector does, however, generate a series of problems, the main one being its lack of coverage of the informal sector. Thus, the wage mass (WM) of the CCI sector, or the contribution of salaries to the GDP, was calculated based on the occupations of the CCI sector present in the PNADc.[7] Therefore, for its greater territorial coverage and better coverage of labor market nuances, PNADc stands out as a solid database for capturing the dynamics of both first and second jobs.

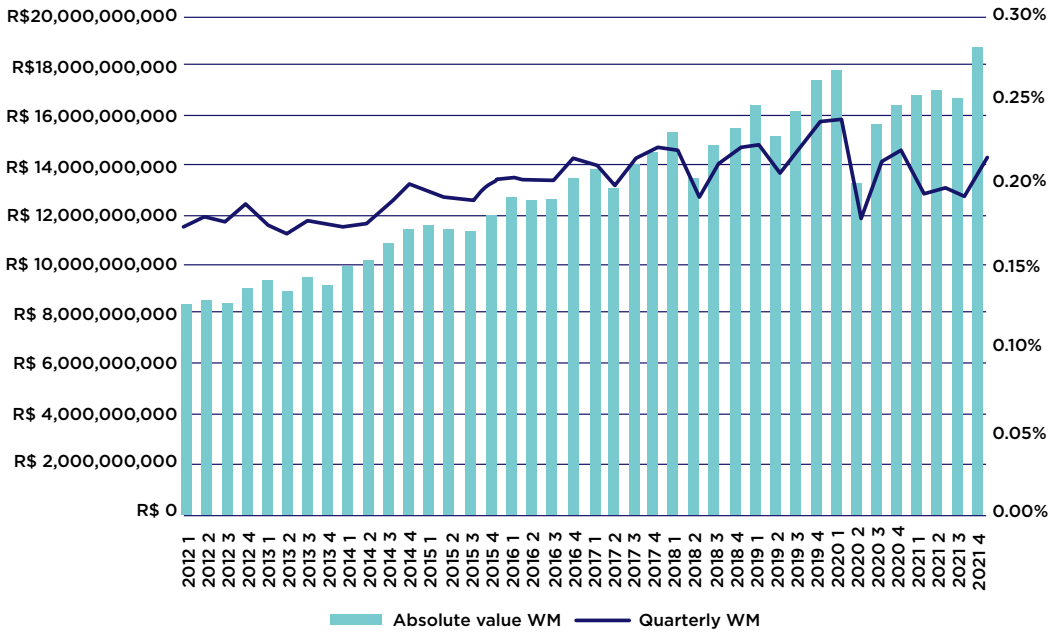
For this reason, as a strategy for calculating WM, the expansion factors made available by the PNADc were used. Thus, each observation contained in

A strategy for calculating WM, the expansion factors made available by the PNADc were used. Thus, each observation contained in the PNADc database represents a given number of people, and the same procedure can be applied to households.

the PNADc database represents a given number of people, and the same procedure can be applied to households. [8] In the particular case of the present study, each observation concerning a specific occupation and its respective wage represents a certain number of occupations and their respective wages. [9] The PNADc contains many options for expansion factors; however, when it comes to describing the variables that represent the expansion factors, these do not change significantly, thus posing a difficulty for the researcher's work. [10]

Graph 1 shows the behavior of WM per quarter from 2012 to 2021. The significant impact of the COVID-19 pandemic on the sector's salaries is clearly observed after the first quarter of 2020, while a potential recovery is observed starting in the last quarter of 2021.

Graph 1 : Quarterly wage mass in the CCI sector (includes second remunerations and informal work)



Source: developed by the authors themselves based on PNADc data.

Although the absolute value of the WM of the CCI sector shows an increasing trend in recent years, it is important to note that, in relative terms, there is a trend for greater variation, revealing a certain volatility. Over the ten-year period covered by the PNADc data, the WM of the CCI sector was, on average, 0.19% of the national GDP.

SECOND REMUNERATIONS

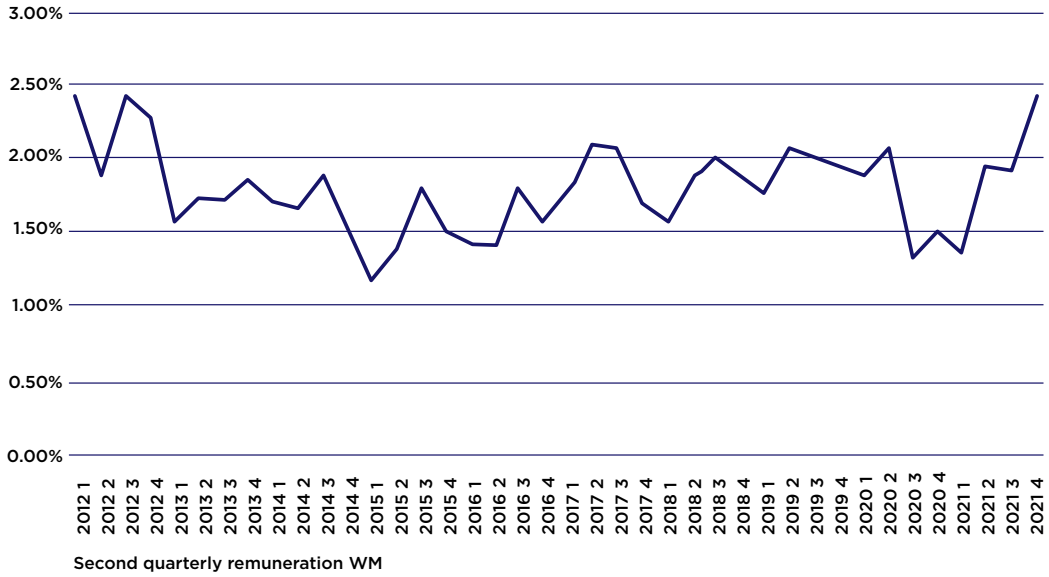
In the present work, second incomes are also calculated by means of the PNADc. The variable V405012, described as "cash value of the monthly income normally received in this second job," is used to calculate the remunerations arising from a second job in cultural activities and the creative industries.

Due to various difficulties in capturing certain characteristics of the CCI sector in the surveys, we believe it is necessary to develop correction factors

for adjusting the statistics to better reflect the sector's reality. Although intermittent or freelance work and second incomes are important, these remunerations nonetheless represent, on average, according to preliminary calculations, only 1.82% of the WM of the CCI sector. Many workers perform creative functions as a second job, that is, they earn extra income by working in the CCI sector even while they have a main job in a nonrelated sector. Furthermore, many jobs in the creative sectors involve intermittent or freelance work, which are characterized by a high level of informality, making them hard to capture in surveys.

Graph 2 presents the movement of second incomes in each quarter from 2012 to 2021. On average, second incomes represent 1.82% of the mass wages of the CCI sector.

Graph 2: Second remunerations according to the PNADc
Quarterly second-income wage mass



Source: developed by the authors themselves based on PNADc data.

In this regard, since we understand that the value of second incomes is not properly covered by the PNADc, an ideal solution would be to add an adjustment factor to the formula used to calculate GDP. Such an adjustment factor could be calculated on the basis of Rouanet Law data. That database, however, was not designed for this use and therefore lacks the necessary variables for this, since, for example, there is no indication of the year in which each datum of information was collected. As a consequence, the database, on its own, does not allow for comparisons of incomes.

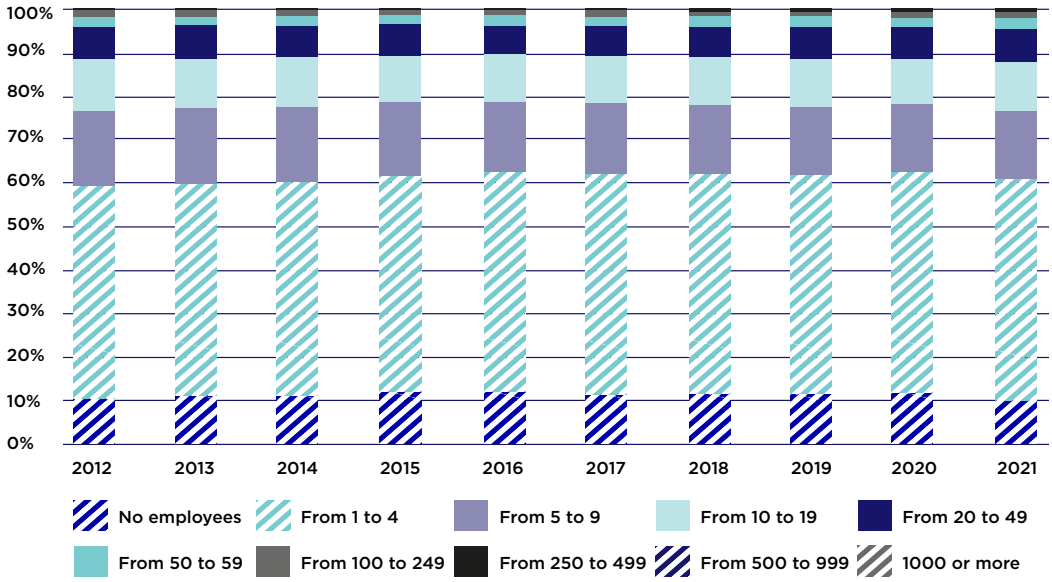
PROFIT MASS [GROSS OPERATING SURPLUS (GOS)]

To calculate the profit mass, we used the Annual Service Survey (PAS) and the Annual Industrial Survey – Enterprise (PIA-Enterprise), both from the IBGE.[11] These surveys present estimates of total corporate gross revenue broken down into specific groupings of sectors, due to the lack of a sufficient sample to estimate each sector separately. To estimate the gross revenue of only the sectors pertinent to the present research, we applied a double weighting on the average value of rev-

enues and expenditures of the groupings that included portions of the cultural and creative industries. The quantities used in this weighting were the wage mass (sum of wages) and the composition of the business fabric (size of companies) of each sector present in the groupings in each corresponding state and year. For calculating the wage mass and weighting by company size, the PNADc and RAIS databases were used for wage mass and company size, respectively.

To calculate the profit mass,[12] the total number of companies in the CCI sector was extracted from the RAIS data. In this light, we can argue that the methodology we used can cover up to and least 97% of the formal companies in the CCI sector. It is important to note that, in addition to the already mentioned characteristics, there is a predominance of micro and small businesses in the CCI sector, as shown in Graph 3. This stylized fact is of crucial importance in regard to controlling the PM for outliers,[13] since very high profit values in the context of a sector with a predominance of small businesses can significantly distort the results of the method. As shown in Graph 3, micro and small businesses have a far greater participation in the sector than do larger companies.

Graph 3: Graph 3 – Companies in the CCI sector by size

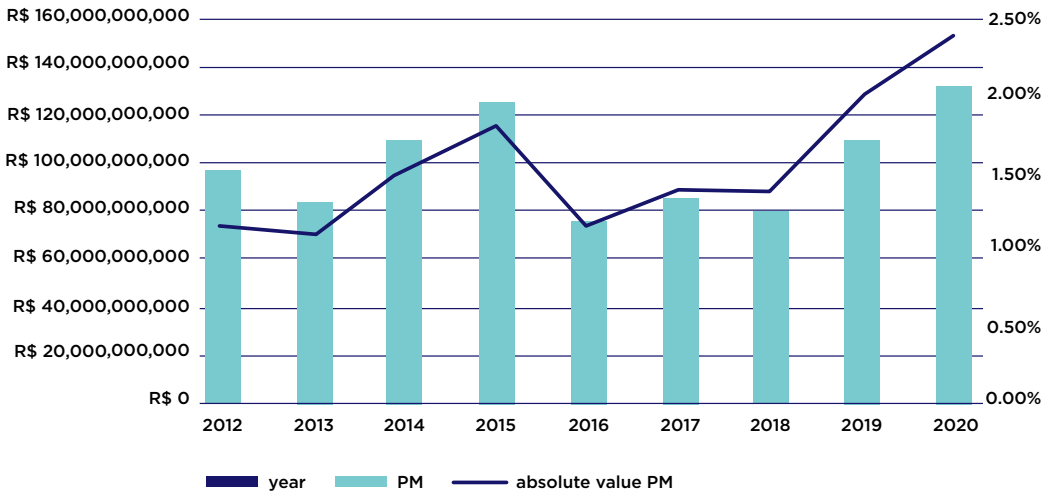


Source: developed by the authors themselves based on RAIS data.

Finally, the lack of coverage of informal work generates two effects on PM. First, the number of companies making up the CCI sector appears to be significantly lower, underestimating the true number. Second, the sector's average profit ends up being overestimated, since formal companies are more likely to earn higher profits. As mentioned earlier, these difficulties were overcome by use of the double weighting.

Just as in the case of WM, the calculation of the PM of the CCI sector is a cornerstone in the process of understanding the contribution of the CCI sector to the national GDP. For the year 2020, the PM of the CCI sector represented about 2% of the national GDP. Figure 4 shows the movement of the PM since 2012.

Graph 4: Profit mass of the CCI sector Massa de lucros da Ecic



Source: developed by the authors themselves based on RAIS and PNADc data.

INCOME FROM DIGITAL ACTIVITY

Despite that the consumption of digital cultural and creative goods and services is of growing importance for the CCI sector, the collection and inclusion of data concerning this consumption is still very incipient in national accounts, especially in GDP statistics (MOREAU, 2022). Rey (2022) states that there is also an unexplored field in terms of the statistics on e-commerce for the digital economy, a field that has gained strength due to a trend for the "platformization" of goods and services offered by the creative economy, generating an increased demand for the monetization and online offer of cultural goods and services. Currently, not all of these factors are duly considered in the calculation of the PIB of the creative sectors.

One of the greatest difficulties in measuring the size of digital activity in the creative economy is owing to the fact that a large portion of the consumption of these goods is not paid for by the consumer; in other words, the services are offered free of charge, exchanged for consumer data (as in the case of nontransactional digital platforms), or the consumers are subsidized through the purchase of advertising. Therefore, unless the income perspective is applied, the size of the digital activity in the creative economy is unlikely to be reflected in the PIB calculation (MOREAU, 2022).[14]

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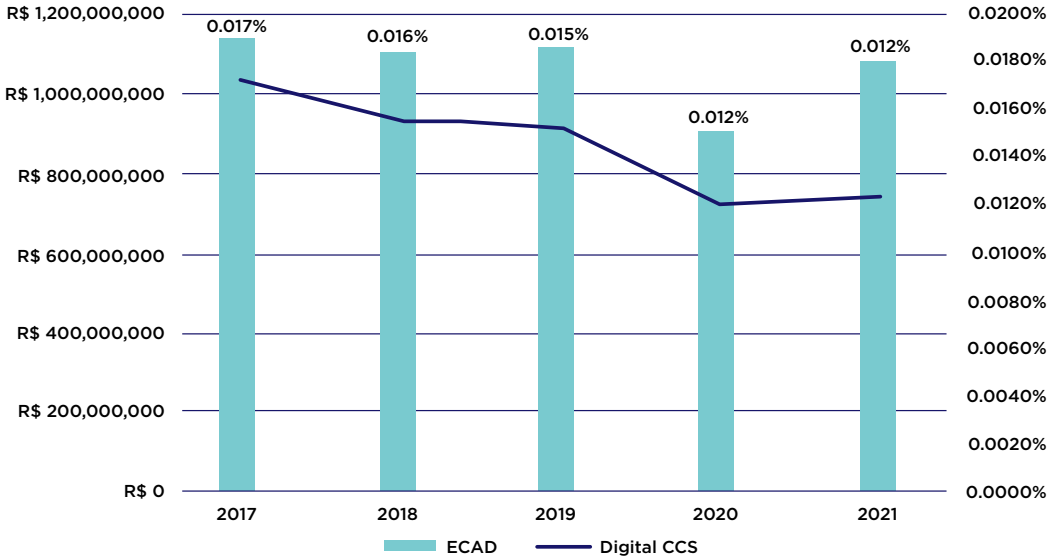
Graph 5 shows the participation of digital income. The low value reported is not necessarily related to the low relevance of digitization in the creative and cultural industries. Rather, the observed low value is mainly due to difficulties in measuring these incomes. UNESCO (2022) reports that, in 2020, 62.1% of total revenue from recorded music worldwide came from streaming, and video-on-demand subscriptions are still

on the rise. It can therefore be safely stated that in regard to digitization there is a large gap between what is produced and what can be accounted for as income, especially in the cultural sector.

Graph 5: Income from digitization



Source: developed by the authors themselves based on ECAD data.

In addition to the aforementioned income, that arising from the gig economy – a labor market of intermittent jobs characterized by internet-based hiring and work – is another development of digitization that labor statistics have been unable to measure due to a lack of data. It is therefore necessary to increase coverage and to devise innovative means of statistical data collection, in order to address the measurement challenges posed by the digital economy. Agreements between digital platforms and governments could generate a further source of statistical information for statistical institutes.

INDICATORS EXTRACTED FROM THE ROUANET LAW

The Rouanet Law [15] data reveal a great deal of potential, insofar as the extracted database allows for the visualization of countless economic activities and hiring models, thus being an excellent way to calculate intermittent or freelance work and to develop a proxy for rentals (rental of sound equipment, clothing, exhibition spaces, etc.), which are very important for the CCI sector. The extracted database contains nearly 600,000 observations and spans the period from 2009 to the first semester of 2022. Graph 6, below, shows the distribution of values for all categories considered rentals in the Rouanet Law database.[16]

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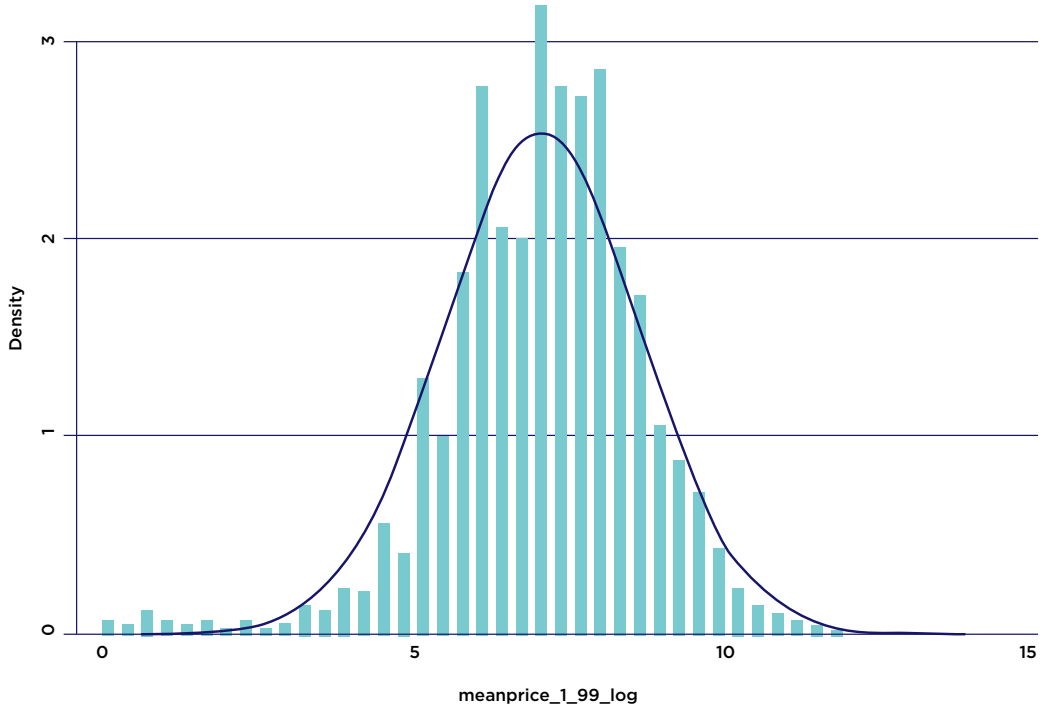
Graph 6: Rouanet Law Data
(logarithmic scale)



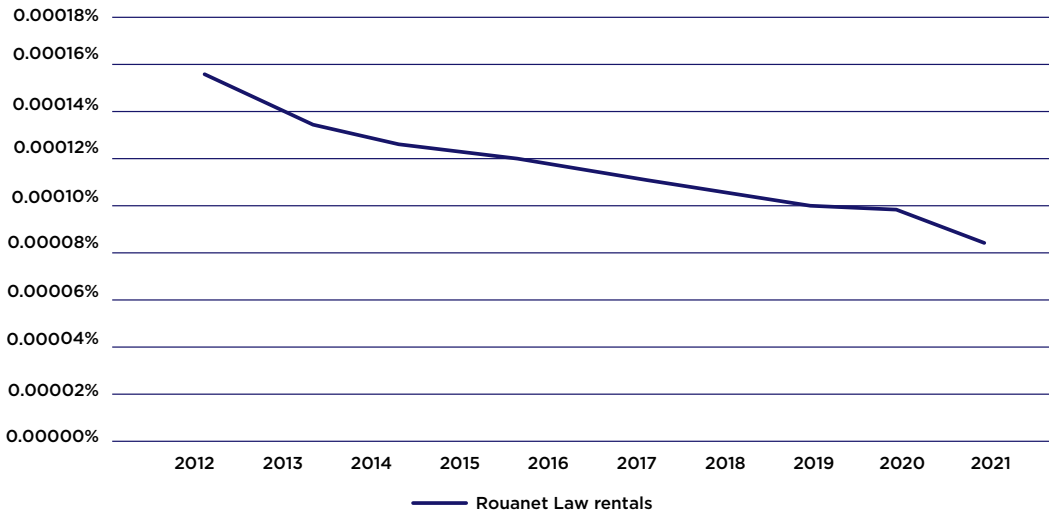
Source: developed by the authors themselves based on data extracted from SalicNet.

Despite the wealth of information in the extracted data and the possibility of conducting analyses concerning occupations and inequality of access to culture by region and municipality, the database does not offer adequate tools for researchers to conduct certain comparisons, such as between different sorts of income. As previously mentioned, the data from the Rouanet Law were introduced to demonstrate the potential of this information, despite the methodological restrictions it presents, mainly the lack of temporal information.

The downward trend seen in Graph 7 can be explained by the lack of a temporal unit in the Rouanet Law accountability database. Consequently, the simple average of the sum of rentals between the years 2009 and 2022 does not allow us to identify the values that correspond to the respective years. The value of rentals extracted from the database remains fixed, even though the value of GDP varies due to factors such as inflation and the growth of the Brazilian economy. The fixed value of the rentals represents less as the years go by.

It is argued that by combining databases it would be possible to develop a proxy for measuring the mass rentals of the CCI sector. Due to limitations found in the Rouanet Law database, however, the development of such a proxy remains as a goal for future research. Analysis of Rouanet Law accountability data reveals that intermittent or freelance[17] hirings represent 32.8% of all the hirings in the database and, in terms of value, they represent 32.65% of the total amount calculated from the accountability reports.

Graph 7: Rouanet Law data



Source: developed by the authors themselves based on data extracted from SalicNet.

TAXES ON THE CCI SECTOR (GOVERNMENT REVENUE)

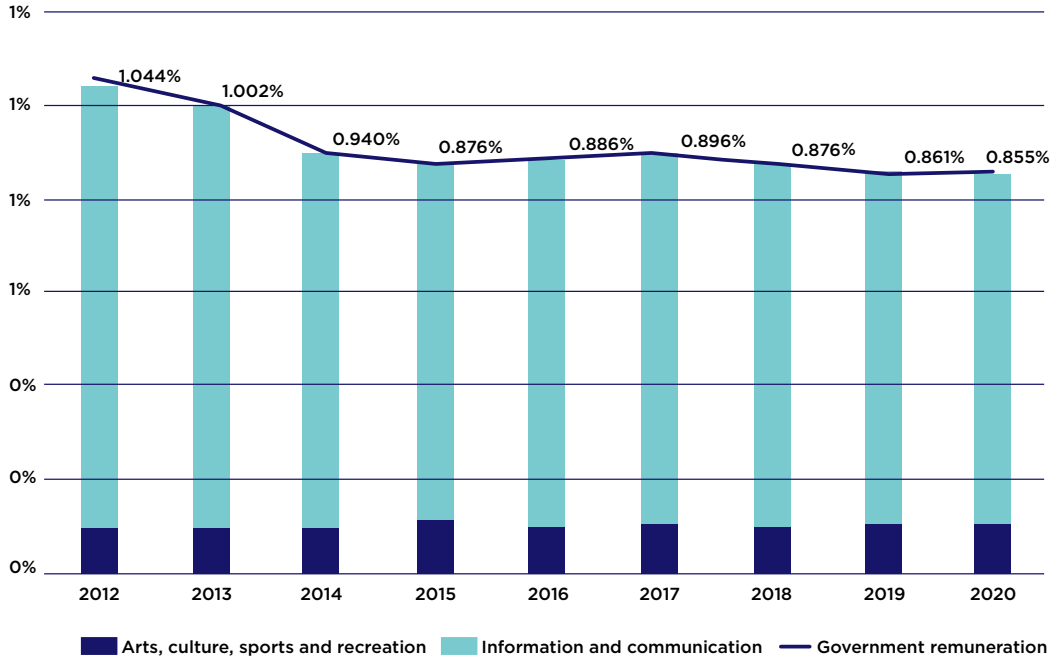
As is the case of profits, wages, and rents, which are forms of remuneration, when adopting the income approach it is likewise important to calculate the government's revenue extracted from the CCI sector. These revenues are in the form of taxes paid by economic agents in the sector along with taxes levied on creative and cultural production. These are, therefore, taxes paid by workers and companies and taxes on products, services, and production.

Taxes on products are those paid per unit of the good or service, which are levied on production, sale, and importation, or when the good or service is exported, transferred or delivered, or even when it is intended for one's personal consumption or for the formation of one's own capital. Other taxes on production include taxes on labor or remunerations and fees paid in the process of specific economic activities.[18]

Thus, taxes [19] on the following categories are accounted for: employee compensation, in the form of wages, together with actual and imputed social contributions; gross mixed income; gross operating surplus; taxes on production and imports; and subsidies for production and imports (the latter of which enter the calculation with a negative sign). [20]

To calculate the government revenue, the Tables of Resources and Uses (TRU), specifically the level-20 tables – 2010–2020 – a division level of CNAE 2.0 [National Classification of Economic Activities 2.0], made available by the IBGE,[21] were used as a database. The aforementioned table presents information that has been disaggregated by the CNAE and can provide information on the sectoral relationships between agents within the Brazilian economy (government, households, and companies). Graph 8, below, shows the government revenue from the CCI sector since 2012.

Graph 8: Government revenue from the CCI sector



Source: TRU[22] – IBGE.

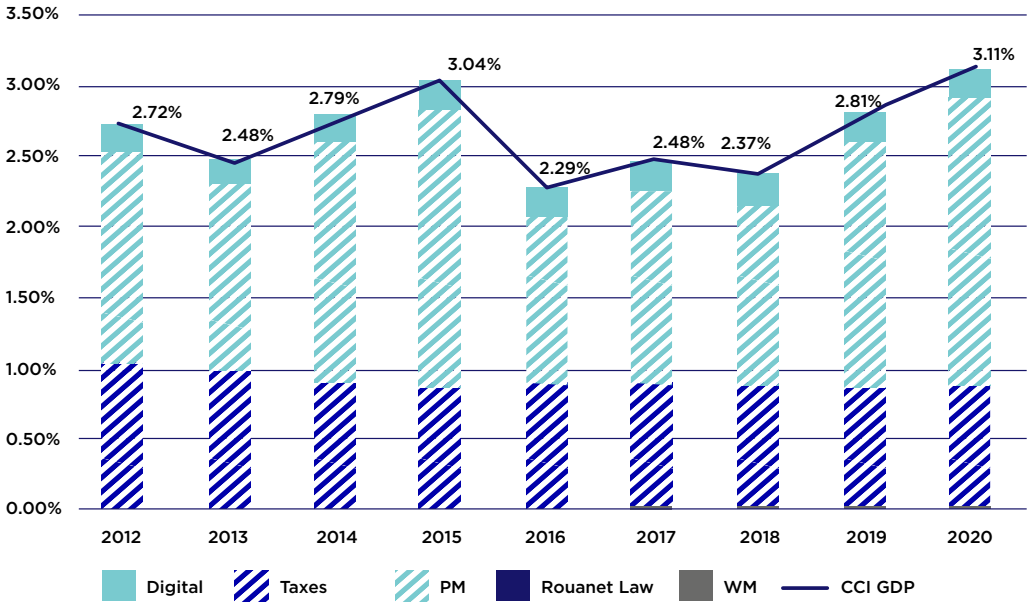
To calculate government revenue, the total net taxes excluding subsidies for the "arts, culture, sports and recreation"[23] and "information and communication" sectors were extracted from the TRU. As can be seen in Graph 8, revenue from the CCI sector has been declining in recent years. Part of this decline can be explained by the austerity policies implemented during the administration of former Brazilian President Dilma Rousseff, since declines in public spending are associated with reductions in government revenues (MELLO; ROSSI, 2017).

RESULTS

Graph 9 presents the result of the measurement of the GDP of the CCI sector disaggregated by wage mass, profit mass, government revenue, rents (Rouanet Law), and the various sorts of income extracted from the digital sector. The values presented are relative to the national GDP at market prices.[24] It can be seen that the GDP of the CCI sector closely followed the dynamics of the Brazilian economy. As in the case of the Brazilian economy, after 2015 the sector experienced a relatively strong decline – due to austerity policies and the consequent period of recession – followed by a recovery period.

The low representation of second incomes, rentals, and income arising from the digital sector somehow distorts both the composition and the value.

Graph 9: GDP of the CCI sector

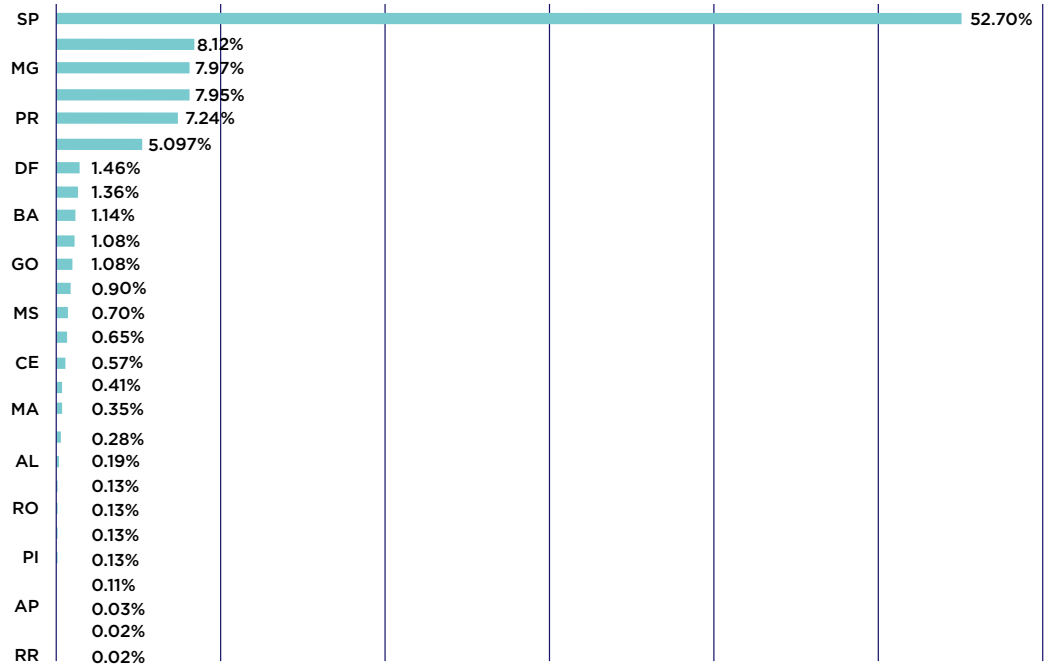


Source: developed by the authors themselves.

Profit mass and taxes represent a significant part of the CCI sector's GDP. This dynamics seems to be a consequence of the sector's characteristics, including the presence of individual micro-entrepreneurs and small companies without employees,[25] as well as the difficulties in measurement pointed out by the present study. In other words, the low representation of second incomes, rentals, and income arising from the digital sector somehow distorts both the composition and the value. [26]

Besides national GDP, it is very common to calculate the GDP for smaller segments of an economy, such as the GDP of states and municipalities, which is done by the IBGE in Brazil. In this regard, the states whose GDP is most widely reported in the literature stood out as the main ones in terms of participation. The state of São Paulo is an outlier in this context, as its participation in the GDP of the CCI sector significantly surpasses that of other states. The states of Rio de Janeiro, Minas Gerais, Santa Catarina, Paraná, and Rio Grande do Sul stand out as the second group, with participations that are very close to each other in percentage terms.

Graph 10: Estimation of the GDP of the CCI sector, percentage of contribution by state



Source: developed by the authors themselves.

CONCLUSIONS AND RECOMMENDATIONS

As seen previously, the contribution of the creative and cultural industries (CCI) sector to the national GDP represented approximately 3.1% for the year 2020. For 2022, the postpandemic recovery of the sector is likely to increase its representation, which can be seen as a solid contribution to the growth of the Brazilian economy. Nevertheless, despite the growing recognition of the importance of the CCI sector in recent years, this study shows that these advances have not necessarily translated into better statistics for the sector.

Despite their best efforts, researchers who study the creative economy end up working with imprecise or nonexistent data, which can result in the poor formulation of policies for promoting the sector or may contribute to higher rates of unemployment and informal work. As a solution to the statistical and methodological challenges pointed out by this study, collaboration between the State and the private sector for the production of data is necessary for a better understanding of the CCI sector.

By using an approach that includes several new aspects for calculating the CCI sector's GDP, our aim is to open a new front of research in the literature concerning this sector, thereby overcoming problems or improving the results obtained in recent years by researchers in this area. The recommendations arising from this work are the result of limitations faced during its realization, which mainly involved limitations in the data, either due to its not being available or its being provided in ways unsuitable for economic research.

- The provision of microdata on revenues and profits is very important for the CCI sector; in other words it is important to provide public access to

data which in many cases has already been collected by existing research on these items.

- Providing and organizing a database concerning the Rouanet Law accountability information could be highly beneficial for the sector, creating an excellent tool for research on the CCI sector. The many possible uses of this data would include its use as a tool for identifying inequalities of access to cultural production.
- Informal work in the CCI sector requires special attention, insofar as it is an intrinsic characteristic that is often the standard of interaction between players in the sector, rather than a condition, as in other sectors.
- Digitization of the creative economy has taken great strides in recent years, and participation of digital revenues in the CCI sector's GDP has likewise been increasing. The ability to generate statistics on transactions in the digital field has not, however, kept pace with this development. A mapping of these transactions could therefore contribute significantly to a better measurement of the sector's GDP as well as to an understanding of the transformations derived from digitization.
- The aforementioned effort would also be relevant for understanding and measuring the sector's exports, especially those made through digital platforms (streaming, production by freelancers, etc.).
- There is a clear predominance of SMEs in the CCI sector. Policymakers should therefore pay special attention to these companies in the policy formulation process.
- In regard to the disaggregated data on income tax provided by the CNAE, a large difference was found between the description of its information in comparison to the information in the database made available by the official agencies, which is very important for calculating GDP. Therefore, increased availability of the disaggregated data could improve the capacity to measure the CCI sector's GDP.
- Agreements between governments and digital platforms could help in mapping the gig economy[27] and income from streaming, e-learning platforms, etc., which are revolutionizing relationships in the sector. OBS

HOW TO CITE THIS ARTICLE
VALIATI, Leandro *et al*. "Produto Interno Bruto da Economia da Cultura e das Indústrias Criativas: uma abordagem pela ótica da renda." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

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NOTES

1. The degree of data disaggregation refers to how much of the original raw remains available for inquiry. Data with a high level of disaggregation are those in which smaller units of data can be accessed, while those with a low level of disaggregation are those in which only large units can be accessed.
2. Valiati and Morrone (2014) define cultural activity as the set of human products and activities made and carried out mainly with the purpose of creating, expressing, interpreting, preserving and transmitting symbolic content.
3. Moreover, a portion of cultural production is not priced, but rather characterized by the generation of linkages, such as art exhibitions in museums, independent cultural movements, etc. Navarrete (2022) also underscores the economic contribution, which is neither priced nor accounted for, of cultural production present in online repositories, online museums, etc., while Sacco (2022) discusses the inability of the traditional System of National Accounts to capture new cultural productions produced through the wide range of existing digital platforms.
4. Cauzzi (2019) demonstrates that using RAIS as the main tool for measuring the creative intensity of the Brazilian economy – insofar as its data does not consider informal or autonomous work, which are common in the cultural and creative sector – ends up biasing the results of calculations made to determine creative intensity. Therefore, the PNADc, a survey produced by the IBGE, presents the advantage of capturing informal work as well as formal work.
5. It should be noted that architecture, at the available level of disaggregation, is accounted for together with engineering services, technical activities related to architecture and engineering, and technical testing and analysis (Table 2). Since architects are part of the group of creative workers and engineers are not, it is to be expected that the architectural sector, by itself, has a higher intensity than the engineering sector.
6. Besides the variables mentioned, interest rates and income from capital should be included in the calculation. The current databases, however, did not allow for the inclusion of this variable.
7. The PNADc replaced the Annual PNAD, which ended in 2015, and seeks to monitor indicators of population and the formal and informal labor markets in Brazil. This survey is issued quarterly for standard disclosure with a larger set of indicators. There are, however, monthly, annual, and variable publications that complement the information presented by the survey. The PNAD and PNADc have been

widely used in studies on the labor market of the culture and creative industries sector. (FERREIRA NETO; FREGUGLIA; FAJARDO, 2012; DA SILVA; ZIVIANI, 2021; OLIVEIRA; ARAÚJO; SILVA, 2013; MACHADO et al., 2021).

8. Detailed information concerning the variables can be found in the PNADc dictionary: dicionario_das_variaveis_microdados_PNADC_maio_2015.xls (live.com).

9. The expansion factors provided by the PNADc are calculated at the municipal level, while the calculated national distribution is the sum of the distributions at the municipal level.

10. The expansion of the sample was done using variable V1028, which is defined by the following technical descriptions: household weight and weight of individuals, at 6 digits and 8 decimal places; and quarterly weight with correction for noninterview with calibration by population projection.

11. In the PAS, the sum of gross revenue from the provision of services, resale of goods, and other activities was used. In the case of PIA-Enterprise, total revenue for industrial companies was used.

12. Unfortunately, the data currently in the public domain does not permit a more elaborate analysis of the relationship between profits and the size of the companies in the CCI sector, insofar as it was not possible to ascertain profits by company size with the databases used in this study.

13. An outlier is a value that deviates widely from the average or is extremely atypical for the presented series, which can lead to misinterpretation of the results. In the present study, outliers were controlled using the winsorization method, concerning which more details are presented in the appendix. In the winsorization process, the value of an outlier is changed to the value of the nearest observation that is not an outlier. In the case of extremely high values, although it is possible that the income of an individual, such as a famous artist, actually is that high, this single observation is not representative of the population.

14. At the same time, cultural or technological goods, such as music and internet repositories, generate more value than can be estimated at first sight. In other words, the social benefit of these goods is not accounted for in the calculations of GDP. It is crucially important to develop tools and initiatives that allow for a better measurement of the contribution of these goods and services to economic activity (BRYNJOLFSSON; COLLIS, 2019).

15. To extract data concerning the Rouanet Law, a tool called web scraping was used, by which data is extracted from the web. It was necessary to use this tool due to the absence of a structured database.

16. To arrive at the distribution format presented in Graph 6, the values were "winsorized" in order to control outliers by truncating at the 1st and 99th percentiles.

17. The contracts classified in the database as being on a fee, project or service basis were considered as being hired on an intermittent or freelance basis.

18. Available at: https://ftp.ibge.gov.br/Contas_Nacionais/Sistema_de_Contas_Nacionais/Notas_Metodologicas_2010/19_margens_e_impostos_20200928.pdf. Retrieved on December 11, 2022.

19. Sources of information and types of taxes recompiled: import and export tax; tax on industrialized products; income tax; tax on financial operations (IOF); social contribution on net revenues (Cofins); Social Integration Program/Program for the Training of Public Servants (PIS/Pasep CSLL); withholding tax on financial transactions (CPMF); other taxes administered by the Federal Revenue of Brazil (RFB). Sources of information: STN; SiafiI; FGTS; Sesc; Sesi; Senai; Senac; DIPJ; Cempre (IBGE); Finbra.

20. In addition to the aforementioned taxes, it is important to measure the collection of income tax on individuals (IRPF) from the economic activities in the cultural and creative industries sector. Unfortunately, despite being present on the Brazilian government website (https://dados.gov.br/dados/conjuntos-dados/resultado-da-arrecadacao) there is little data concerning this type of collection.

21. Available at: https://www.ibge.gov.br/estatisticas/economicas/servicos/9052-sistema-de-contas-nacionais-brasil.html?=&t=resultados. Retrieved on December 13, 2022.

22. Available at: https://ftp.ibge.gov.br/Contas_Nacionais/Sistema_de_Contas_Nacionais/2017/indice_de_tabelas.pdf. Retrieved on December 13, 2022.

23. The level 20 of disaggregation of the Resource and Use Tables (TRU) does not permit the separation between arts, culture, sports, and recreation. It would therefore be necessary to use more disaggregated data, which would demand an empirical effort and a great deal of time, which is beyond the scope of this work.

24. System of quarterly national accounts | IBGE.

25. Unfortunately, the presence of individual microentrepreneurs in the sector could not be measured with the databases used in this study.

26. In 2020, the GDP of the CCI sector consisted as follows, in decreasing order: profit mass (2.04%); taxes (0.86%); wage mass (0.20%), digital (0.01%) and Rouanet Law (0.0001%).

27. The gig economy, or the economy of intermittent work, is a new sort of employment mode that is gaining strength and impacting labor markets worldwide, and it has been fully integrated into the CCI sector for years. For some professionals in the CCI sector, intermittent work is a supplement to a primary income not necessarily derived from an occupation in the cultural or creative field. In the case of actors, musicians, IT technicians, and developers, as well as other professionals, intermittent income is characteristically their main source of income. Professionals can resort to the gig economy when seeking supplementary income, temporary jobs during periods of labor transition, and flexibility. This work is often carried out through digital platforms that connect employers, workers, and clients. Despite the benefits of labor flexibility and opportunities for entrepreneurship, due to the instable nature of remuneration and the absence of workers' rights, this type of work is characterized as informal and is assigned a precarious status.

Appendices

APPENDIX A – DATABASES USED

Annual Social Information Report (RAIS)

This report provides information on formal labor activity in Brazil, with data related to companies and workers. The data is provided by employers and legal entities, on an annual basis. The databases are presented in two different ways: from the viewpoint of the enterprises and from that of the wage-earning workers. Insofar as it covers 97% of formal employment in Brazil, the RAIS is used as one of the main tools for measuring the cultural labor market in Brazil. However, its use as the main tool for measuring the sector leads to a series of problems, the biggest being its lack of coverage of the informal sector. For this reason, Da Silva and Ziviani (2021) argue that PNAD would be a more suitable instrument for measuring the labor market in the culture sector.

The Continuous National Household Sample Survey (PNADc)

The PNADc replaced the Annual PNAD, which ended in 2015, and is aimed at monitoring population indicators and formal and informal labor market indicators in Brazil. This survey is published quarterly in a standard issue with a larger set of indicators, but there are also monthly, annual, and variably issued publications that complement the information furnished by the survey.

Due to its broader territorial coverage and better coverage of nuances in the labor market, the PNADc is an outstandingly solid database for studying the dynamics of first and second jobs, as well as their respective working hours, necessary for mapping and calculating wages in the cultural sector. Since it combines two nationwide databases concerning formal employees, it can provide a more accurate measurement of wages received in the sector. Moreover, the PNADc allows for conclusions about supplementary income, that is, income of workers whose main occupation is in another sector, but who have second jobs in the cultural sector.

The Annual Commerce Survey (PAC)

The Annual Commerce Survey (PAC),[1] published since 1988, is focused on the formally constituted commercial company whose main source of income arises from commercial activity. Its main goal is to compile information on the basic structural characteristics of companies that derive their income mainly from commerce. The PAC survey collects the following economic and financial information: gross and net revenue; commercial margin; number of companies and local units; number of staff; personnel expenses; financial, operational and nonoperational expenditures; purchase and stocks of merchandise for resale; acquisitions and sales of fixed assets, and other aspects. The survey is issued annually. Its geographical scope is national, providing results for Brazil, large regions and federal units.

1 Available at: Pesquisa Anual de Comércio | IBGE. Retrieved on December 12, 2022.

The Annual Services Survey (PAS)

The Annual Services Survey (PAS)[2] is published annually and provides information on the nonfinancial service sector in Brazil. Like the PAC, the PAS only investigates formally constituted companies whose main sources of revenue arise from nonfinancial services.

The PAS was launched in 1998 with the aim of providing the necessary data for characterizing the structure of nonfinancial services in Brazil, with the exception of the fields of health and education. The survey currently investigates companies that operate in the following sectors, grouped on the basis of the CNAE 2.0 classes: services provided mainly to families; information and communication services; professional, administrative and complementary services; transportation, auxiliary transportation services and postal services; real-estate activities; maintenance and repair services; and other service activities.

The economic and financial data provided by the survey include: gross and net revenues; number of companies; number of staff; payroll expenses; financial, operational and nonoperational expenditures; acquisitions and sales of fixed assets, and other aspects. Its geographical scope is national, providing results Brazil, large regions and federal units.

The Rouanet Law – Brazilian Cultural Incentive Law

The Rouanet Law (Law No. 8.313/91) is considered the main cultural incentive mechanism in Brazil and established the National Program for Support to Culture (Pronac). To achieve this goal, the law sets forth regulations concerning how the federal government should provide resources for carrying out artistic and cultural projects.

Digital – ECAD, streaming, and property rights

The data used to calculate remuneration from digital sources were extracted from ECAD, the World Intellectual Property Organization (WIPO) database, National Accounts, and remittances of Brazil's Central Bank (Bacen).

ECAD serves as the link that connects composers, performers, musicians, publishers, and phonographic producers to the channels and spaces used by consumers to listen to music. ECAD has one of the largest databases of musical works in Latin America, which includes 16 million musical works, 13 million sound recordings, and 305,000 audiovisual works.[3]

2 Available at: Pesquisa Anual de Serviços | IBGE. Retrieved on December 12, 2022.
3 Information obtained from the ECAD website. Available at: https://www4.ecad.org.br/. Retrieved on December 13, 2022.

APPENDIX B – SECTORS AND CATEGORIES OF THE CULTURE AND CREATIVE INDUSTRIES SECTOR BY DATA SOURCE

Table 1: Creative sectors and derived sectorial categories

CNAE 2.0 Classification	Sector	Category
13002	Manufacture of textile items, except clothing	Fashion
14001	Manufacture of clothing and accessories, except custom-made items	
14002	Manufacturer of custom-made clothing articles	
13001	Fiber preparation, spinning and weaving	Artisanal activities
16002	Manufacture of wood, cork and braided material products, except furniture	
32001	Manufacture of jewelry, costume jewelry and similar goods	
58000	Publishing and editing integrated with printing	Publishing
60002	Television activities	Cinema, radio and TV
59000	Motion picture, production of video and television programs, sound and music recording	Music
60001	Radio activities	
62000	Information technology (IT) services activities	Development of digital games and software Other information technology services
71000	Architecture and engineering services and related technical activities; Technical analyses and testing	Architecture
73010	Advertising	Advertising and business services
63000	Information services activities	
74000	Other professional, scientific and technical activities not classified elsewhere	Design
90000	Artistic, creative and performance activities	Performing arts Visual arts
91000	Activities linked to cultural and environmental heritage	Museums and heritage

Source: elaborated by the authors themselves based on CNAE 2.0 Domiciliar, of IBGE (2019).

Table 2: Creative occupations and derived sectorial categories

Category	Code (COD PNADc	Description
Advertising and business services	1221	Sales and marketing executives
	1222	Advertising and public relations executives
	2431	Advertising and marketing professionals
	2432	Public relations professionals
Architecture	2161	Building architects
	2162	Landscape architects
	2164	City planners and traffic engineers
	3118	Technical drafters and designers
Artisanal activities	7312	Makers and tuners of musical instruments
	7313	Jewelers and gemstone cutters, artisans of precious and semi-precious metal
	7317	Artisans of stone, wood, wicker, and similar materials
	7318	Artisans of fabrics, leather, and similar materials
	7319	Unspecified artisans
	7534	Upholsterers, mattress makers, and related workers
Fashion	7531	Tailors, dressmakers, milliners, and furriers
	7532	Skilled workers in clothing preparation
	7533	Sewers, embroiderers, and related workers
Design	2163	Designers of products and clothing
	2166	Graphic and multimedia designers
	3432	Interior designers and decorators
	7316	Poster writers, decorative painters, and printmakers
Cinema, radio and TV	1431	Managers of sports, entertainment, and cultural centers
	2654	Directors of film, theater, and related fields
	2656	Announcers on radio, television, and other media
	3521	Broadcasting and audiovisual recording technicians
Music	2354	Other music teachers
	2652	Musicians, singers and composers
Other information technology services	1330	IT and communications service managers
	2356	Information technology instructors
	2521	Database designers and administrators
	2522	Systems administrators
	2523	Computer network professionals
	2529	Other database and computer network professionals
	3511	Technicians for IT and communications operations
	3512	Technicians for IT and communications user support
	3513	Computer network and system technicians
	3514	Web technicians
Development of digital games and software	2511	Systems analysts
	2512	Software developers
	2513	Web and multimedia developers
	2514	Applications programmers
	2519	Other analysts and developers of software and multimedia
Publishing	2641	Writers
	2642	Journalists
	2643	Translators, interpreters and linguists

Category	Code (COD PNADc	Description
Museums and heritage	2621	Archivists and museum curators
	2622	Librarians, documentalists and related professionals
	3433	Museum, gallery and library technicians
Visual arts	2355	Other arts teachers
	2651	Visual artists
	3431	Photographers
Performing arts	2653	Dancers and choreographers
	2655	Actors
	2659	Other creative and performing artists
	3435	Other middle-level professionals in cultural and artistic activities
	5241	Fashion, art and advertising models
Gastronomy	3434	Kitchen chefs

Source: elaborated by the authors themselves based on IBGE data (2019).

Table 3: CNAE 2.0 codes and derived sectorial categories

CNAE 2.0 Subclass	CNAE 2.0 description	Sectorial category
7111100	Architectural services	Architecture
9003500	Management of spaces for performing arts, shows, and other artistic activities	Performing arts
9001903	Dance production	
9001901	Theater production	
9001902	Music production	
9001906	Sound and lighting activities	
9001999	Performing arts, shows, and other complementary activities not previously specified	
9001905	Production of rodeo shows and similar events	
9001904	Production of circus shows, puppet shows and similar events	
9002701	Activities of visual artists, independent journalists, and writers	Visual arts
9002702	Restoration of artworks	
7420001	Photographic production activities, except aerial and underwater photography	
7420003	Photographic laboratories	
7420002	Aerial and underwater photography production activities	
3212400	Costume jewelry and similar article manufacturing	Artisanal activities
1623400	Cooperage and manufacturing of wooden packaging items	
1621800	Laminated wood and plywood, manufacture of pressed and agglomerated wood articles	
1629301	Miscellaneous wooden article manufacturing, except furniture	
1629302	Manufacture of miscellaneous articles from cork, bamboo, straw, wicker, and other braided materials, except furniture	
1622699	Manufacture of other carpentry articles for construction	
1622602	Manufacture of wooden frames and wooden parts for industrial and commercial installations	
1622601	Manufacturing of prefab wooden houses	
3211601	Gem cutting	
3211602	Manufacture of jewelry and goldsmithing articles	
3211603	Minting of coins and medals	

CNAE 2.0 Subclass	CNAE 2.0 description	Sectorial category
6021700	Free-to-air TV activities	Cinema, radio and TV
6010100	Radio activities	
5914600	Motion picture screening activities	
5913800	Motion picture, video, and television program distribution	
6022502	Activities related to pay TV, except program providers	
6022501	Programmers	
5911199	Other cinematographic, video, and television program production activities not elsewhere specified	
5911102	Advertising film production	
5911101	Cinematographic studios	
5912002	Sound mixing services in audiovisual production	
5912099	Other cinematographic, video, and television program post-production activities not specified elsewhere	
5912001	Dubbing services	
7420005	Microfilming services	
7420004	Filming of parties and events	
6311900	Data processing, application service providers, and web hosting services	Other information technology services
6209100	Technical support, maintenance, and other services for IT	
6204000	IT consulting services	
6201502	Web design	Development of digital games and software
6201501	Custom-made computer programming services	
6201500	Custom-made computer programming services (Deactivated)	
6203100	Development and licensing of noncustomizable computer software	
6202300	Development and licensing of customizable computer software	
7410202	Interior decoration	Design
7410201	Design	
7410299	Other design activities not specified elsewhere	
7410203	Product design	
5812302	Publishing of nondaily newspapers	Publishing
5812301	Publishing of daily newspapers	
5812300	Newspaper publishing (Deactivated)	
5822100	Newspaper printing and publishing (Deactivated)	
5822101	Printing and publishing of daily newspapers	
5822102	Printing and publishing of nondaily newspapers	
5821200	Book printing and publishing	
5811500	Book publishing	
5819100	Publishing of directories, lists, and other printed products	
5829800	Printing and publishing of directories, lists, and other printed products	
5823900	Printing and publishing of magazines	
7490101	Translation, interpretation, and related services	
5813100	Magazine publishing	

CNAE 2.0 Subclass	CNAE 2.0 description	Sectorial category
1413402	Tailoring of professional clothing	Fashion
1413403	Manufacture of professional clothing	
1413401	Manufacture of nontailored professional clothing	
1340599	Other finishing services for threads, fabrics, textile products and clothing	
1340501	Printing and texturizing services for threads, fabrics, textile products and clothing	
1340502	Bleaching, dyeing and twisting services for threads, fabrics, textile products and clothing	
1412603	Third-party manufacture of clothing, except underwear	
1412602	Production services for tailored clothing, except for underwear	
1412601	Production services for clothing, except for underwear and tailored clothing	
1411801	Production services for underwear	
1411802	Third-party manufacture of underwear	
1351100	Manufacture of textile products for household use	
1359600	Manufacture of other unspecified textile products	
1330800	Manufacture of knitted fabric	
1421500	Sock manufacturing	
1354500	Manufacture of special fabrics, including textile products	
1422300	Manufacture of clothing articles produced in knitting and crocheting mills, except socks	
1414200	Manufacture of clothing accessories, except for safety and protection	
1352900	Manufacture of tapestry products	
1353700	Manufacture of cordage products	
9102302	Restoration and conservation of historical places and buildings	Museums and heritage
9102301	Museum activities and exploration of historical places and similar attractions	
9101500	Library and archive activities	
5920100	Sound recording and music editing activities	Music
7312200	Services for advertising spaces, except for media vehicles	Advertising and business services
7311400	Advertising agencies	
7490199	Other unspecified professional, scientific and technical activities	
7490105	Services for sports, cultural and artistic professionals	
7319099	Other advertising activities unspecified above	
7319002	Sales promotion	
7319003	Direct marketing	
7319004	Consulting for advertising	
7319001	Creation of stands for fairs and exhibitions	
6399200	Other information services activities unspecified above	
6319400	Portals, content providers, and other internet services	
6391700	News agencies	

Source: developed by the authors themselves based on the CNAE 2.0 system.

Table 4: Groupings of PAS and PIA that include one or more creative sectors

PAS/PIA grouping	CNAE 2.0 codes in the PAS/PIA grouping	Creative sectors that are in the grouping
PAS – Cultural, recreational and sports activities	90.01-9, 90.02-7, 90.03-5, 92.00-3, 93.11-5, 93.13-1, 93.19-1, 93.21-2, 93.29-8	90.01-9, 90.02-7, 90.03-5
PAS – Technical-professional services	69.11-7, 69.20-6, 70.20-4, 71.11-1, 71.12-0, 71.19-7, 71.20-1, 73.11-4, 73.12-2, 73.19-0, 73.20-3, 74.10-2, 74.20-0, 74.90-0	71.11-1, 73.11-4, 73.12-2, 73.19-0, 74.10-2, 74.20-0, 74.90-0
PAS – Computer and communication equipment maintenance and repair	95.11-8, 95.12-6	95.11-8
PAS – Information technology services	62.01-5, 62.02-3, 62.03-1, 62.04-0, 62.09-1, 63.11-9, 63.19-4	All are creative
PAS – Audiovisual services	60.10-1, 60.21-7, 60.22-5, 59.11-1, 59.12-0, 59.13-8, 59.14-6, 59.20-1	All are creative
PAS – Publishing and editing integrated with printing	8.11-5, 58.12-3, 58.13-1, 58.19-1, 58.21-2, 58.22-1, 58.23-9, 58.29-8	All are creative
PAS – News agencies and other information services	63.91-7, 63.99-2	All are creative
PIA – Manufacture of clothing and accessories	14.1, 14.2	All are creative
PIA – Manufacture of Textile products	13.1, 13.2, 13.3, 13.4, 13.5	All are creative
PIA – Manufacture of wood products	16.1, 16.2	All are creative
Manufacture of jewelry, costume jewelry and similar products	32.1	All are creative

Table 5: Equivalence between the PAS/PIA sectors and the derived sectorial categories

CNAE 2.0 Subclass	PAS/PIA sector	Category
1330800	13.3 – Manufacture of knit fabrics	Fashion
1340501	13.4 – Finishing of threads, fabrics and textile artifacts	
1340502	13.4 – Finishing of threads, fabrics and textile artifacts	
1340599	13.4 – Finishing of threads, fabrics and textile artifacts	
1351100	13.5 – Manufacture of textile artifacts, except clothing	
1352900	13.5 – Manufacture of textile artifacts, except clothing	
1353700	13.5 – Manufacture of textile artifacts, except clothing	
1354500	13.5 – Manufacture of textile artifacts, except clothing	
1359600	13.5 – Manufacture of textile artifacts, except clothing	
1411801	14.1 – Manufacturing services for clothing and accessories	
1411802	14.1 – Manufacturing services for clothing and accessories	
1412601	14.1 – Manufacturing services for clothing and accessories	
1412602	14.1 – Manufacturing services for clothing and accessories	
1412603	14.1 – Manufacturing services for clothing and accessories	
1413401	14.1 – Manufacturing services for clothing and accessories	
1413402	14.1 – Manufacturing services for clothing and accessories	
1413403	14.1 – Manufacturing services for clothing and accessories	
1414200	14.2 – Manufacture of knitted and crocheted articles	
1421500	14.2 – Manufacture of knitted and crocheted articles	
1422300	14.2 – Manufacture of knitted and crocheted articles	
1621800	16.2 – Manufacture of wooden, cork and plaited products, except furniture	Artisanal activities
1622601	16.2 – Manufacture of wooden, cork and plaited products, except furniture	
1622602	16.2 – Manufacture of wooden, cork and plaited products, except furniture	
1622699	16.2 – Manufacture of wooden, cork and plaited products, except furniture	
1623400	16.2 – Manufacture of wooden, cork and plaited products, except furniture	
1629301	16.2 – Manufacture of wooden, cork and plaited products, except furniture	
1629302	16.2 – Manufacture of wooden, cork and plaited products, except furniture	
3211601	32.1 – Manufacture of jewelry, costume jewelry, and similar articles.	
3211602	32.1 – Manufacture of jewelry, costume jewelry, and similar articles	
3211603	32.1 – Manufacture of jewelry, costume jewelry, and similar articles	
3212400	32.1 – Manufacture of jewelry, costume jewelry, and similar articles	

CNAE 2.0 Subclass	PAS/PIA sector	Category
6391700	News agencies and other information services	Advertising and business services
6399200	News agencies and other information services	
9001901	Cultural, recreational and sports activities	Performing arts
9001902	Cultural, recreational and sports activities	
9001903	Cultural, recreational and sports activities	
9001904	Cultural, recreational and sports activities	
9001905	Cultural, recreational and sports activities	
9001906	Cultural, recreational and sports activities	
9001999	Cultural, recreational and sports activities	
9002701	Cultural, recreational and sports activities	
9002702	Cultural, recreational and sports activities	
9003500	Cultural, recreational and sports activities	
5811500	Publishing and editing integrated with printing	Publishing
5812301	Publishing and editing integrated with printing	
5812302	Publishing and editing integrated with printing	
5813100	Publishing and editing integrated with printing	
5819100	Publishing and editing integrated with printing	
5821200	Publishing and editing integrated with printing	
5822101	Publishing and editing integrated with printing	
5822102	Publishing and editing integrated with printing	
5823900	Publishing and editing integrated with printing	
5829800	Publishing and editing integrated with printing	
5812300	Publishing and editing integrated with printing	
5822100	Publishing and editing integrated with printing	
5911101	Audiovisual services	Cinema, radio and TV
5911102	Audiovisual services	
5911199	Audiovisual services	
5912001	Audiovisual services	
5912002	Audiovisual services	
5912099	Audiovisual services	
5913800	Audiovisual services	
5914600	Audiovisual services	
5920100	Audiovisual services	Music
6010100	Audiovisual services	Cinema, radio and TV
6021700	Audiovisual services	
6022501	Audiovisual services	
6022502	Audiovisual services	
7111100	Technical-professional services	Architecture

CNAE 2.0 Subclass	PAS/PIA sector	Category
7311400	Technical-professional services	Advertising and business services
7312200	Technical-professional services	
7319001	Technical-professional services	
7319002	Technical-professional services	
7319003	Technical-professional services	
7319004	Technical-professional services	
7319099	Technical-professional services	
7410202	Technical-professional services	Design
7410203	Technical-professional services	
7410299	Technical-professional services	
7420001	Technical-professional services	Visual arts
7420002	Technical-professional services	
7420003	Technical-professional services	
7420004	Technical-professional services	Cinema, radio and TV
7420005	Technical-professional services	
7410201	Technical-professional services	Design
6201501	Information technology	Digital games and software development
6201502	Information technology	
6202300	Information technology	
6203100	Information technology	
6204000	Information technology	Other information technology services
6209100	Information technology	
6311900	Information technology	
6319400	Information technology	Advertising and business services
6201500	Information technology	Development of digital games and software

Source: developed by the authors themselves based on CNAE 2.0 and CNAE 2.0 Domiciliar data.

Museu | Image by Adriano Catenzaro

The Process of Calculating the GDP of the Culture and Creative Industries Sector by the Observatório Itaú Cultural | Interview

The process by which Observatório Itaú Cultural calculates the GDP of the culture and creative industries (CCI) sector is the outcome of a continuous joint effort, which relies on the collaboration of national and international specialists on this topic. In this meeting, Flávia Oliveira and Leandro Valiati talk about this process, discussing three aspects: (1) the importance of the project's motivations; (2) the challenges; and (3) the preliminary results of this indicator.

The planning and implementation of public policies for the growth and development of any country depends on the availability of reliable economic evidence and indicators. The identification and measurement of the value of various intangible and tangible activities, therefore, is an important mechanism for decision-makers in both the public and the private sphere. Among these mechanisms, gross domestic product (GDP) stands out as one of the main indicators used internationally for comparing economies, and is also used as a thermometer for the "health" of a given country's economy.

In view of the declining relative importance of the traditional industries, giving rise to unemployment and structural changes in the economy, there is a growing concern about the importance of the economic activity in the cultural and creative industries (OAKLEY, 2004).[1] Creativity thus emerges as an alternative for the creation of income, employment and wealth, underscoring the need to map and to measure the economic values of the activities related to it. Reflecting on a sector as dynamic as the creative field, however, demands that we pay close attention to the unique characteristics of this field, especially when it comes to calculating the sector's GDP. Therefore, the process of constructing the GDP of the CCI sector involved four essential steps, namely: (1) establishing which sectors to consider in this calculation; (2) mapping and identifying the databases available for estimating this economic indicator; (3) allowing for comparability among the estimations; and (4) offering the possibility of monitoring GDP by means of historical series.

Access the content by QR Code or by the link below: https://www.itaucultural.org.br/secoes/observatorio-itau-cultural/revista-observatorio-34-pib-economia-cultura-entrevista

For placing high value on the collaborative nature of the process of constructing the GDP of the CCI sector, the methodological choices in keeping with the four essential steps were discussed through consultation with national and interna-

tional specialists. Generally, these consultations resulted in five points of agreement among the specialists, namely, the need to: (1) include information concerning both formal and informal economic activity in the creative and cultural sector; (2) create tools that consider the multiple regional realities in Brazil, taking into account the diversity of creative expressions and artistic-cultural activities; (3) capture aspects related to social inequality in Brazil, expressed by divergences in access to culture, disparities of gender and race/color, social mobility and income concentration; (4) make sure that the estimations can be monitored periodically in a recurrent way, through the establishment of historical series; and (5) measure the values generated from the impacts of digitization in the creative sector, relative to access to culture through digital platforms, especially streaming. These and other important aspects related to the process and the motivations for the construction of the GDP of the CCI sector can be accessed in the first video of the series, at the following link:

VÍDEO 1

It is furthermore important to note that thinking about the creative economy in proposing economic indicators amenable to accurate measurement and periodic follow-up involves a series of specific challenges, especially in developing countries. Three important aspects thus emerge. First, Brazil possesses a historical, consolidated tradition in the production and systemization of public databases. However, due to inherent specificities and limitations of the traditional methodologies for measuring GDP, there is a need to select only certain sorts of information that correspond to this very restricted analytic spectrum. Second, due precisely to the superstructure of social inequalities in Brazil, it is necessary to include information on both formal and informal jobs, as well as aspects related to the concentration of income in the creative and cultural sector. This information has been extracted from the official databases and included in the calculation of the GDP for the CCI sector. Finally, there are specificities inherent to the dynamics of the creative and cultural sector, which involves activities that produce tangible and intangible impacts – such as the "positive externalities" of the cultural practices, giving rise to more diverse and inclusive societies – and, therefore, which may or may not be possible to measure/valuate in economic terms. Therefore, and in line with the contributions from national and international specialists concerning the sector's digitization, our estimation of the GDP of the CCI sector already considers information on intellectual property rights from the Central Bureau for Collection and Distribution (ECAD) of music. These challenges, and the way they are dealt with, are the theme of the second video of the series, at the following link:

VÍDEO 2

More specifically, in regard to the GDP of the CCI sector in Brazil, it should once again be noted that this calculation takes place as part of a process, under continuous construction and development, requiring a constant effort aimed at capturing the totality and diversity of the dynamics inherent to the sector, in view of the databases and the available levels of disaggregation. In practical terms, considering the income from formal and informal jobs (wage mass) the income of companies (profit mass) and other sources (up to the moment corresponding to the ECAD

data), the GDP of the CCI sector is equivalent to somewhere between 2% and 3.5% of Brazil's GDP in 2020. It should be noted that, despite the inherent limitations of the traditional approach to estimating GDP, coupled with the methodological choices adopted, the cultural and creative sector is among the ten most important sectors of the Brazilian economy.[2] This finding and other information about the estimated value of the GDP of the CCI sector in Brazil can be found in the third and last video of the series of the interview of journalist Flávia Oliveira with professor and researcher Leandro Valiati.

VÍDEO 3

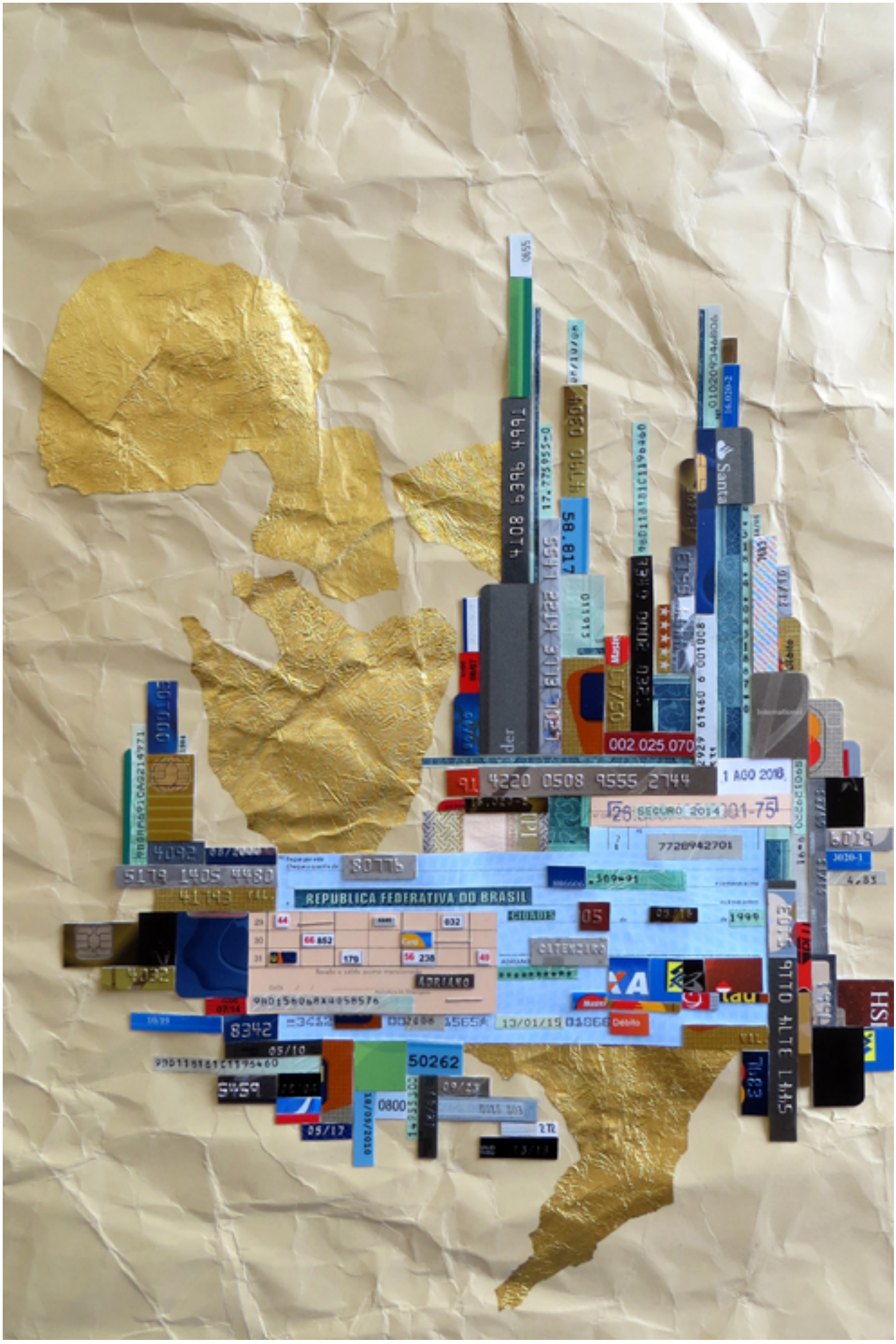
FLÁVIA OLIVEIRA
is a journalist. She is a commentator on GloboNews and a columnist in the newspaper *O Globo* and on CBN radio. She is a podcaster on the channel *Angu de grilo*. She serves on the executive board of Amnesty International Brazil and on the advisory boards of the organizations Uma Gota no Oceano, Centro de Estudos das Relações de Trabalho e Desigualdades (Ceert), Observatório de Favelas, Agência Lupa, Rede Liberdade, Instituto Sou da Paz, Instituto Ibirapitanga, Perifa Connection and the Museu do Amanhã.

LEANDRO VALIATI
is a professor and researcher in the area of the economy of culture and cultural industries in Brazil and in the United Kingdom. Due to his academic position, he had the opportunity to play an important role in the construction and execution of policies for the economy of the cultural and creative industries of all the administrations of the Ministry of Culture between 2010 and 2018.

NOTES

1. OAKLEY, K. "Not So Cool Britannia: The Role of the Creative Industries in Economic Development." *International Journal of Cultural Studies*, v. 7, issue 1, pp. 67–77, 2004. Available at: https://journals.sagepub.com/doi/abs/10.1177/1367877904040606. Retrieved on: October 31, 2022.

2. The ten sectors that make the greatest contribution to Brazilian GDP (IBGE, 2019) are, in decreasing order: the industry of transformation (12.0%); retail commerce (11.3%); public administration (10.2%); financial activities (7.2%); education (6.7%); health (5.1%); construction (3.9%); agriculture (3.2%); the extractive industries (2.9%); and energy (2.1%).



Juro 04 | Image by Adriano Catenzaro

Juro 02 | Image by Adriano Catenzaro

Artistic Essay

ADRIANO CATENZARO

The artist produces his work through the combination of cutouts from different materials, in an investigation that explores graphic experimentation with organic and geometric shapes coupled with an interest in visual elements from the cityscape. His work is situated on the border between fluid shapes and figuration, using collage on paper and other materials. This process results in works with broad chromatic diversity.

Catenzaro has participated in art shows and juried exhibitions since 2013. In 2017, he was selected to participate in the 2nd *Mostra Bienal Caixa de Novos Artistas* and in the 13th *Bienal Internacional de Curitiba*. Adriano Catenzaro's art is taken as a reference for art education in schools, and he is also the author and illustrator of the books *Capitais brasileiras* (2019) and *O mistério da ilha desconhecida* (2022).

ABOUT HIS WORKS

For more than two years, Catenzaro portrayed 1,056 architectural symbols in Brazil's 27 Capital Cities. The materials left over from that series were used as structural elements in the series *Moradas* [Dwellings], making an analogy with the process by which dwellings are built.

The shapes of the membranous structures inside flowers served as a basis for creating the compositions of the *Antera* [Anther] series. The artist drew artworks that represent a pollen producing system, an essential element for the propagation of life on the planet.

In *Estruturas* [Structures], the artist uses paper cutouts as elements for designing structures of support and agglutination. These compositions can represent buildings, edifices, architectural skeletons created by human action, as well as webs, cocoons and other woven organic structures created by nature. In the end, everything is fused together in a symbiosis, forming a structural organism.

An extensive collection of various discarded bank cards, tax payment receipts, paper currency and payroll control sheets gave rise to the series *Crise* [Crisis]. From this material, the artist created a mass of numbers and fragments of financial documents, conveying the idea of an expanding fungi colony. The work represents a living organism, that grows and feeds, taking over all of the space surrounding it. Here, interest on credit, loans, fines and resources received in advance are growing uncontrollably. OBS

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HOW TO CITE THIS ARTICLE
CATENZARO, Adriano. "Ensaio artístico." *Revista Observatório Itaú Cultural*, São Paulo, n. 34, 2023.

ADRIANO CATENZARO
is a visual artist and illustrator. Born in 1979, in Curitiba (PR), where he lives and works, he holds a BA in industrial design and a postgraduate degree in packaging design from Pontifícia Universidade Católica do Paraná (PUCPR).

Cortiço | Image by Adriano Catenzaro

Estrutura 3 | Image by Adriano Catenzaro

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