

## **Development of statistical model and parameter analysis for optimal water loss control target**

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### **ABSTRACT**

Although the target of revenue water rate varies depending on the size of the production, the water supply population, and the geographical characteristics, the difficulty of the water service provider is increasing in some regions. For the waterworks, statistical data on the effective use of waterworks were collected and analyzed. These data varied according to the characteristics of a region and time. The purpose of this study is to derive new parameters that affect the  $Q_r / Q_D$  (Revenue water ratio) using statistical data. The factors considered to be correlated with  $Q_r / Q_D$  were classified into three categories: local situation factor, factor for  $Q_r / Q_D$  enhancement, and financial factor. The results of the correlation analysis between each factor and the  $Q_r / Q_D$  are summarized. In addition, multiple regression analysis is carried out according to the administrative district and water supply population size. As the characteristics of all the municipalities showed that higher  $Q_r / L_p$  (Revenue water quantity divided by pipe length) were higher in the  $Q_r / Q_D$ . In special metropolitan cities, the higher the  $B_s / L_p$  (Number of small blocks divided by pipe length), the higher the  $Q_r / Q_D$ . And figure 1 and 2 show correlation between the  $Q_r / Q_D$  and the waterworks characteristics with 95% C.I. (Confidence Interval).

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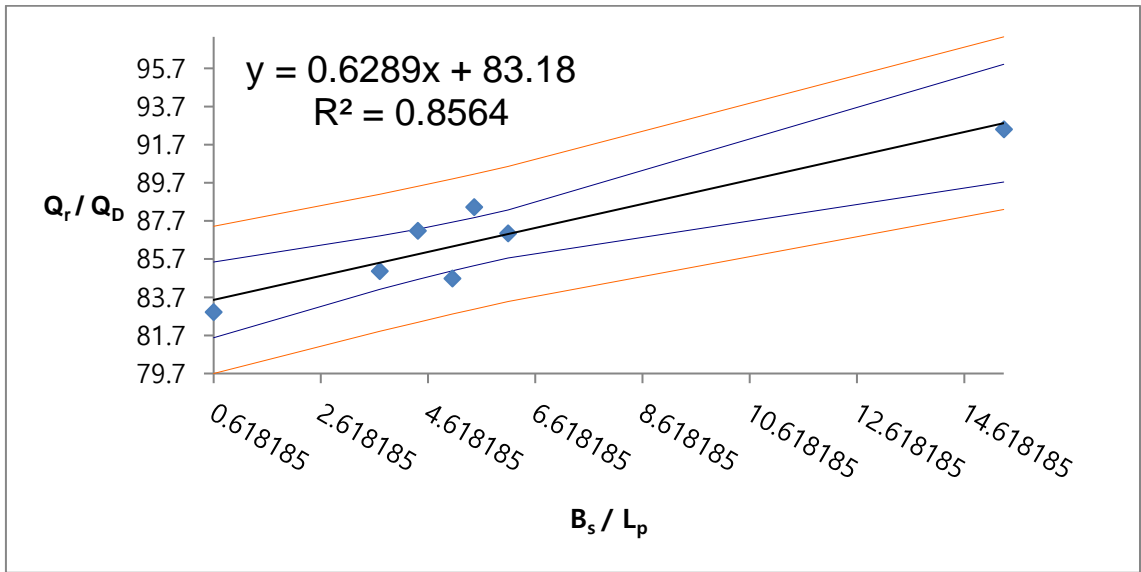


Fig. 1. The Correlation diagram between  $B_s / L_p$  and  $Q_r / Q_D$  with 95% C.I.

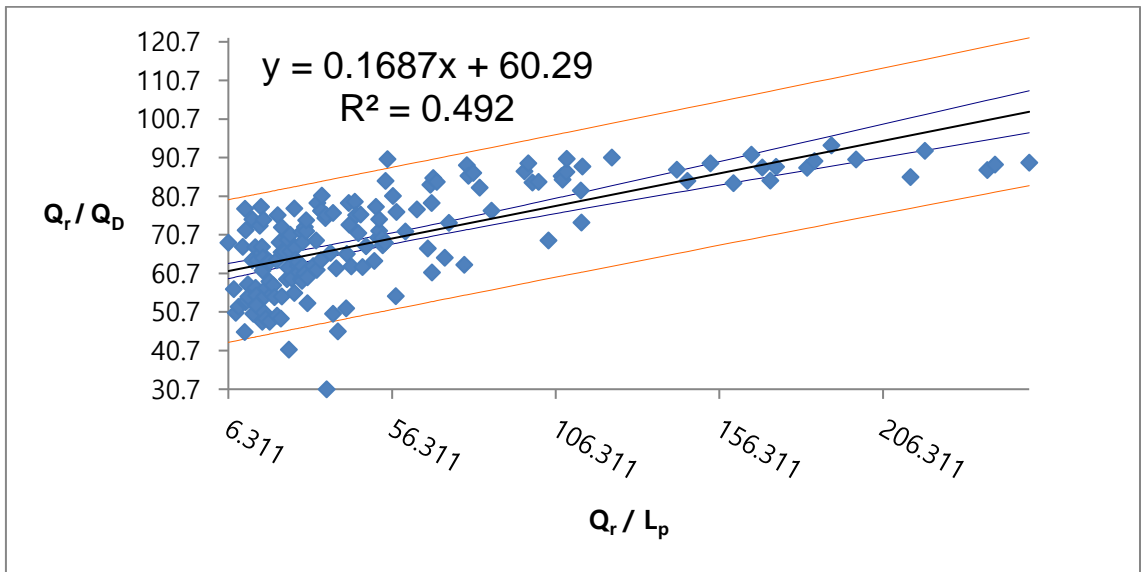


Fig. 2. The Correlation diagram between  $Q_r / L_p$  and  $Q_r / Q_D$  with 95% C.I.

## REFERENCES

- Lambert, A. O. et al. (1999). A review of performance indicators for real losses from water supply system, IWA-AQUA, **48** (6), 227-337.
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