Online fashion retailer Asos has unveiled strong Christmas trading figures, underlining shoppers' rapid move to the internet when it comes to buying clothes.

Total retail sales jumped 38% to £335.7m in the four months to the end of December – ahead of market forecasts for a 36% rise. Sales in the UK, Asos's biggest market, increased 37% to 133.7m.

Nick Robertson, Asos's chief executive, said: "We have enjoyed another strong Christmas and made a good start to the financial year. Retail sales in the UK were particularly strong.

"We have been benefiting from a structural shift online for 10 years. By constantly improving the offer to our fashion-conscious twentysomething customers they are rewarding us with more sales."

He said improvements included allowing customers to pick up their purchases from 3,000 convenience stores across the country to meet increasing demand for "click and collect" orders.

Asos targets young shoppers keen to emulate the styles of celebrities such as Kate Moss and Cara Delevingne. David Cameron's fortysomething wife, Samantha, wore a £42 Asos dress to watch the prime minister's conference speech in October.

The company's success, even in the UK where consumer spending power has suffered a relentless squeeze, highlights the importance of the internet to retailers. Companies with strong online operations, such as Next and John Lewis, withstood tough Christmas trading conditions while those with a weaker online operation, including Debenhams and Morrisons, suffered.

Asos's international sales rose 38% to £202m. The company delivers to 237 countries and territories and sells more than 65,000 products bearing famous fashion names as well as its own brand.