

**Broadband**

**Retail and Wholesale service provisioning and service assurance**

**2009 Report**

Belgacom publishes on an annual and quarterly basis a comparison between the broadband services provided to its retail customers and the services provided to its wholesale customers (unbundled lines: ULL and bitstream).

Two metrics are compared:

- (1) Installation time of a line (provisioning)
- (2) Time required to resolve a technical trouble related to the Belgacom's infrastructure (repair)

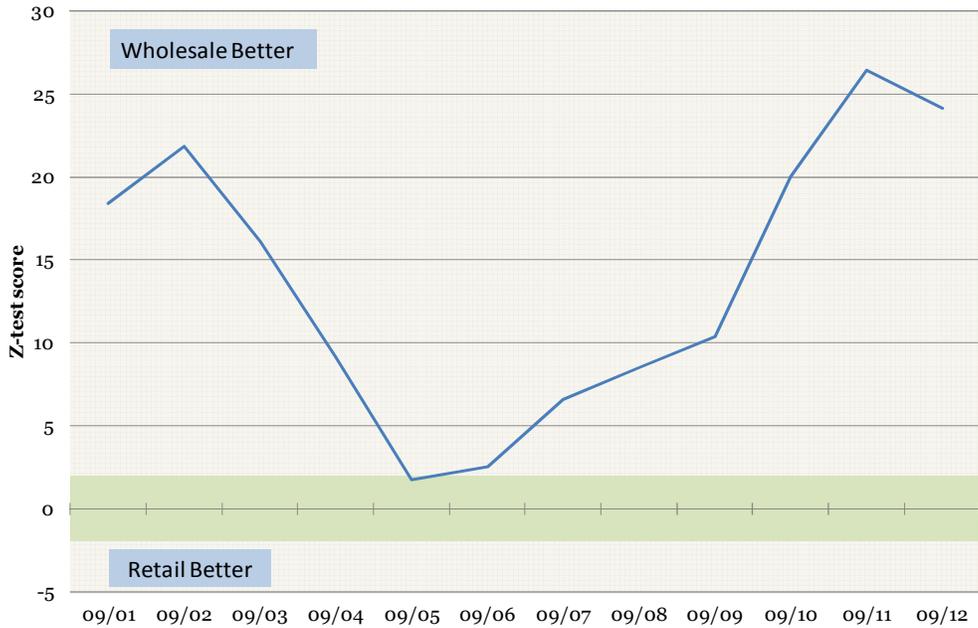
The comparison is based on the generally accepted Z-test used for statistical analysis of two sets of measurements (in this case proportions of wholesale and retail data). The data is compared on a monthly basis and presented in charts.

Z-scores between -1.96 and +1.96 indicate that it is unlikely that any observed difference is statistically significant (5% probability or below). This zone is colored green in the charts.

Z-scores out of this band require an analysis to understand the factors that drive the difference.

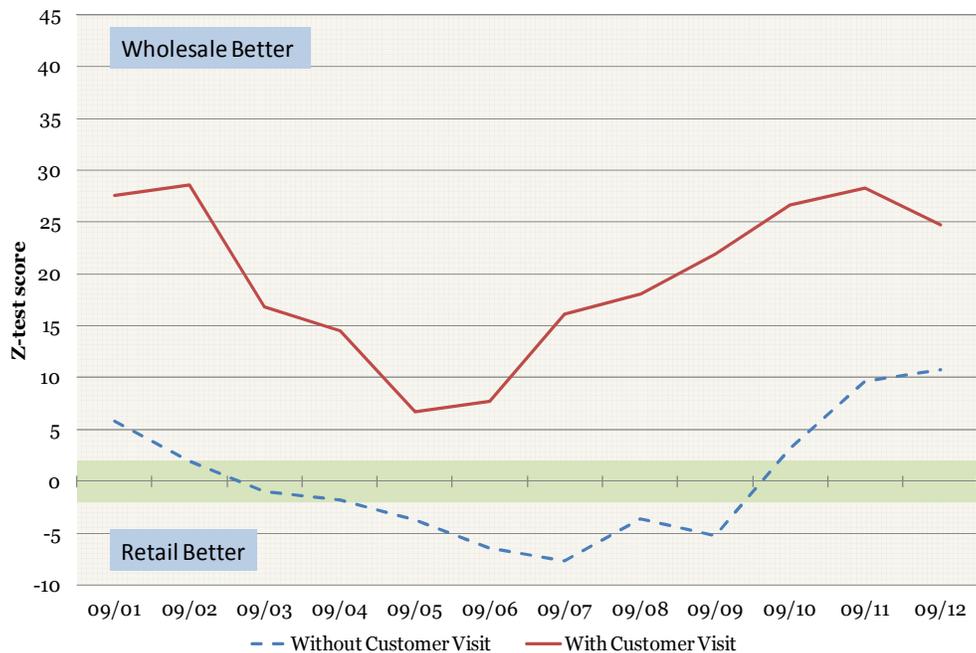
Belgacom decided to publish the analysis on a voluntary and recurrent basis since it provides an objective measurement of relative performance between retail and wholesale and a valuable framework to discuss possible differences.

# 1. Provisioning



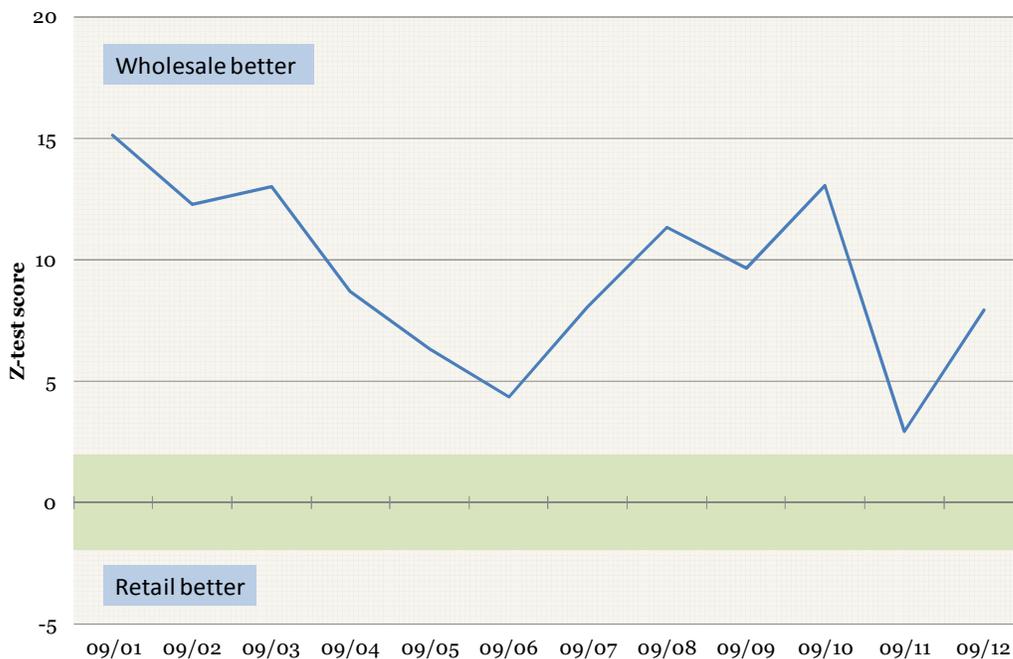
The chart shows that the overall 2009 performance was better for wholesale than for retail (during May 2009, the performance output falls within control limits which conducts to the conclusion that during this month there is statistical evidence of equality).

The following chart gives a break-down between installations that require a visit of the customer and installations that don't require an intervention at the customer premises.



The chart shows that the overall 2009 performance was better for wholesale than for retail in case customer visits were required. During the months May, June, July, August and September, the performance was slightly better for retail versus wholesale for installations that required no intervention at the customer premises. This difference is due to the fact that wholesale orders frequently request an installation 7 days after the order date (which concurs with the applicable SLA). As a result, in periods of lower installation volumes, retail orders can be installed faster than 7 days and therefore faster than the installation time requested by the wholesale customers.

## 2. Service repair



The chart shows that the overall 2009 performance is better for wholesale than for retail.

### **3. Independent Report on agreed-upon procedures**

In June 2010, Ernst & Young performed agreed-upon procedures with respect to the present Equality of Service KPI's report. More specifically, these agreed-upon procedures encompassed the verification of the sources of the data collected, the data collected itself, the data extraction, the Z-test calculation and the Z-test graphs as set out in the present Equality of Service KPI's report. The process of extracting provisioning data from NPS (Network Provisioning System) and OMS (Order Management System) for the Z-test was assessed for the period from 1 July 2009 until 31 December 2009 due to an archiving limitation of 13 months in NPS and OMS.

Upon the reading of the Ernst & Young report on agreed-upon procedures, Belgacom noted no findings. The Ernst & Young report was communicated to the BIPT on 27 July 2010.

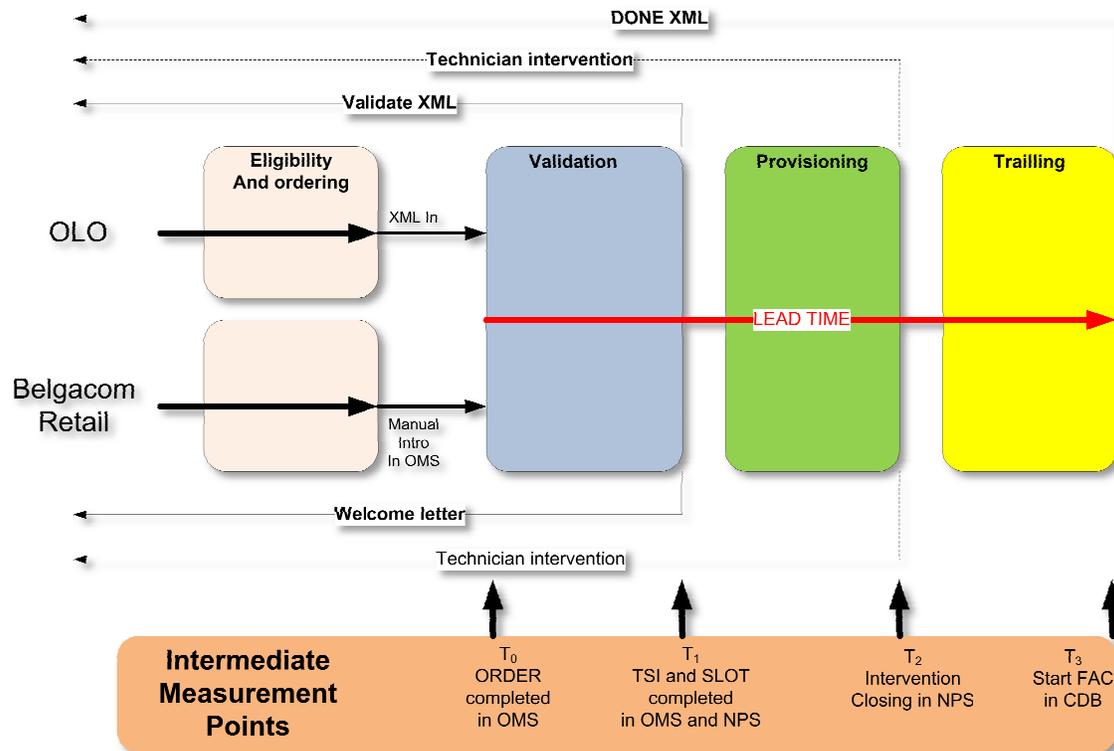
Agreed-upon procedures do not constitute an audit neither a limited review under auditing standards hence the auditor did not express any assurance as to the correctness of the present Equality of Service KPI's report.

## Annex: the measurement model

To compare output performance for wholesale products with retail products, an alignment needs to be made between wholesale and retail products as the End-to-End processes for OLOs and retail are not fully comparable.

### 1. Provisioning

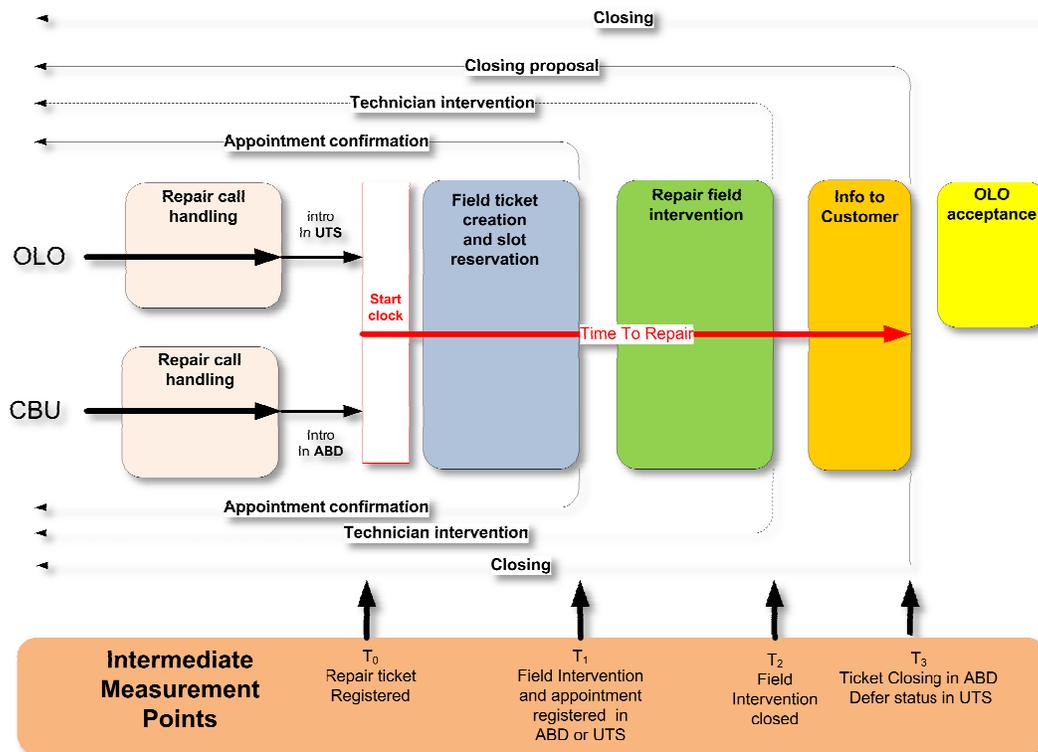
The model defines equal and comparable time stamps ( $T_0$ ,  $T_1$ ,  $T_2$ ,  $T_3$ ) for the building blocks *Validation*, *Provisioning* and *Trailing*. The latter is a merely administrative completion of the order. The **Lead Time** is defined as ( $T_3 - T_0$ ).



### 2. Repair

In accordance to the provisioning model, the Service Assurance model defines equal and comparable time stamps ( $T_0$ ,  $T_1$ ,  $T_2$ ,  $T_3$ ) for building blocks comparable between retail and wholesale. The **Time To Repair** is defined as ( $T_3 - T_0$ ). As opposed to retail, where the concept

does not apply, wholesale ticket lifecycle is subject to stop clocks<sup>1</sup>. Hence in order to have a comparable base, only “net” times are considered.



### 3. Z-test

The output performance KPI (Lead Time or Time To Repair) for every provisioning or repair action triggered by either wholesale or retail is considered to calculate the proportion of instances that comply with predefined SLA obligations. E.g. out of a total of 100 orders placed in a certain period of time, 95 were delivered within the 10 days SLA timer, yielding a proportion of 95%.

The Z-test, testing statistically the equality of proportions out of two different populations (i.e. wholesale and retail populations), supports the assessment of whether the KPIs are either equal or different, based on a 95% confidence interval.

The Z-test allows identifying areas where there may be differences. A Z-score falling inside the 95% confidence band results in ascertaining differences in performance to be insignificant. Z-scores out of this confidence band do not automatically lead to conclude

<sup>1</sup> Stop clocks are predefined agreements between OLOs and Belgacom. Details about this process are available on request.

there is inequality in service delivery but require an additional analysis as several factors can cause the Z-score to fall outside confidence intervals.

Furthermore, equality or inequality of output performance for any service does not allow drawing a conclusion about SLA performance as both have strictly no link.

#### *Disclaimer*

This voluntary initiative is a result of Belgacom's internal governance structure, and does not amount to any contractual commitment or regulatory obligation on behalf of Belgacom.

The published data have been compiled and calculated by Belgacom in good faith and following best internal standards. However, Belgacom cannot be held responsible for any error in the quality of the information that would occur despite Belgacom's internal precautions, nor for any damage that would allegedly be claimed pursuant to the publication of the Z-Test information.

The results of the output performance comparisons do not allow drawing any conclusions about the regulated SLA performance by Belgacom, as there is no link between these elements.

The objective of this publication is to provide the market with a general observation on KPIs but does not constitute any commitment to reach a specific result related to these KPIs.