A firm's strategic innovation orientation, which is aimed at discovering and satisfying emerging customer needs with novel technological solutions, has repeatedly been shown to be crucial for firm innovativeness and firm performance. Despite its apparent importance, relatively little research has addressed antecedents of a firm's strategic orientation that help explain heterogeneity in innovation strategies across firms. Especially the influence of top management teams (TMT) should be critical, since innovation strategies are shaped at the top management level. Building on the theory of upper echelon, this study investigates how TMT characteristics affect a firm's strategic innovation orientation, and how this relates to innovation outcomes and firm performance. Hypotheses are tested on a sample of goods manufacturers using a combination of survey data, document analysis, and objective capital market data for firm performance. Results indicate that TMT diversity, measured as heterogeneity in educational, functional, industry, and organizational background, has a strong positive effect on a firm's innovation orientation. A strong proactive focus on emerging customer needs and on novel technologies then lead to a portfolio of new products with higher market newness and technology newness, which both increase firm performance. The results therefore emphasize the importance of TMT characteristics as antecedent for innovation strategy and innovation outcomes.