Abstract: In spite of the numerous benefits of the Prefabrication building technology (prefab), its uptake in the construction industry has been very slow. This is largely because the reported benefits have been anecdotal, and little research has focused on quantifying the benefits. This research aimed to fill this knowledge gap by investigating whether or not prefab contents as percentages of the final contract sums could correlate significantly with the time and cost performance achieved on projects. Using archival research approach, 30 light to medium commercial building projects completed during 2013 and 2014 in Auckland, New Zealand, were investigated. The project details acquired included initial cost and duration estimates and the corresponding completion figures, and the values of prefab contents as percentages of the final contract sums. Correlation and regression analyses were used to analyse the data. Results showed that cost and time performance improved with increase in the building prefab content in the buildings within certain limits. On the basis of regression models developed and validated using the project records, it was found that by increasing the offsite proportion of building components up to 77%, there is 95% chance of achieving the cost and time targets, not withstanding the influence of other extraneous factors such as weather, contract strategy, site and project characteristics. This result is expected to provide the empirical evidence that decision makers need to employ more of the technology in the industry, and hence contribute to improving its wider up-take.