Abstract

In today's world of automotive business characterized by global competition, proliferation of model variants, shrinking product life cycle and demanding customers, the Indian automotive manufacturers are encountering severe challenges to introduce new automotive model variants (NAMVs). In order to overcome these challenges (for e.g., regulatory pressures, passenger safety, emission control, rapidly changing technologies, low capacity utilization, etc.), the Indian original equipment manufacturers (OEMs) are making efforts to increase their R&D efficiencies in terms of rapid development and launch of NAMVs. Although several research studies have cited the deployment of various capabilities by organizations for new product development (NPD), the extant literatures have not addressed the interrelationships between these capabilities and the relative importance of the capabilities particularly in the context of introduction of NAMVs. This research work determines and establishes the critical organizational capabilities and NPD success measures and using their research implications, deploys an application-based structural framework aimed at successful and rapid introduction of NAMVs by the Indian automotive manufacturers. The thesis work analyses the relative importance of four different core organizational capabilities – design and delivery capabilities (DDC), transformational capabilities (TRC), relational management capabilities (RMC) and general management capabilities (GMC). In order to assess the effectiveness of the above mentioned core capabilities, two NPD success measures namely, 'customer perceived value (CPV)' and 'success measures for product introduction (SMPI)' have been used in this research. The first objective of the thesis addresses the relative importance of identified core organizational capabilities and NPD success measures and their interrelationships in the context of introducing a NAMV from concept till product launch. The second objective of the thesis work is aimed at the prioritization of the attributes based on the numeric values of their standardized estimates corresponding to each of the four core capabilities. The third objective of the thesis determines the relative priorities of attributes (affected/manifest variables) with respect to NPD success measures i.e. customer perceived value (CPV) and success measures for product introduction (SMPI) of NAMVs.

The values obtained for model fit indices (unidimensionality) were within the permissible ranges to validate this structural model comprising four core organizational capabilities and two NPD success measures as the latent constructs. Out of the fourteen hypotheses tested, only five were rejected which indicates a sufficient validity of the model. The results indicated that the reliability and discriminant validity of fit measures were satisfactory indicating no further modifications. As a whole, the confirmatory factor analysis (CFA) satisfactorily holds good.

Based on the empirical evidence, it was observed that the general management capabilities (GMC) of the automotive manufacturing firms had a positive impact on all the other three capabilities inclusive of DDC, TRC and RMC. As conceived, all the linkages between GMC and

the other three capabilities (i.e. DDC, TRC, and RMC) had been found to be positively significant at 5% level. All relationships between DDC and CPV, between TRC and CPV, and between RMC and CPV had been observed to be positive at 5% level of significance. The direct links between GMC and SMPI as well as between GMC and CPV had been found to be non-significant at 5% level. Also, the association between DDC and SMPI witnessed a non-significant inference at 5% level. This indicated that DDC of a firm by itself might not positively affect the SMPI. It was found that the positive impact of GMC on DDC was the highest. The positive effects of GMC on TRC and RMC were also significant at 5% level of significance. Hence, it can be deduced that the GMC of an automotive manufacturing unit played a vital role in strengthening the other three capabilities – DDC, RMC, and TRC of the firm while by itself did not affect CPV and SMPI. The positive relationship between TRC and DDC analytically validated the definition of TRC as a catalyst for strengthening DDC.

While TRC positively influenced CPV at 5% level, the relationship between TRC and SMPI had been found to be non-significant at the same level of significance which was in contrast to already established notion. As such RMC had a positive impact on both CPV and SMPI at 5% level of significance, its impact on DDC had been observed to be insignificant at 5% level. Hence, it may be ascertained that the RMC of an automotive OEM had a predominant role in enhancing CPV and SMPI. While on its own, RMC had negligible effect characterized by non-significant inference at 5% level to enhance the DDC of an automotive OEM. There had been found a positive linkage between CPV and SMPI to a greater extent at 5% level of significance.

This research can be further extended such that the current application-based structural model for introducing NAMVs (working on basic non-renewable fuel sources – petrol and diesel-based model variants) can be advanced to incorporate the operating parameters required for adaptation of newer technologies embedded in electric hybrid vehicles. This type of application-based structural models may help in identification of new organizational capabilities to take care of disruptive innovation for launching NAMVs in the new marketplaces which may help in uprooting already established firms who are the market leaders.

The relative importance of the identified capabilities and their interrelationships will be the key knowledge inputs to Indian automotive manufacturers for achieving business transformation and excellence. The insights from this study may be significant contributors towards successful and rapid introduction of NAMVs in the marketplace.