Henry Ford and the Model T: lessons for product platforming and mass customization

Fabrice Alizon, Keyplatform Company, 91 rue du Faubourg St Honoré, 75008 Paris, France
Steven B. Shooter, Mechanical Engineering, Bucknell University, Lewisburg, PA 17837, USA
Timothy W. Simpson, Industrial & Manufacturing Engineering, The Pennsylvania State University, University Park, PA 16802, USA

Henry Ford is recognized as the father of mass production, but his contributions extend well beyond that, offering valuable lessons for product platforming and mass customization. In this paper, we study Ford's Model T and its many variants in depth and describe insights into Ford's vision and his car. In particular, we examine how the platform was built, leveraged and dynamically maintained with continuous improvements to maximize learning and economies of scale. Finally, we compare Ford's approach to more current approaches for platforming and mass customization. October 2008 marked the 100-year anniversary of the introduction of the Model T. In some aspects this old car still outperforms us, and we can learn valuable lessons from its past to avoid future mistakes and improve current practices.

Keywords: design practice, automotive design, design history, customization, product development

Many of today's industries target platform-based products tailored to customers' needs through derivative products. This approach enables companies to increase their market share and reduce their development and manufacturing costs (Meyer and Lehnerd, 1997; Robertson and Ulrich, 1998). Even if platform-based product development is better understood and managed today, it is still far from being mastered by industry and academia (Alizon et al., 2007). Thus, the goal in this study is to examine one of the most successful products in automotive history, namely, the Ford Model T. We assert that the Model T was one of the first platform-based products ever produced in quantity and one of the most efficiently designed. Despite the famous maxim attributed to Henry Ford: 'You can have any color car so long as it's black', Ford's contributions extend far beyond being the pioneer of mass production processes. Ford adapted techniques from the U.S. weapon and meat packing industries to the automotive industry and improved

Corresponding author:
Fabrice Alizon
fabrice.alizon@gmail.com

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it to its limits by rigorous principles (Hounshell, 1984). Each Model T model was built on the same platform, with a deep level of customization: the body was specific to each model. Nowadays, only the 'Skateboard' concept and the Sequel prototype by GM (Eberle, 2006) target the same level of customization. Furthermore, this platform was improved over time along with the models. For all these reasons we suggest that the Model T platform was and is still a reference in terms of platform-based design, permitting Henry Ford to tailor derivative products for multiple market segments, and to even mass customize this product based on an original approach.

Managing variety is not a new phenomenon and goes back to the beginning of the industrial revolution and even predates it (Arndt and Kierzkowski, 2001); therefore, there has always been room for fragmented markets to emerge. Hence, at the beginning of the automotive industry, mass production was the right choice (with an average of 5 models per year over 19 years) (Hounshell, 1984). Ford also engendered principles for mass customization by developing a core platform with a high level of production while outsourcing tailored products to specialized companies.

The first aim in this study is historical, highlighting Henry Ford's work in terms of product platforming and mass customization; usually only mass production is considered (Hounshell, 1984). The second aim is to discuss how Ford and his team developed the Model T as a platform and why and how it was possible to easily customize this car. Finally, the last aim is to extend this success to today's platform-based approach, garnering insights from the past and lessons learned from this success story.

In the next section, we revisit the Model T's history, discussing its lifecycle, design, and manufacturing processes. This description explains why and how Ford did more that just implementing mass production; hence, Sections 2 and 3 discuss how Ford specified a relevant product platform, which enabled mass customization strategy. This study is based primarily on a historical viewpoint (Clymer, 1955), two technical sources (Fahnestock, 1921; Ford Motor Company, 1921), and an existing Model T (a Touring 1923).

1 *Related literature*

Before producing the Model T, Ford first gauged the market with several designs, through the Model N, a Roadster built in 1905 and one of the first four-cylinder cars at the time, the model R and S built in 1906 and 1907, respectively, and the Model K, a six-cylinder car, which was a failure and his last venture in the high-priced car market. In October 1908, Ford launched the Model T. At the very beginning, the Model T was a success for its general utility, fine performance and price. This car rapidly became the first car owned by many in the country. Early versions of this car were refined and offered very