

# **An Analysis of NoSQL Database and Relational Database on an Ecommerce Platform**

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Lots of businesses recognize the Internet as an effective approach to creating valuable business opportunities. Currently, there is a trend towards an online marketing model, which refers to posting business information to Internet users with the goal of increasing offline consumption. However, as this model has gained popularity it has also increased challenges. One of them is that large amounts of data are now available on online commerce platforms, which leads to database maintenance and performance issues for businesses.

In order to handle large amounts of data and processing, a Database Management System for online commerce platforms has to address demanding performance requirements, especially scalability and processing efficiency. On the other hand, from a business perspective, the usage and maintenance of their database must be cost-effective. These conditions demand that online commerce platforms must be built on a scalable and practical database.

To improve a platform's ability to process data, this dissertation investigates different kinds of databases and how they help to mitigate issues related to large volumes of data. There are two major types of database: Relational Database and NoSQL Database. In this dissertation, the response time, error rate and throughput of different Database Management Systems are compared. Database process time complexity and space complexity are used to measure the efficiency. Furthermore, the dissertation comparatively analyzes different databases' economic costs.

The research is based on a real business platform - Soosokan, which is a project conducted within the Trinity College innovation incubator, called LaunchBox. Two Database Management Systems: MySQL database and Cloudant database, respectively based on relational SQL and NoSQL technology, were built on the Soosokan platform to evaluate processing big data performance and economic benefits. The results of two database experiments show that the scalability of MySQL and Cloudant is similar, but Cloudant is more efficient than MySQL in querying and inserting. In addition, Cloudant occupies more space but MySQL is more expensive. In conclusion, Soosokan employed the cost-effective Cloudant database with better performance.