

Analysis of The Government Ordinances in The Basic Productive Process on The Performance of Cellphone Manufacturing Companies Installed in The Industrial Pole of Manaus from 1993 To 2018

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Abstract

The Manaus Free Trade Zone, also known as ZFM, is characterized by being an industrial hub that includes industries from different segments. When it comes to the production of cutting-edge technology, the sector of computer goods stands out, especially the product known as cell phone. Some manufacturers of this product are installed in ZFM and are world leaders in this market. The industries installed in this pole enjoy tax incentives under the condition of execution of Basic Productive Processes (BPP). From this perspective and through a qualitative methodology, using the bibliographic research procedure applied to the case study at the ZFM, the objective of this article is to carry out a bibliographic review regarding the interministerial ordinances. It was intended to evaluate its obligations and exemptions regarding the production processes provided for by these laws for the production of the portable mobile phone terminal product, during the period from 1993 to 2018. In view of this work, it was possible to identify changes in the requirements imposed by legislation according to the technological evolution of the product and the market. In addition, it allowed the government's intention to increase the production chain of this product, with the purpose to strengthen the national industry for the manufacture of particular inputs, although

certain obligations imposed through percentages of domestic manufacture were changed over the period, allowing the importation of these items. Such decision makes us question the effectiveness of the adopted methodology.

Keywords: Manaus Free Zone; Basic Productive Process; Cell phone.

1. Introduction

With the current political and economic scenario in Brazil, issues such as: tax incentives, tax waivers and the Manaus Free Trade Zone (ZFM) have become the focus of discussions and debates, especially when it comes to taxes and tax reform. According to the current Minister of Economy, among other measures, tax simplification is necessary for the growth of Brazil. The idea is to unify several taxes into one federal tax (MINISTRY OF ECONOMY, 2019).

In addition, today, with what is called Industry 4.0, manufacturing units will need intelligent installations with the flexibility to interact with activities in real time, with the ability to learn and make decisions instantly between machines. It is in this perspective that ZFM is inserted, specifically the Industrial Pole of Manaus, with the need for actions to simplify and at the same time make its productive processes flexible to the new technologies of the market.

The Manaus Industrial Pole (PIM) brings together industries from different segments, from electronics, chemicals, two wheels, computer goods, among others. As shown in table 1 below, in 2018, the five main subsectors of the ZFM together represented more than 80% (eighty percent) of PIM's revenue.

The purpose of this article is to carry out a bibliographic review of the Interministerial Ordinances of Basic Productive Process - BPP of the Manaus Free Trade Zone - ZFM of the portable mobile phone terminal product belonging to the sector of computer goods, in the period from 2014 to 2018.

Table 1 shows the most representative sectors that acting in the industrial pole and its respective revenues in 2018 current basis.

Table 1. Participation of the Main PIM Subsectors in billing in Dollars - Year 2018.

Electronics	27,98%
Computer Goods	21,47%
Motorcycle and components	13,98%
Chemical	11,93%
Thermoplastic	6,22%

Fonte: Prepared by the authors based on data from the document Performance Indicators of the Industrial Pole of Manaus 2013 – 2018, Suframa (2019a).

2. Literature Review

2.1 Industrial agglomeration - Manaus Free Trade Zone and Manaus Industrial Pole

In the literature, several authors present concepts for industrial agglomeration, industrial district and clusters, highlighting the geographical concentration and the ability to specialize. According to Lins (2000, p. 235), industrial districts are geographical concentrations of sectorial specialized firms, mainly small and medium-sized ones (SMEs), where production tends to occur vertically disintegrated (due to the specialization of companies in different phases of the productive process) and amid inter-firm upstream and downstream relationships (suppliers-customers), market and non-market and simultaneously cooperative and competitive.

In the last five years, 1,400 (one thousand and four hundred) Special Economic Zones (SEZ) were built around the world; SEZs are present in more than 145 nations. These zones offer tax incentives and simplified legislation to attract international investment. Currently, they are progressively encouraging new industries, such as high technology, financial services and tourism (IRWIN-HUNT, 2019). Chinese Special Economic Zones, for example, are areas of industrial activity that offer advantages (incentives) in order to attract foreign investments, making the country's economy gradually more integrated with global capitalism.

As of 2017, China has been taking measures to boost foreign investment by lowering restrictions and eliminating taxes. The so-called “negative lists” (areas where foreign investment is restricted), were established in 2013 with the creation of the Shanghai Free Zone and are being changed to allow a greater participation of foreign capital in specific sectors and projects; in addition, the Chinese government seeks to simplify rules that can boost these investments and increase communication with investors.

Regarding tax incentives, some measures were taken, among them: elimination of withholding tax when foreign investors who have recently invested foreign companies directly reinvest the profits distributed by these companies in priority industries; tax reduction for companies involved in advanced, high-tech and high added value services (LUO and HEIDECHE, 2019).

YE and ZHANG (2019) describe the importance of free trade areas located in the internal regions of countries, analyzing the specific case of China's EEZs, since even though they do not have ports, these areas are important for the country's development, since they seek interregional balance, openness and expansion in carrying out reforms, in addition, these regions optimise the allocation of production resources throughout the country and not only in coastal regions and allow them to adapt to the new information age.

According to CHEN (2019), China was responsible for creating the largest number and types of EEZ for the world. China created types of EEZ that crossed its borders. However, the domestic Chinese zones, according to this author, presented two lessons, the first positive related to boosting industry, job creation, promoting technology and innovation and regional development.

However, the second lesson was not positive. It demonstrated that local governments compete to create identical special economic zones, consuming unnecessary investments, leading to competition unfair and partial failures, from these lessons it is important to have coordination with vertical and horizontal policies and sensitivity to create EEZ in areas where they are really needed.

The EEZ's present different characteristics depending on the region (country) in which they are implemented, and several factors can determine the success or not of this model. Russia's special economic zones, according to Sosnovskikh (2017), even after 10 to 15 years of implementation, still find it very difficult to attract investors and develop their regions, since it is necessary to develop a new free-market approach, improve negotiating with potential investors, improving infrastructure and implementing appropriate regulations, localization should prioritize cost reduction, improve profitability and performance and not just choose regions with economical problems.

The study by FRICK, RODRÍGUEZ-POSE and WONG (2018) on the performance characteristics of special economical zones in emerging countries showed the following results:

- the growth of the zone is difficult to sustain over time; updating the technological component or added value of the economy through policies in special economical zones is often challenging;
- and the size of the zone is a determining factor, in general, larger zones have an advantage in terms of growth potential.

Furthermore, he identified that companies are looking for low-cost areas, close to large cities and markets. On the other hand, they pointed out that specific incentives and programs vary according to the context and are not structurally correlated with the area's performance.

2.2 Manaus Free Zone and Manaus Industrial Pole

The Manaus Free Trade Zone (also called as ZFM) is a model of economic development that aims to enable an economic structure in the Western Amazon and Amapá, by improving the productive and social integration to the rest of the country, safeguarding national sovereignty and its borders. Today, the Manaus Free Trade Zone still has the three strands for which it was created: commercial, industrial and agricultural, with the industrial sector being considered the basis of support for the model.

The Manaus Industrial Pole (also known as PIM), installed within the ZFM, covers approximately 500 (five hundred) industries that provide more than half a million jobs, direct and indirect, in various segments, with emphasis on: electronics, two wheels and chemicals (SUFRAMA, 2019b).

The Manaus Free Trade Zone established in 1957, according to Art. 1 of Law No. 3,173, of June 6, 1957, was intended for storage or storage, safekeeping, conservation, processing and withdrawal of goods and other items from other countries and for use in the Amazon, thus being an area dedicated to the trade of goods and not a model of industrial agglomeration.

Under the direction of a military government, ten years later, the model was reevaluated to seek the development of the region given local factors, and the distance from the country's major economic centers. As of Decree-Law No. 288, of February 28, 1967, regulated by Decree No. 61,244 of August 28, 1967, the ZFM became an area of free import and export trade and of tax incentives, initially for 30 years, with the objective of creating an industrial, commercial and agricultural center in the Amazon.

Brazil has a wide range of taxes and fees that are applied to individuals and legal entities in different contexts and actions, for example: financial transactions, production of goods and services, merchandise transactions, among others. The Manaus Free Trade Zone, as an exception zone through tax exemption, offers tax and non-tax incentives to industrialization that allow a competitive advantage in attracting investments compared to other regions of Brazil. However, it should be noted that operating in an incentive area can be considered complex given the rules to which companies are subjected to set up and operate in the incentive area.

According to SUFRAMA (2020), in addition to the benefits offered by the Federal Government, the federal and state incentives of ZFM are:

- Federal taxes:
 - Reduction of up to 88% of the Import Tax (I.I.) on the inputs destined for industrialization;
 - Exemption from Tax on Industrialized Products (I.P.I.);
 - Reduction of 75% in the Corporate Income Tax, including additional projects classified as priorities for regional development, calculated based on Operating Profit until 2013; and
 - Exemption from contributions to PIS / PASEP and Cofins in internal operations in the Manaus Free Trade Zone.
- State taxes:
 - Partial or total refund, ranging from 55% to 100% - depending on the project - of the Tax on Operations Relating to the Circulation of Goods and on the Provision of Interstate and Municipal Transport and Communication Services (ICMS).

In a recent study released by Fundação Getúlio Vargas (FGV), PIERI, ALBUQUERQUE and CERQUEIRA (2019, p. 41), they state that PIM contributes to “the generation of formal jobs, the generation of income and the investment in human capital of workers, in addition to the effects of ZFM on improving infrastructure”. The authors cite that although the quantity of jobs in the industries of the region has reduced in recent years, the industry still stands out compared to other sectors and also point out the qualification of the workforce employed by the PIM industries as another positive factor.

Still in the work published by FGV, ANDRADE, GELCER and HOLLAND (2019, p. 64-65), they assessed the effectiveness of the tax incentives granted to ZFM and concluded in some respects that this model has been successful for having allowed the evolution of “income per capita of both the metropolitan region of Manaus and the state of Amazonas, the performance of some education indicators, access to services such as water and sanitation, and income inequality rates”.

However, the authors make some reservations, claim that the region needs a structured plan with clear rules to allow long-term investments, tax reform needs to reevaluate the risks of the taxes involved, alert to the need for investments in rail, road, river infrastructure and telecommunications; regarding the adequate use of Research, Development and Innovation (RD&I) resources in activities aimed at natural resources and training of professionals and also defend the development of tourism activity in the region.

2.3 Basic Productive Process - BPP

The Basic Productive Process (BPP) started at a time of political and economic transition in the country, the 1990s. According to Mendonça (2013), the commercial opening of this period directly influenced the national industry, as well as the companies installed in the ZFM, see the need to adapt to a much more competitive environment, with the company of imported products with lower prices and better quality. In this context, Law No. 8,387 of December 30, 1991, which amended Decree-Law No. 288/1967, in order to develop the industry, instituted the BPP as a requirement for the enjoyment of tax incentives in the industrialization of products that come out ZFM and defined it as the "minimum set of operations, in the factory, which characterizes the effective industrialization of a given product."

According to § 6 of Article 7 of Law No. 8.387 / 1991, the Executive Branch through the Ministry of Economy, Finance and Planning, the Secretariat of Science and Technology of the Presidency of the Republic and the Superintendence of the Free Trade Zone. Manaus (SUFRAMA) should fix the BPP within 120 (one hundred and twenty) days from the publication of the referred law, after the deadline without the publication of the BPP, the interested company could ask SUFRAMA to fix the provisional BPP in up to 60 days. This exceptionality was revised by Law no. 10.176, of January 11, 2001, which allowed only the Ministers of State for Development, Industry and Foreign Trade and Science and Technology, through Government Ordinance, within 120 days, counted from the date of the proposal of the interested company, the establishment of the BPP or its rejection; such a rule remains valid, subject to changes in the ministries, given the new ministerial structure adopted by the federal government.

Today, the BPP receives harsh criticism from society, especially from the business class, for not meeting the deadline established by legislation and for creating mechanisms to restrict production at the Manaus Industrial Pole. At the 278th Meeting of the Development Council of the State of Amazonas - CODAM, held in February 2019, industry representatives from the State of Amazonas raised their concerns about the ZFM model and the Basic Productive Process: "The products that are being manufactured here today do not guarantee the continuity of the model ten years henceforth. It is necessary to fight for the approval of new BPP's for products that are not yet manufactured here. And the same difficult process cannot continue" (SUFRAMA, 2019b).

3. Bibliographic review of the Government Ordinances in relation to the Portable Cellular Terminal from 1993 to 2012

The basic production process of the portable terminal product of the portable mobile phone terminal,

popularly called the cell phone, started in 1993 with simple assembly and quality control steps and evolved over the years according to the product technology adding increasingly complex stages and inputs. In this context, this section presents the main characteristics of the government ordinances published in the period from 1993 to 2012, the first productive processes of the mobile phone product.

Table 2. Interministerial Ordinance from 1993 to 2012.

Year	Changes and Modifications
1993	Interministerial Ordinance MIR / MCT / MICT / MC* No. 272, of December 17, 1993.
1994	Interministerial Ordinance No. 138, of August 3, 1994 (partial amendment of Interministerial Ordinance MIR / MCT / MICT / MC No. 272, of December 17, 1993).
2000	Interministerial Ordinance MDIC / MCT No. 26, of May 24, 2000 (partial amendment of Interministerial Ordinance MIR / MCT / MICT / MC No. 272, of December 17, 1993).
2003	Interministerial Ordinance No. 543, of December 18, 2003 (MDIC / MCT Interministerial Ordinance No. 26, of May 24, 2000, revoked).
2004	Interministerial Ordinance No. 286, of November 4, 2004 (Revoked Interministerial Ordinance MDIC / MCT No. 543, of December 18, 2003).
2005	Interministerial Ordinance No. 144, of May 18, 2005 (repeals Interministerial Ordinance No. 286, of November 4, 2004); Interministerial Ordinance No. 241, of July 18, 2005 (amends Annex I of Interministerial Ordinance No. 144, of May 18, 2005); Interministerial Ordinance no. 317, of October 4, 2005 (repeals Interministerial Ordinance no. 144, of May 18, 2005 and Interministerial Ordinance no. 241, of July 18, 2005); Interministerial Ordinance No. 351, of November 4, 2005 (changes Interministerial Ordinance No. 317, of October 4, 2005).
2006	Interministerial Ordinance no. 25, of February 15, 2006 (repeals Interministerial Ordinance no. 317, of October 4, 2005 and Interministerial Ordinance no. 351, of November 4, 2005); Interministerial Ordinance No. 137, of August 2, 2006 (amends Interministerial Ordinance MDIC / MCT no 25, of February 15, 2006); Interministerial Ordinance No. 211, of November 20, 2006 (repeals Interministerial Ordinance No. 25, of February 15, 2006).
2007	Interministerial Ordinance No. 236, of December 6, 2007 (repeals Interministerial Ordinance No. 211, of November 20, 2006)
2008	Interministerial Ordinance 23, of January 29, 2008 (changes Interministerial Ordinance 236, of December 6, 2007); Interministerial Ordinance No. 236, of December 29, 2008 (repeals Interministerial Ordinances MDIC / MCT No. 236, of December 6, 2007 and No. 23, of January 29, 2008).
2009	Interministerial Ordinance No. 224, of December 24, 2009 (repeals Interministerial Ordinance No. 236, of December 29, 2008).
2010	Interministerial Ordinance No. 221, of November 9, 2010 (repeals Interministerial Ordinance No. 224, of December 24, 2009).

2011	Interministerial Ordinance No. 245, of September 30, 2011 (repeals Interministerial Ordinance No. 221, of November 9, 2010).
2012	Interministerial Ordinance No. 144, of June 26, 2012 (repeals Interministerial Ordinance No. 245, of September 30, 2011); Interministerial Ordinance No. 307, of December 28, 2012 (repeals Interministerial Ordinance No. 144, of June 26, 2012).

Source: Prepared by the authors from <http://www.in.gov.br/web/guest/inicio>, Imprensa Nacional (2019).

Grades:

MIR - Ministry of Regional Integration; MCT - Minister of Science and Technology;

MICT - Ministry of Industry, Commerce and Tourism; MC - Ministry of Communications.

From the bibliographic review methodology adopted in this work and according to Table 2, we identified 20 (twenty seven) government ordinances (BPP) related to the portable mobile phone terminal product and published in the period from 1993 to 2012, of this total, 06 (six) ordinances were amendments to be previously published ordinances. The years 2005 and 2006 stood out for presenting 4 (four) and 3 (three) publications, respectively.

The period of this study coincides with the beginning with the application of the BPP methodology in the Manaus Free Trade Zone, in 1993. Initially, the BPP required for the “cell phone” product was generic, adopted for all computer goods applied to telecommunications and composed of simple steps that, in general, involved the assembly of electrical and mechanical parts in product formation and quality control, at this time, there were no requirements or dispensations for inputs or production steps of the product. From the 2000s and 2003 onwards, the first dispensations of inputs (liquid crystal, crystal displays, for instance) and the national manufacturing requirements for items such as batteries and chargers appeared. In 2004, the primary specific BPP published for the product mobile phone operating in digital technology combined or not with other technologies made the production process complex, created a list of inputs (modules and / or subsets) dispensed and a percentage control of imports and national manufacture of items, including a percentage requirement for production exports.

In 2005, the promulgated ordinances indicated changes in the percentages of layoffs and requirements and did not show changes in the production stages. In 2006, the content of the published BPP's highlighted the change in the production stages of manufacturing the electric transformer; the inclusion of new inputs dispensed, such as the speaker and antenna, and in addition, the battery and charger manufacturing percentages were changed again. In 2007, the published ordinance included new dispensations of modules and subsets; this year, the option of investing in R&D activities arose as a counterpart to the dispensations granted by the BPP, in addition, the ordinance changed the rules for the percentage production of mobile phone batteries and included the requirement to present an annual report containing information about the use percentages provided for in the Ordinance, under penalty of non-compliance with BPP. In 2008, BPP allowed the dispensation of production steps, conditioned this situation in a series of requirements: percentage of product export and / or percentage of investment in R&D activities, battery manufacture and

direct current converter (AC-CC) or battery charger, reduction of the expected dispensation for the assembly of printed circuit boards and investments by the company to carry out the productive steps dispensed under these conditions.

This year also included the requirements for Digital TV and GINGA (software that provides the interaction between the viewer and Brazilian open digital television), in addition to new changes regarding the percentages of battery and charger manufacturing. The year 2009 brought percentage changes in the requirement of the Digital TV and GINGA system, allowing for a percentage exchange for investment in R&D activities and new percentages for the manufacture of the battery and charger. The ordinance published in 2010 presented the rules for outsourced production of complete cell phones and sent new percentage rules for the manufacture of battery chargers and batteries with the provision for exemption subject to percentage investment in R&D activities. In 2011, the percentage rules for the manufacture of battery chargers and batteries underwent a new change and additional investments in R&D activities were directed to the “Major Brazil Program”, in addition to the requirement to manufacture flash memory cards of the type μ SD-card Card according to schedule and established percentages.

The ordinances published in 2012, in general, modified the percentage of exemption from the assembly of printed circuit boards and allowed the inclusion of exemption from new modules and sub-assemblies under specific terms and conditions. In relation to the changes, the ordinances of the year 2012 presented variations regarding to the percentage requirements of models with digital TV reception; the rules of manufacture of battery and battery chargers; the rules of application of additional investments in R&D activities and finally included the requirement, according to their own schedule and percentages, to manufacture Micro SD-card (secure digital) and Micro SDHC Card (secure digital high capacity) type cards.

4. Bibliographic review of the Government Ordinances in relation to the Portable Cellular Terminal from 2014 to 2018

Since no BPP related to the mobile phone product was published during 2013, the following government ordinances, published from 2014 to 2018, presented changes in the production process where it is possible to identify a product with much more complex technology than the observed in the previous period. This section describes the main BPP changes of this period, identifying the obligations and waivers related to the production of the mobile phone in the ZFM in force at the time.

Table 3. Interministerial Ordinance from 2014 to 2018.

Year	Changes and Modifications
2014	Interministerial Ordinance No. 263, of March 19, 2014 (amends Interministerial Ordinance MDIC / MCTI* No. 307, of December 28, 2012); Interministerial Ordinance No. 285, of November 11, 2014 (amends Interministerial Ordinance MDIC / MCTI No.

	307, of December 28, 2012); Interministerial Ordinance No. 324, of December 31, 2014 (repeals Interministerial Ordinance No. 307, of December 28, 2012).
2016	Interministerial Ordinance No. 14, of January 18, 2016 (amends Interministerial Ordinance No. 324, of December 31, 2014).
2017	Interministerial Ordinance No. 58, of August 2, 2017 (repeals Interministerial Ordinance No. 324, of December 31, 2014).
2018	Interministerial Ordinance No. 20, of April 10, 2018 (amends Interministerial Ordinance No. 58 of August 2, 2017); Interministerial Ordinance No. 53, of December 6, 2018 (repeals Interministerial Ordinance No. 58, of August 2, 2017).

Source: Prepared by the authors from <http://www.in.gov.br/web/guest/inicio>, Imprensa Nacional (2019).

Grades:

* MDIC - Ministry of Development, Industry and Foreign Trade

MCTI - Ministry of Science, Technology and Innovation

As shown in the Table 3 above, in the period from 2014 to 2018, 07 (seven) government ordinances (BPP) related to the portable mobile phone terminal product were published, of this total, 04 (four) were related to changes to previous ordinances. The years 2014 and 2018, specifically, had more publications and BPP changes compared to the others, presented, three and two, respectively, throughout each calendar year.

The government ordinances published over this period, as well as in other years, show changes mainly focused on items (inputs) that reflect reflexes of technological and market changes. In the ordinances published in 2014, it was found:

- Changes in the percentages of the requirements (obligations) of the production stages, in particular of the integrated circuits of memory of various models applied to cell phones;
- Inclusion and alteration in the waivers of different requirements, subject to the application of percentages in R&D, according to the rules provided for in the legislation;
- Inclusion of the obligation exchange table in order to make manufacturers' manufacturing more flexible.

In 2016, the published ordinance again changes the requirement percentages for integrated memory circuits;

- It includes the requirement to manufacture the cable wires for mobile phone chargers, according to BPP, or otherwise, requires the application of a percentage in R&D;
- Changes the residual percentages referring to the requirements of each production stage to be fulfilled by December 31 of the following year;
- Allowed to use the surplus of each productive stage in the following year; and changes the calculation of cell phones with GINGA technology.

The ordinance published in 2017, as well as the others, had its main changes directed to the cell phone's memory system and the requirements of the wires, cables and battery. The 2018 year brings ordinances

that:

- Changes in the percentages of integrated memory circuits; battery requirement;
- It included the figure of the “smart phone with dedicated module and component of high integration and performance,” produced according to its specific BPP that can be counted for the length of the obligations required by the mobile phone BPP;
- Changes the table of exchange of obligations;
- Changes the obligation related to the reception of Digital TV signals involving applications in R&D according to the rules described for each dispensation.

6. Conclusion

Considering the bibliographic review adopted in this work, the first mobile phone manufacturing period at ZFM, from 1993 to 2012, demonstrates the technological evolution of the product and also the level of requirements (obligations) imposed by the legislation. Initially, the obligations are directed only to the stages of assembly and quality control; over time, requirements and layoffs are progressively restrictive. As cell phones began to include new technologies, BPP also included new obligations and increasingly demanded additional investments from parts of the manufacturing companies.

From the ordinances of the period from 2014 to 2018, it is possible to observe that the percentage foreseen for the requirements (obligations) and layoffs of the productive stages was the object of several changes to each published BPP. This fact allows questioning the capacity of the manufacturers of the product in the ZFM in adopting the measures (percentages) imposed by government ordinances, especially those related to advanced technology inputs, as is the case of integrated memory circuits, an item that has changed in all published ordinances. In addition to these items, there was an obligation to manufacture the battery, which over this period also underwent modifications.

In several published ordinances, it is possible to identify the government's intention to increase the national production chain of this product in order to boost the production of certain inputs, either in the national territory or in the Manaus Free Trade Zone. It was also possible to note that the obligations imposed through percentages of domestic manufacture were changed over the period at various times, in order to make the import of inputs more flexible. This fact makes us question the effectiveness of the methodology adopted until then by interministerial ordinances to establish the basic production process of this type of product.

This study was limited to presenting the main obligations and exemptions foreseen in the government ordinances that regulated the Basic Productive Process - BPP of the portable mobile phone terminal product over the determined period, based on the technological evolution of the product and the legislation. As a suggestion for future work, we suggest conducting an analysis of the impacts of these changes on the manufacturers of this product in the ZFM and in the production chain. In addition, present industrial and economic indicators related to the PIM that may reflect the impacts of the BPP on the industries.

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