Acknowledging an increased research interest into the success factors for young technology-based firms in the last decade, the present study serves two main purposes. First, we aim at developing a comprehensive concept of functional management competence in young technology-based firms. Functional management competence covers the understanding of and proficiency in managing specific functional tasks (Katz, 1974). As we focus on young technology-based firms, it is suggested that marketing, financial and technology management tasks are at the core of functional management competence. Second, we aim at delineating and validating an appropriate measurement model for functional management competence. In order to test the model's nomological validity, we investigate the impact of functional management competence on firm growth. Therefore, building on established firm development approaches, we propose a phase model for the development of young technology-based firms. Our study builds upon data from 212 young technology-based firms in the field of microtechnology, nanotechnology, electronics, optics and lasers. We use formative measurement models to establish valid and reliable constructs and a path model based on partial least squares modelling to investigate the performance effects. The results suggest that functional management competences generally are significant drivers of firm development speed. In particular, technology and marketing management competences are shown to impact development speed. While technology management competence is positively driving development speed, the marketing management competence impact on speed is mediated by competitive advantage of the new products developed by young technology-based firms. Financial management competence has no significant link to firm development speed.