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Managing costs through business model servitization: a strategic management accounting perspective on the RESOLVE[1] project

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EXTENDED ABSTRACT

The purpose of our research is to discuss how strategic management accounting can support business model (BM) servitization in tackling cost barriers regarding products and/or technologies which because of their production costs do not provide satisfying profits for the manufacturers. The empirical domain of this paper is the dynamic and complex electric mobility scenario. The focus is on the RESOLVE project, which is funded by the European's Union research and innovation program.

It is well known that the congestion in European cities, caused by the demand and usage of motor vehicles of the growing urban populations, produces noise and emission levels that pollute the urban environment and negatively affect the quality of life and health of local populations. Electric light vehicles (ELVs) may represent a solution to these problems. There are many actors involved within this dynamic and complex setting (electric vehicle makers and their suppliers, municipalities, energy companies, final users) and several marketing and technological aspects are still unclear.

Four main factors prevent the diffusion of ELVs: cost (and consequently the price for end-users), energy efficiency, attractiveness, and willingness to use (Weiller et al., 2015). To foster a wide diffusion of ELVs, the RESOLVE project aims to develop a range of cost-effective, energy efficient and comfortable ELVs that will primarily attract car drivers to

[1] RESOLVE: Range of Electric SOlutions for L-Category VEhicles - Horizon2020- GV5 2014 - Grant Agreement nr .653511 (http://www.resolve-project.eu). RESOLVE is a research project funded by European Community under H2020 European Green Vehicles initiative.

switch to ELVs for daily urban commutes. The project has thus been developing components and systems that meet the very low cost requirements for ELVs market segment. At the same time, the project plans to deliver an exciting and attractive vehicle driving experience by proposing new concepts (tilting & narrow track), while keeping the vehicle energy consumption at a very low level. These factors could induce internal combustion engine car drivers to switch to ELVs for their daily urban mobility needs. This is particularly true, if ELVs manage to be a cost-effective solution not only in terms of the purchase cost but also in terms of the total cost of ownership (TCO) – including the cost of purchase, energy and maintenance costs, resale and government subsidies. These new concepts will be exhibited in two fully electric tilting four wheeler demonstrators (L2e and L6e) although many new features will also be applicable to the complete range of ELVs (including powered-two wheelers).

One of the most important constraint that has delayed the wide diffusion of e-vehicles is the high cost of the battery system because it makes the development and production of e-vehicles not economically convenient. Furthermore, the battery system involves a high degree of technological uncertainty (Kley et al., 2011). However, no significant technological improvements are foreseen in the near future to make it economically sustainable for manufacturers and end-users. The RESOLVE project is thus developing an innovative electrified powertrain and it will tackle cost reductions by: a modular and scalable design of the components (i.e. battery pack and inverter); functional integration for drivetrain electronics, which includes an inverter, DC/DC-converter, battery charger and vehicle management unit; and finally using existing low-cost devices. However, a further way of boosting demand could be to tackle the cost issues by identifying alternative business models (BMs) for the widespread diffusion of RESOLVE's vehicle concept.

In the literature a shared definition of "business model" (Zott et al., 2011) is still lacking. In this paper, we refer to Osterwalder's ontology (2004), which lists and connects the nine typical components of a BM (capability, partnership, value configuration, value proposition, channel, relationship, customer, cost and revenue). Changes to existing BMs can make the difference between successfully commercialized innovations and those that are not economically sustainable (Chesbrough and Rosenbloom 2002; Teece 2010; Weiller et al. 2015). BM innovation can be valuable way of moderating and modulating the influence of cost drivers on the product and service production cost (Bernstein Research, 2011; Giannetti et al., 2016).

In the electric vehicle sector, very diverse BMs are emerging to respond to the major barriers to electric vehicle adoption, such as limited driving range, limited availability of charging infrastructure, long recharging times, and high costs (Khoo and Gallagher, 2012; Weiller et al., 2015; Hall et al., 2017). Each BM is characterized by one or more different elements, such as value proposition, target customers and distribution channels, customers and supplier relationships, ways of performing “key activities” and using “key resources”, cost structure and revenue streams. Specifically, alternative BMs could be differentiated by elements such as: i) direct selling; ii) pay per use; iii) vehicle leasing; iv) battery leasing. The design of alternative BMs could also have a significant impact both on the purchase cost and on TCO for the end users. Formulas other than direct selling could provide a competitive TCO for ELVs compared to conventional internal combustion engine vehicles. Customers could thus save money through lower acquisition and usage costs. These formulas need to be taken into account jointly with product development strategies, since they contribute in determining both actual costs and possible levers for cost reduction.

In this wide range of BMs alternatives, one possible innovation could be to add services or to revise the BM according to a service dominant logic (Baines et al., 2009; Giannetti et al., 2016; Weiller et al., 2015; Tenucci and Supino, 2017). Weiller et al (2015), for instance, analyze four cases: Build Your Dreams (BYD), Wanxiang, Tesla and Autolib’. Each case exploits different BMs: BYD is characterised by electric vehicle (EV) sales + fast charging; Wanxiang by EV leasing and sales + battery swapping; Tesla by High-end EV sales + fastcharging; Autolib’ by EV car sharing. Each BM is examined by a framework including 11 criteria. The first five criteria look at how the BM addresses the barriers to electric vehicle adoption from a consumer perspective. The remaining criteria are related to value creation and capture from the supply side. Within the latter group of criteria, the servitization of BM is considered as one way of creating and capturing value from the business. Hall et al (2017) pinpointed the significance of a service approach within the e-vehicle domain by studying ten new e-mobility BMs that can link three important sectors i.e. the automotive industry, energy systems and transport infrastructure. Each BM archetype is analysed to highlight implications for users, regulations, technology, and city systems. For the purpose of this paper it is important to recall that according to Hall et al. (2017), some BM archetypes seem to have the greatest capacity to fulfill the BM innovation needs across the three industries. Without going into detail, these promising BMs are characterized by an important integrated service approach to mobility.

To sum up, it seems that services play a significant role in overcoming barriers to e-vehicle diffusion. However, the magnitude of value creation of different BMs is not clear (Weiller et al., 2015; Hall et al., 2017), and consequently whether these BMs are economically sustainable.

In this research, we aim to examine the BM servitization of ELVs through the cost driver analysis approach developed within the strategic management accounting (SMA) field. The topic of cost driver analysis is widely treated in the SMA literature (Shank and Govindarajan, 1991); however, it does not consider BM as a subject of investigation and servitization as a way to manage cost and value drivers (Banker and Johnston, 2007). In some contexts, selecting relevant cost drivers and managing their impacts on production costs is not a problem, since there are clear possible solutions. However, within other contexts (i.e. ELVs), it may be difficult to select relevant cost drivers and to manage their impacts because, for instance, of the complex relationships among cost drivers and entities (i.e. different organizations as in the electric vehicle domain) involved in the provision of products/services to the final consumer (Banker and Johnston, 2007).

In this setting, cost driver analysis can help in identifying the main cost drivers of specific BMs and in modeling their impact on costs through the servitization of the BM. This approach leads to a better understanding of both the strategic positioning of private companies involved in a specific BM and whether the BM is economically sustainable. Giannetti et al. (2016) proposed the analysis of cost drivers by adopting a service-dominant logic perspective (Vargo and Lusch, 2004), and applying it to “Better Place” case study, another well known case history within the electric mobility scenario. However, this framework should be tested considering different contexts and cases.

In this research the framework proposed by Giannetti et al (2016) is adopted in a new context i.e. the RESOLVE project. We use an exploratory approach and investigate the RESOLVE project through the case study method (Yin, 2003; Eisenhardt and Graebner, 2007).

The originality of this paper lies in the context investigated (RESOLVE project) and the cost driver analysis applied regarding the servitization of BM. The expected outputs include; 1) insights for designing suitable BMs in order to boost the diffusion of vehicles developed by the RESOLVE project, and 2) a refinement of the cost driver analysis within a servitized BM context.

References

Ansari, S., Bell, J., Okano, H. (2006). Target Costing: Uncharted Research Territory, Handbooks of Management Accounting Research, 2, 507-530.

Baines, T.S., Lightfoot, H., Benedettini, O., Kay, J. (2009). The servitization of manufacturing: a review of literature and reflection on future challenges. Journal of Manufacturing Technology Management, 20, 547–567.

Banker R.D., Johnston H.H. (2007). Cost and profit driver research, in C.S. Chapman et al. (Eds), Handbook of Management Accounting Research, Elsevier, 531-556.

Bernstein Research (2011). Global Autos: Don't Believe the Hype – Analyzing the Costs & Potentials of Fuel Efficient Technology.

Chesbrough, H.W., Rosenbloom, R.S. (2002). The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. Industrial and Corporate Change, 11(3), 529–555.

Davila, T., Wouters, M. (2007). An empirical test of inventory, service and cost benefits from a postponement strategy, International Journal of Production Research, 45(10), 2245-2267.

Eisenhardt, K.M., Graebner, M.E. (2007). Theory building from cases: Opportunities and challenges. The Academy of Management Journal, 50(1), 25–32.

Giannetti, R., Risso, L., Cinquini, L. (2016). Managing costs by business model: issues emerging from the case of E-Car, Measuring Business Excellence, 20(4), 28-45.

Hall, D., Moultak, M., Lutsey, N. (2017). Electric Vehicle Capitals of the World: Demonstrating the Path to Electric Drive, International Council on Clean Transportation, Washington, DC.

Khoo, E., Gallagher, J. (2012). Emerging Electric Vehicle Market & Business Models and Interoperability Standards, ESB, C6-202, CIGRE 2012, Ireland.

Kley, F., Lerch, C., Dallinger, D., 2011. New business models for electric cars—A holistic approach. Energy Policy, 39(6), 3392–3403.

Osterwalder, A. (2004). *The business model ontology: a proposition in a design science approach*, Dissertation 173, University of Lausanne.

Shank, J.K., Govindarajan, V. (1993). Strategic Cost Management: The New Tool For Competitive Advantage, New York, The Free Press.

Teece, D.J. (2010). Business Models, Business Strategy and Innovation. Long Range Planning, 43(2-3), 172–194

Vargo, S.L. and Lusch, R.F. (2004), "Evolving to a new dominant logic for marketing", Journal of Marketing, 68(1), 1-17.

Weiller, C., Shang, A., Neely, A., Shi, Y. (2015). Competing and Co-existing Business Models for EV: Lessons from International Case Studies. International Journal Automotive Technology Management, 15, 1–12.

Zott, C., Amit, R. and Massa, L. (2011). The business model: recent development and future research, *Journal of Management*, May, 1-25.