BOOTSTRAP方法在對應能力指標信賴區間之應用研究

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摘 要

目前，許多的企業普遍應用統計製程管制於生產製程中，在整個生產過程的管制上，製程能力指標也是統計製程管制的工具之一。製程能力指標的目的在於檢驗生產製程的能力，也就是監控製程是否能夠生產出符合消費者的產品。目前在製程能力指標之相關文獻探討上，大多集中在對稱公差的製程，但是，在實際生活中，不對稱公差卻時常存在。因此本研究以非對稱能力指標為研究的對象，找出其適合的信賴區間。 傳統推導信賴區間的方法必須假設母體為常態分配，然而這樣的假設卻可能與事實相違背。因此本研究利用BOOTSTRAP無母數的統計推論技巧，在不需要對母體做預先性的假設、也沒有繁複的統計推導情形下，找出精確度高的信賴區間。 我們首先推導出C 估計式之期望值和變異數，並利用BOOTSTRAP方法來探討分析C 的估計式。接著建立非對稱能力指標C 之四種BOOTSTRAP信賴區間，並比較這四種信賴區間。最後提供模擬結果做為實務界另一個參考方向。

關鍵詞 : 製程能力指標、非對稱公差、BOOTSTRAP方法

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