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# Product Take-Home Assignment

MercadoPago – QR Payments

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## Solution Details

MercadoPago is a payment platform created in 2004 as a complement to MercadoLibre marketplace. At the time, the solution goal was to enable a payment gateway to route and process existing payments method for the marketplace.

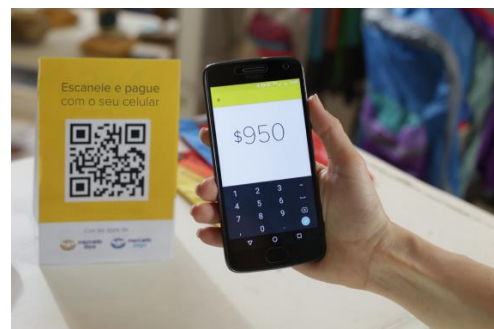
Over the years, MercadoPago has enabled multiples functionalities and independent services to the platform, becoming first a mobile wallet and, later, a financial institution approved by Central Bank in 2018. This has allowed MercadoPago to enable new products and services for their customers independently from any other financial institution.

Supporting multiple payments methods and transaction types is the core for MercadoPago business and as a highly competitive market, keeping as focus to provide secure, fast and frictionless payments for merchants and consumers is the differentiator to growth market share.

MercadoPago is currently supporting: credit and debit card, Prepaid card, Wires, Boletó among others. More recently, QR Payment service was enabled thru their mobile wallet.

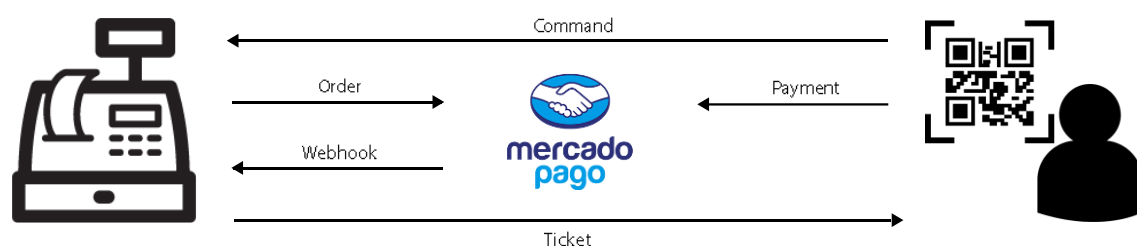
The purpose of this document is to focus on [MercadoPago – QR Payments](#) Service, which was launched in November 2019, offering a contactless alternative payment method for in-store purchases.

As part of MercadoPago Mobile wallet, QR Payments enables consumers to pay for products in physical stores by scanning a previously generated QR code, that the merchant can print and display at the store front.



By generating the QR code previously, printing it and displaying in the store fronts merchants are not requested to have additional hardware in order to use the payment method.

Once scanned the customer will see the details of the purchase in their mobile and then they are able to validate and confirm the value and opt to use the balance available in their MercadoPago Wallet, a Credit card previously registered or to use an alternative credit card to complete the purchase without cash exchange nor contact with a POS terminal.



Additionally, users are able to generate additional QR codes at any time, either assigning a value at the moment of creation or by selecting a product from the catalog previously loaded.

Lastly, the payment is confirmed immediately and the funds are credited and available in the same day for the seller in their MercadoPago Wallet.

## Why is this solution Important?

Currently the solution has become a highly relevant for the market given the current worldwide health scenario given by COVID19, customers are increasingly looking forward for payment methods that minimize the risk of infection.

Additionally, the following items highlight 3 areas that allows to:

- Minimize losses and protect brand reputation
- Cover new use cases
- Increase transactions volumes

### Security

QR Code scanning usage adds an additional security layer for the payment process requiring customers to unlock their mobile in order to access to MercadoPago application and eliminates NFC the risk to be victim of eavesdropping and interception attacks.

### Versatile technology

QR code technology has gained popularity over the years and is currently at the peak of buzzwords worldwide.

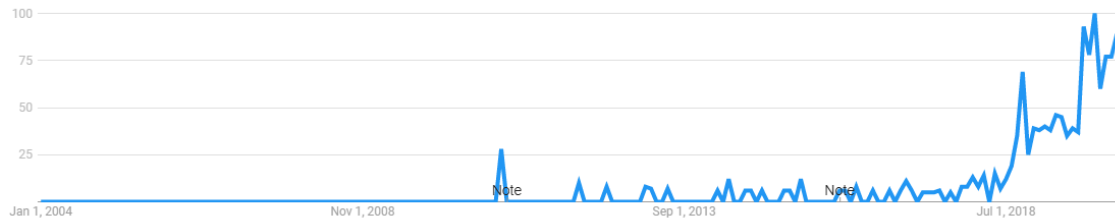


Google Trends Brazil: QR CODE - Interest over time

While one of the main usages of the technology is focused on storing URLs and advertising with QR codes appearing in magazines, billboards and buses there are multiples use cases that are supported by this technology and several more pending to be explored as they enable a link between physical and digital worlds.

### Inclusion Support

QR code use on payments is introducing a solution for the several gaps in the electronic payments market including unbanked population. As the technology and use case gains popularity, adoption rate will also increase.



Google Trends Brazil: PAGAMENTOS QR - Interest over time

With over 30% of economically active worldwide population<sup>1</sup> with no access to bank accounts due to unemployment or low income, inconvenience, blacklisted or even distrust on the system, there is a roadblock on financial development. In Brazil only, this represent over \$800 billion of Brazilian Reais per year than the 45 million of Brazilians moves<sup>2</sup> outside of the financial system.

## Top Features & Success KPI

The solution enables multiples features that also found in its main competitors such as QR generation and same day credit, the followings are identified as differentiators:

### 1. Catalog QR Code generation

The solution enables to define the QR code value at the time generations. Alternatively, a merchant may have already created a catalog of product with pricing and they may opt to generate a QR code now linked to a product in a catalog previously loaded. This reduce risks points of entering wrong value.

### 2. Stores Map

The solution enables a dynamic map that allows to filter based on segments to find stores that accept MercadoPago QR Payment

Key metrics to measure it success are:

- Existing members adoption
  - QR Payments users/MercadoPago customer base
- New subscription
  - New MercadoPago user with QR Payment as first transaction

## Opportunities for Improvement

### 3. Limited Save/Share QR Code

Currently it is not viable to share QR codes generated via any means. All codes should be scanned directly from the mobile where it was generated or by taking a screenshot and sharing the image.

<sup>1</sup> <https://globalfindex.worldbank.org/>

<sup>2</sup> <https://www.ilocomotiva.com.br/single-post/2019/09/24/Um-em-cada-tr%C3%AAs-brasileiros-n%C3%A3o-tem-conta-em-banco-mostra-pesquisa-Loocomotiva>

Additionally, codes generated are not saved, therefore in case of being unable to scan it at the time of generation, for example a customers with not internet access, it will be needed to generate a new one or take an screenshot.

#### **4. Interoperability**

Currently there are over 10 solutions offering QR Payments only in Brazil, this number multiplies significantly if we look for solutions accepted in other countries.

However, each solution implemented their own specification for QR code, which does not allow interoperability across solutions and force consumers and merchants to use multiples platforms to accept multiple payment methods.

## **Proposed Enhancements**

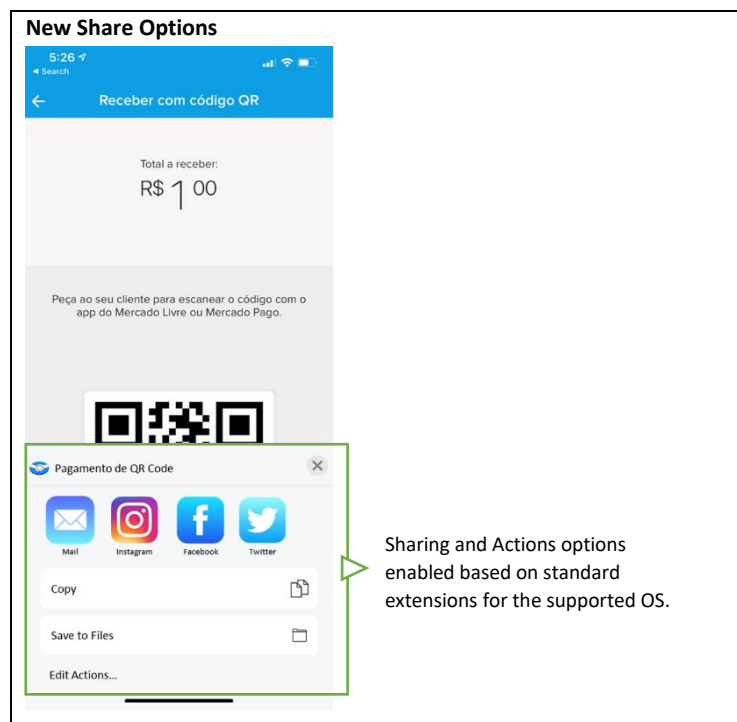
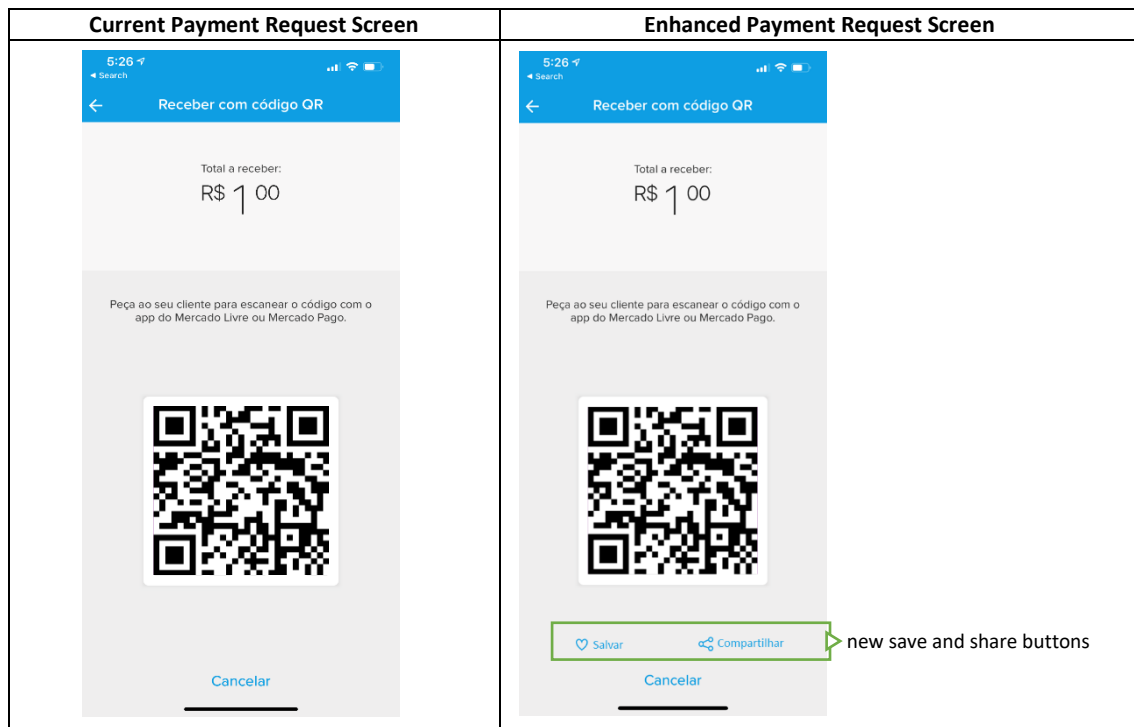
### **1. Share QR Code Enhancement**

#### ***User Stories***

- As a merchant I would like to share a QR code via email to facilitate the remote payment of product and services.
- As merchant I would like to share a QR code in Social Networks for customers to complete a purchase.
- As a consumer I would like to receive a QR code by email to complete a purchase.
- As a merchant I would like to save the QR code generated to use or send later.

#### ***Details***

This enhancement allows merchants to easily share via other channels the code generated, enabling to share it in Facebook pages, Instagram business accounts, by email or even in MercadoLibre seller ad to enable the payment method and complete purchases remotely. Nevertheless, additional security controls are requested in order to minimize emerging fraud schemes.



## 2. Interoperability

### User Stories

- As a merchant I would like to have a unique QR code that allows customers to pay regardless the application they use.
- As a merchant I would like that all funds received by QR payment credited in my MercadoPago Wallet
- As Consumer I would like to pay with MercadoPago QR Payments app regardless of the service provider that the merchant use.

## Details

Implementation of a unique standard will ensure that customers are able to scan any QR code using any application, reducing the friction in the experience of both customers, consumer and merchant, and driving an increase in transactions processed.

On March 16th 2020, the Brazilian Central Bank<sup>3</sup> has released the details for the approved QR code standard that will ensure interoperability within the Brazilian financial system, called **BR Code** and that is based on EMVco specifications for QR Codes. Enhancements on the code generator to implement BR Code standard based on Central Bank definitions should be implemented based on BR Code Specifications<sup>4</sup> as follows:

| ID             | Nome EMV                              | Tam    | Uso <sup>8</sup> | Descrição  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
|----------------|---------------------------------------|--------|------------------|--|---|------------------|-----|--|-----------|------|------------------------|------------------|-----------|-----------------|--------|---|----|-------------------|--|--------|------|-----|---------------------|-----------|----|-----|----|---|-------------------|----|--------|----|---|---------------------|
| 00             | <i>Payload Format Indicator</i>       | 02     | M                | versão do <i>payload</i> QRCPs-MPM, fixo em "01"   |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 01             | <i>Point of Initiation Method</i>     | 02     | O                | Se o valor 12 estiver presente, significa que o BR Code só pode ser utilizado uma vez.   |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| [26-51]        | <i>Merchant Account Information</i>   | 05..99 | M                | "26" – indica arranjo específico; "00" (GUI) obrigatório:  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
|                |                                       |        |                  | <table><tr><th>ID</th><th>Nome</th><th>Tam</th><th>Uso</th><th>Descrição</th></tr><tr><td>00</td><td>GUI</td><td>14</td><td>M</td><td>BR.COM.ARRANJO</td></tr><tr><td>01..99</td><td colspan="4">conforme arranjo</td></tr></table>  | ID                                      | Nome             | Tam | Uso  | Descrição | 00   | GUI                    | 14               | M         | BR.COM.ARRANJO  | 01..99 | conforme arranjo                        |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
|                |                                       |        |                  | ID   | Nome                                    | Tam              | Uso | Descrição  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
|                |                                       |        |                  | 00   | GUI                                     | 14               | M   | BR.COM.ARRANJO   |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 01..99         | conforme arranjo                      |        |                  |  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
|                |                                       |        |                  |  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 52             | <i>Merchant Category Code</i>         | 04     | M                | "0000" ou MCC <b>ISO18245</b>  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 53             | <i>Transaction Currency</i>           | 03     | M                | "986" – BRL: real brasileiro - <b>ISO4217</b>  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 54             | <i>Transaction Amount</i>             | 01..13 | O                | valor da transação. Ex.: "0", "1.00", "123.99"   |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 58             | <i>Country Code</i>                   | 02     | M                | "BR" – Código de país ISO3166-1 alpha 2  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 59             | <i>Merchant Name</i>                  | 01..25 | M                | nome do beneficiário/recebedor   |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 60             | <i>Merchant City</i>                  | 01..15 | M                | cidade onde é efetuada a transação <sup>9</sup>  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 61             | <i>Postal Code</i>                    | 01..99 | O                | CEP da localidade onde é efetuada a transação  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 62             | <i>Additional Data Field Template</i> | 39..63 | M                | <table><tr><th>ID</th><th>Nome EMV</th><th>Tam</th><th>Uso</th><th>Descrição</th></tr><tr><td>05</td><td><i>Reference Label</i></td><td>01..25</td><td>M</td><td>ID da transação</td></tr><tr><td rowspan="2">50</td><td rowspan="2"><i>Payment system specific template</i></td><td rowspan="2">30</td><td rowspan="2">M</td><td><table><tr><th>ID</th><th>Nome</th><th>Tam</th><th>Uso</th><th>Descrição</th></tr><tr><td>00</td><td>GUI</td><td>17</td><td>M</td><td>BR.GOV.BCB.BRCODE</td></tr><tr><td>01</td><td>versão</td><td>05</td><td>M</td><td>1.0.0<sup>10</sup></td></tr></table></td></tr></table> | ID                                      | Nome EMV         | Tam | Uso  | Descrição | 05   | <i>Reference Label</i> | 01..25           | M         | ID da transação | 50     | <i>Payment system specific template</i> | 30 | M                 | <table><tr><th>ID</th><th>Nome</th><th>Tam</th><th>Uso</th><th>Descrição</th></tr><tr><td>00</td><td>GUI</td><td>17</td><td>M</td><td>BR.GOV.BCB.BRCODE</td></tr><tr><td>01</td><td>versão</td><td>05</td><td>M</td><td>1.0.0<sup>10</sup></td></tr></table> | ID     | Nome | Tam | Uso                 | Descrição | 00 | GUI | 17 | M | BR.GOV.BCB.BRCODE | 01 | versão | 05 | M | 1.0.0 <sup>10</sup> |
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|                |                                       |        |                  | 05   | <i>Reference Label</i>                  | 01..25           | M   | ID da transação  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
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| ID             | Nome                                  | Tam    | Uso              |  |   |                  |     | Descrição  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 00             | GUI                                   | 17     | M                | BR.GOV.BCB.BRCODE  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 01             | versão                                | 05     | M                | 1.0.0 <sup>10</sup>  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
|                |                                       |        |                  |  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 80<br>..<br>99 | <i>Unreserved Templates</i>           | 01..99 | O                | <table><tr><th>ID</th><th>Nome</th><th>Tam</th><th>Uso</th><th>Descrição</th></tr><tr><td>00</td><td>GUI</td><td>14<sup>11</sup></td><td>M</td><td>BR.COM.ARRANJO</td></tr><tr><td>01..99</td><td colspan="4">conforme arranjo</td></tr></table>   | ID                                      | Nome             | Tam | Uso  | Descrição | 00   | GUI                    | 14 <sup>11</sup> | M         | BR.COM.ARRANJO  | 01..99 | conforme arranjo                        |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
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|                |                                       |        |                  |  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |
| 63             | <i>CRC16</i> <sup>12</sup>            | 04     | M                | 4 nibbles do resultado. Exemplo: 0xAC05 => "AC05"  |   |                  |     |  |           |      |                        |                  |           |                 |        |   |    |                   |  |        |      |     |                     |           |    |     |    |   |                   |    |        |    |   |                     |

This is a mandatory for all QR Payments services in the country having as due date September 2020. However, current health scenario introduces an opportunity to leverage for the launch of the interoperability support and become the first solution protecting their customers and offering a frictionless experience.

## About the author

For further information contact Natalia Ruiz at [nataliavruiz@gmail.com](mailto:nataliavruiz@gmail.com)

Learn More about Natalia →



<sup>3</sup> <https://www.bcb.gov.br/estabilidadefinanceira/exibenormativo?tipo=Circular&numero=3989>

<sup>4</sup> <https://www.bcb.gov.br/content/estabilidadefinanceira/SiteAssets/Manual%20do%20BR%20Code.pdf>