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# Car dealerships and their role in electric vehicles' market penetration-A Greek market case study

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#### Abstract

This paper explores the contribution of car dealerships in Electric Vehicle (EV) market up-take. Car dealerships play a significant role in EV market penetration where the most critical moments of the EV's life happens, the actual sale process. The recent yet limited literature from the US shows certain issues during the sale process of EVs. The literature also indicates that the car dealers are not always qualified enough, lack knowledge to sell EVs, or in other cases they might even discourage potential customers from purchasing an EV. Furthermore, the paper presents statistical EV sales data from the Greek market and explores the literature findings through interviews that have been carried out on the only two existing EV distributors in Greece. The aim is to identify the validity of the literature review findings as well as to present the current state of the EV market in the country. Finally, policies and suggestions are made that can improve EV market penetration in Greece.

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*Keywords:* Electric vehicles sale process; Greek EV market; EV dealerships; policies for EV market up-take \* Corresponding author. Tel.: +30 2310 498484; fax: +30 2310 498269. E-mail address: <u>atromaras@certh.gr</u>

### 1. Introduction

Governments across the world are trying to reduce air emissions through various pledges, directives and regulations. The transport sector alone is responsible for 25.3 percent of the EU's Green House Gas (GHG) (European Union, 2015) emissions, while road transport itself contributes to almost 72 percent of the EU GHG transport sector emissions (European Union, 2015). Furthermore, road transport contributes globally to 10 percent of total GHG emissions (OECD, 2009). As a response to the impact that the transport sector has to the environment, the EU has introduced various policies, including aiming at making the sector more competitive in the future while creating growth and providing employment.

One of these main driving policies, the 2011 Roadmap to a Single European Transport Area (European commission, 2011), aim at shaping the future of the transport sector by increasing sustainability and competitiveness of the transport system through the reduction of GHGs, better energy efficiency, and the use of alternative fuels and energy sources. The White Paper also sets as a target the reduction of GHG emissions to 20 percent below their 2008 level by 2030 for the transport sector. As a response to the European Union's heavy dependency on oil products, the European Commission introduced in 2015 the Energy Union package (European Commission, 2015), aiming at providing secure,

sustainable, competitive and affordable energy to EU consumers. Disturbingly the following figures present how much the EU is dependent on hydrocarbons with 94 percent of transport relying on oil products out of which 90 percent is imported (European Commission, 2015). Reference to the development and deployment of alternative fuels as means to decarbonise transport and reduce oil dependency, is also made in the Clean power for Transport (European Commission, 2013) and the Directive on the deployment of alternative fuels infrastructure (European Parliament, 2014). Regardless, energy efficiency and the need for the EU to become a leader in renewable energies, are raised in President Junker's agenda (Junker, 2014) not only as a climate change response mechanism, but also as a way of creating growth and jobs.

Based on the aforementioned GHG figures coming from road transport, EVs can play a significant role, not only for the EU but globally, in meeting their commitments for their reduction. According to EURELECTRIC (2009): a) EVs can help attain major EU energy environmental policy goals by replacing conventional internal combustions engines, b) EV technology can offer an opportunity for the EU to become a front runner in the production of EVs thus creating a sustainable green economy, c) EVs are more efficient than alternative transport technologies. So, despite the benefits that EVs have in terms of carbon footprint, while being able to handle people's daily driving needs and save money from refuelling, why are they not selling fast enough?

Based on data from the European Automobile Manufacturers Association (ACEA) the total amount of EVs registered in the EU were 186,170 for 2015 and 92,455 for 2014 (ACEA, 2016). This accounts to a 101. 4 percent increase in EV registrations between 2014 and 2015. Figure 7 presents the number of EV registrations in the EU per country with the Netherlands being in the first and Norway in the second place. However, Norway has the market with the world's highest plug-in share (19 percent in 2015) competing with the UK which has a market 15 times larger (EV-Volumes website, 2016). Greece, the market that is going to be the focal point of this paper, has an EV market at an infancy level with a total of 67 registered EVs in 2015 and 59 in 2014 (ACEA, 2016). Vehicles like the BMW i3 were introduced in early 2014 at a starting price of 35,000€ while the Mercedes-Smart electric was introduced at the middle of the same year at 24,500€. The charging infrastructure in the country is also at a very similar level with only one main charging network of 15 chargers located in the vicinity of Athens. Despite the fact that the total numbers of EV sales are growing, the figures are still not satisfactory or enough across the EU countries to compete against the conventional vehicles.

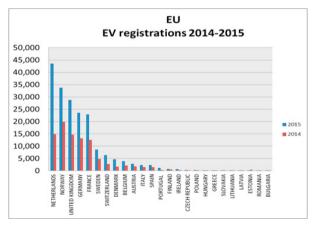


Figure 1 Number of EV registrations in EU per country for 2014-2015. Source of data ACEA (2016)

In addition another factor that could influence the purchase of EVs is the cost of charging. Specifically, electricity prices are relatively cheap compared to conventional fuels with the average kwh cost at  $0.221 \in$  in the Euro zone and  $0.179 \in$  in Greece (Eurostat, 2015). On the contrary, the average cost for gasoline and diesel is  $1.378 \in$  and  $1.027 \in$  respectively in Greece (fuelprices.gr, 2016). Therefore, charging an EV cost less during its lifecycle compared to conventional vehicles (Wu *et al.*, 2015; Prud'homme *et al.*, 2012). Furthermore, the cost of maintenance of EVs is also another parameter that seems to cost less compared to conventional vehicles. Specifically, EVs require less

maintenance due to: a) battery, motor and electronics having to be maintained less frequently, b) the fewer fluids to change, c) regenerative breaking which reduces significantly brake wear, d) less moving parts compared to conventional vehicle engines (US Department of Energy, 2016). Furthermore, EVs do not require an exhaust system.

This paper aims at providing a brief overview of the limited literature regarding the sales process of EVs based on reports from the U.S., presenting the struggle to sell EVs and cases where the dealers deter potential customers from purchasing EVs. The Greek EV market, being at its early development stage will act as a platform to investigate whether these claims from the US market are valid. This is not done for comparison reasons of the two markets. Instead, the process of EV sales in the Greek market is explored to identify early potential problems/issues, in order to propose policies and methods of improvement both to policy makers as well as the EV dealers.

#### 2. Literature review

Regardless of the obvious parameters regarding the difficulties of EVs' uptake, such as their limited range, their price compared to conventional vehicles of the same category as well as the lack of charging infrastructure in many countries, EVs might face another challenge right at the point of their introduction into the market, the car dealerships. The latter play a significant role in EV market penetration, during the initial state of the actual sale process. Recent, yet limited, literature that comes predominantly from the US indicates that the sale process is problematic.

American dealerships struggle to convince consumers to make a leap on EVs (Kress, 2015). According to Kress (2015) dealerships tend to make larger profits from second hand cars, while their largest source of income is from parts and service. The size of profits from the latter is enough to make dealerships and sellers to push customers towards certain choices. With EVs not requiring the usual oil changes and maintenance that internal combustion engines need, this element alone can play a significant factor for dealerships to push certain vehicles to potential customers (Kress, 2015; Richtel, 2015). Some contradicting data are presented by Cahill *et al.* (2015) where the authors state that gross profits vary widely for Plug-in Electric Vehicles (PEVs) depending on make/model and that the average gross profit for PEVs was higher than the respective profit for conventional vehicles of the same category. Since the data refer to average gross profit, this does not meanSe that a dealership might not lose money on a PEV. Instead, this means that on average dealerships have better profits compared to conventional vehicles. Furthermore, dealers might also make some marginal profits from selling additional charging equipment to customers or in some cases other products such as tinted windows which are marketed for increasing range by improving the cooling and heating of the cabin (Cahill *et al.*, 2015). People purchasing EVs in many cases buy them as secondary vehicles which mean that there are fewer trade-ins of conventional vehicles which as mentioned earlier are a main source of profit for dealerships (Cahill *et al.*, 2015).

In other cases car dealerships might try to sell EVs to customers with a traditional standpoint of a conventional car. The dealers will look at the sale price, its limited range, and the lack of infrastructure and instead they might offer to the customer an internal combustion vehicle for their personal utility (Richtel, 2015; Cahill *et al.*, 2014). This viewpoint implies that there might be cases where EVs are not marketed properly based on what they actually offer.

Another factor that might make a dealership to promote more a conventional vehicle is the amount of time it takes to sell an EV. According to a Nissan business development manager cited in Richtel (2015), a salesperson can sell two conventional vehicles in less time than it takes to sell a Nissan Leaf. This means that a salesperson will have to put a lot of work for a relative small bonus which inadequately compensates their effort. The same picture is presented by Cahill *et al.* (2015) where the authors state that dealers report much longer transaction times for PEVs which includes the total time spent from when a customer arrives at the showroom to the point where they drive off with their new vehicle.

Knowledge of the salespeople on the subject of electric cars also seems to be problematic (Evarts, 2014; Cahill *et al.*, 2015) which may as well act as a deterrent for potential buyers. According to a consumer report from the U.S., several salespeople were knowledgeable but few provided accurate answers regarding battery life and their warranties (Evarts, 2014). Others were not as knowledgeable on the matters of tax incentives, charging needs and respective cost. Evarts (2014) also claim that there is a strong correlation between how much the salesperson can encourage a potential buyer to purchase an EV and their knowledge on the subject. Competence in selling EVs is also related to hands on experience and confidence after the salesperson has previously sold EVs (Cahill *et al.*, 2015).

Some more discouraging findings from Evart's (2014) consumer report state that shoppers were discouraged from buying an EV in 35 out the 85 examined dealerships. Similar reports are given by Richtel (2015) where he reports that buyers have visited dealerships to carry out a scheduled test-drive on an EV but instead they were offered to see a conventional vehicle of the same category. This implies that in some cases salespeople might have their own agenda.

#### 3. Methodology

The methodology followed by the paper is simple and relies on the combination of desk research, the use of a questionnaire and phone interviews. The aim was to carry out literature review, where the main issues around the sales process of EVs are identified and the paper's hypothesis is formulated to be tested through the interview by using a questionnaire. Considering the limited availability of automakers that offer EVs in Greece only two interviews were carried out. Product managers related to the electric vehicle series of the automakers from two main official distributors in Greece were interviewed. One was interviewed via telephone, while the other responded to the questionnaire by email. In the first cases the questionnaire was sent to the interviewee prior to the phone conversation in order to familiarize himself with the questions. A structured questionnaire containing open and closed ended style questions was used, including some questions using a Likert scale. This combination of qualitative research interviews and structured interviews is suitable when quantitative studies (existing literature review from the U.S.) have been carried out and qualitative data are required to clarify the meaning of findings, where testing a formal hypothesis and where the generalizability of previously obtained qualitative findings is to be tested (King, 1995; 16, 17). The questionnaire questions were strongly related to the literature review findings yet the phone interview provided directness with the interviewees to further explore and discuss details around the sales process of EVs in Greece.

#### 4. Interview results

The first interview to be conducted was with company A and the product manager A for the EV line, working for the automaker's official distributor in Greece. Company A had the largest share of EV sales in Greece which were bought from civilians, research institutes, as well as public authorities and utility companies. The second interview was carried out with company B and product manager B. Currently, company B no longer offered EVs because the automaker had stop producing them and new models would become available again in 2017. The following section contains the responses to the questionnaire from the two managers.

According to manager A the sale process of an EV takes much longer compared to conventional vehicles. This happens due to the fact that informing the customer regarding the product takes much longer, due to the customer's more queries. Making a deal and confirming a purchase also takes much longer. In the case of EVs, customers tend to need more time to make up their mind, taking even up to 6 month, where during this time they decide whether the EV is suitable for them in terms of daily range, how they are going to pay and where they will charge the vehicle (home/office/public). Similarly, there have been some exceptions where the customers decided very quickly. In terms of the delivery time of the EVs, this is the same like any other conventional vehicle, at around 2 months, which means that this is not a barrier for someone willing to purchase one. In contrast, manager B believed that the main problem was that there were not enough government incentives for a potential buyer for an EV with the only positive factor being that they are exempt from road tax and that the taxation presumption is zero. Furthermore, manager A did not think that a salesperson could promote a conventional car over an EV due to the sale process being longer (for personal reasons and the bonus involved), to be a valid case. He stated that this is bad for the company and the seller, but in the end it is up to the customer to decide which vehicle to purchase. When manager A was asked regarding the cases from the US literature where a dealer would try to suggest that the buyer should purchase a conventional car over an EV. he responded that he did not think this was a valid case because the US market is more developed and further ahead of the European.

Hence, both managers were asked to rate, how knowledgeable their potential customers were regarding EVs, on a scale from 1-5 with the latter being the highest. Manager A responded that the scale varied between 1 and 2 while manager B responded with a 2. According to the manager A, people who came to purchase an EV from a showroom had a fair knowledge about EVs. Instead in some of the promotional roadshows that the company did, the people had

poor knowledge about the EVs, while in some cases they did not even know that these cars even existed. This was something that company A believed that it had to change and that through such promotional events they could raise awareness regarding electromobility and make Greek customers aware of these vehicles.

Furthermore, the managers were asked questions regarding whether they had specialised trained sellers, what kind of training they received and whether the company had a certification for dealerships proving that they are officially certified to sell EVs. Answers varied in this section. In the case of company A regarding the existence of specialised sellers, the reply was that this depended according to the size of the dealership. In one of the dealerships in Athens, they had a dedicated and specially trained seller for EVs. In other dealerships they did not have dedicated EV sellers. Instead all the sellers were trained to sell EVs. In contrast for company B no dedicated EV salesmen existed. Hence, the training that the sellers receive in both companies covers the following subjects: a) general electromobility, b) technical training regarding EVs, c) specialized training for the EV models, d) charging the vehicle and e) finally product characteristics. For company A the training for the specialized dedicated dealers is carried out both by corporate headquarters and domestically, while all the sellers in general are trained by the company's Greek training centre. Furthermore, all technical staff has to be certified to be able to work on an EV, while the training is carried out in the Greek training centre. Also, every service centre is required to have at least one certified mechanic for plug in vehicles. Regarding the certification for a dealership to be qualified for selling EVs, this did not exist. Instead, a permit process is in place where the official Greek distributor decides which dealership can sell EVs based on the potential market and the city where the dealership is located. In the case of company B no certification process existed for a certified EV dealer. The only prerequisite was that the dealership had to install charging equipment with certain specifications made by the automaker.

The next set of questions covered issues around the sale process. Specifically, the interviewees were asked whether EVs are promoted as primary or secondary vehicles. The response from manager A was that the terminology should be the other way around because the majority of people purchasing an EV usually buy it as a secondary car, replacing a larger SUV or an expensive car to run and maintain. Therefore, the secondary vehicle becomes the primary since it is used on a daily basis. Also, there were a few cases of people that went into a showroom to buy a conventional vehicle and decided to buy an EV. In other cases, people had decided to purchase an EV instead, after they had ordered a conventional and paid their deposit. The majority of people were also satisfied with their choice of an EV. Hence, manager A was asked whether a customer would be offered first to view an EV instead of a conventional car when they walked into the showroom, including whether there was any chance that the seller might deter them from purchasing an EV over a conventional. The manager's response was that it is up to the customer to decide what they want to view first when they enter the showroom. Thus, the seller will never suggest something contrary from what the customer wants to view. Manager B also inclined towards the same view stating that a salesperson would only suggest a model according to the customer's needs. Also, according to manager A, a salesperson would never discourage a customer from purchasing an EV because they would be discrediting their own product. The only case where a seller might suggest an alternative is when the customer cannot afford it or the vehicle is not suitable for their needs.

Moreover, the interviewees were asked which type of car offered better higher profits as well as in which case the seller had a higher bonus. The response from both managers was that usually conventional cars offered better profits although that varied in some cases and models. Manager A explained in the case of conventional vehicles, the competition from other automakers could be steeper, thus forcing a dealership to reduce the asking price and their profit. Competition for EVs in Greece is small; therefore, the profits could be bigger in some cases. The profit margin for EVs is smaller due to the manufacturing cost being higher and thus the purchasing price from the plant. Percentages regarding profit from maintenance also varied between models. Regarding the seller's bonus manager A said that it remains the same for both EVs and conventional cars although there is a future scheme for rewarding more the salesperson in case they sell EVs. Another interesting fact was that the majority of buyers charged their vehicles at home or their offices. Company A also offered free charging in conjunction with the charging network provider in Athens, but this service was only used by 10 percent of the people. In contrast for company B the bonus for conventional vehicles was higher according to certain quantitative and qualitative criteria.

Finally, the managers were asked what the motives for selling and promoting EVs are for a dealership. The answer was that the dealerships receive good publicity and in cases where EVs were introduced at a specific dealer, people

who have never visited the specific showroom came to view the EVs and purchased one or ended up buying a conventional car. There is always a profit to be made by selling EVs which is not negligible and the company offers incentives like loans which help both the dealer and the customer.

#### 5. Conclusions

The interviews gave some interesting results that seem to verify most of the EV sales issues that have been identified in the literature review while providing a picture of the Greek EV market. One of the most positive results from the interviews was the fact that EV dealers and salespeople will not discourage a customer from purchasing an EV, based on their own motives, the lengthy sale process or the bonus they might receive. In fact, the bonuses for EVs seem to be the same as those of conventional vehicles. Overall, discouraging a customer from purchasing an EV was perceived as unprofessional both for the dealer and the salesperson while such an action would discredit the product itself. This means that the current players in the Greek EV market, despite the limited sales figures and the whole infancy of the market, present a high level of professionalism and believe in their product. This could be influenced by the fact that the people who were interviewed were both product managers and therefore responsible and accountable for the EV lines in the Greek market. A critical factor for the respect that the dealerships and the salespeople might show to their EV products, could be influenced by the fact, that the main Greek distributor for each automaker chooses the dealerships that will sell EVs in the market, based on the potential market as well as their credibility. Although the latter has not been mentioned in the interviews, the dealerships that sell EVs in Greece are the most reputable despite the fact that they are very few.

Furthermore, according to the interviewed managers gross profits from EVs could potentially be higher than those from conventional cars due to the fact that there is simply more competition from other vehicles and automakers that may force the dealers to lower their price. Therefore, the identified issue from literature that EVs do not generate enough profits for a dealership might be invalid. Instead Cahill *et al.* 's (2105) findings regarding higher gross profits seem to have more validity.

Another interesting finding regarding the training aspect of the salespeople at the dealerships that sold EVs, was that all the staff had to be trained in selling the vehicles. Regardless of whether the dealership had a specialised EV salesperson all the staff had to be trained in the product. This shows that companies have taken a step in investing on qualified personnel that can carry out a sale of an EV. On the other hand the dedicated EV salespeople had received a more extensive training by the automakers' training headquarters outside Greece. Despite the limited amount of dealerships in Greece this shows that the further uptake of the EV market could potentially create more demand for specialized EV sales staff within the country, thus creating demand for a niche set of skills as well as some job vacancies. The interviews also demonstrated that the dealerships are not only interested in providing technical knowledge about the product itself to their salespeople, but also for electric mobility in general and EV charging. This general knowledge provides a basic background to a salesperson in order to carry out their work with more competence and confidence as well as being able to answer more general questions to potential customers. Being able to portray professionalism and confidence to the customer are fundamental to convincing him/her in making a purchase while it also improves the quality of the overall sale process.

Furthermore, it seems that the Greek public has very limited knowledge about the existence of EVs and the technology itself. It is also very surprising that people who have purchased such vehicles only had fair knowledge about the product since they actually had an intention of buying one and were overall interested in the EV technology. Normally, a person who shows interest in a new technology is expected to have done some market research and be well informed. The more disturbing part is the total lack of knowledge for the existence of EVs by the Greek public during some promotional roadshows that have taken place by the automakers.

Based on the results from the literature review and the interviews certain conclusions can be drawn that can help future EU and domestic policies around electric vehicles and their sale process. Since the article focuses on the sale process of EVs any suggestions for improvement should be relevant and yet not limited to this aspect. Although the Greek market has presented a high level of professionalism in the sale process it is important that this picture remains. This might not necessarily remain the same when more automakers decide to enter the market and thus more dealerships. So far for various reasons other official distributors in Greece have remained hesitant, in importing EVs.

Customer satisfaction of early technology adaptors is very important for the further penetration of EVs in any market. This will require that the new players will have to introduce EVs through established dealerships with highly trained salespeople, a maintenance network and good aftersales support. Dealerships might also have to invest on the skills of their salespeople due to selling an EV being far more challenging than a conventional vehicle. The training context for an EV salesperson should be technical enough to the degree that people understand the product and the technology behind it. General knowledge regarding electromobility should also be helpful to create a good background to any person involved in EV sales. Such skills and knowledge could become part of vocational training in the future, thus preparing suitable employees for the industry. As mentioned earlier people remain unaware of EVs and electromobility. Informing the citizens about these vehicles could become a joint effort by the Greek government and the official distributors. Therefore more roadshows could be made possible in the future not for the sole purpose of selling cars but instead for disseminating the technology. Such events can be supported by electric vehicles supply equipment dealers and charging networks' representatives thus presenting the available options for charging an EV in the country. There is also the possibility that such events could attract potential investors in infrastructure.

Another aspect that can improve EV sales figures is charging infrastructure. Specifically, the majority of the EV buyers in Greece charge their vehicles at their homes or work. However, this might not always be the case. A future market penetration of EVs in Greece will mean that not all customers will have the ability to charge at home or work especially judging by the urbanized character of the two major cities in Greece where the majority of the EV dealerships are located. This means that the Greek government will have to give incentives to companies willing to invest in creating charging networks in the country. These could be networks that will either utilise existing parking spaces (like the network that already exists) or that they will be based at gas stations offering parking spaces.

Hence, the interviews have identified that the majority of EV buyers in Greece use them as their secondary vehicle which in practice becomes their main for every day usage. This translates into two aspects relevant to EV sales. The first means that despite the fact that people buy EVs they still have to use a conventional car for long distance travels. Thus with the lack of charging networks across main national road networks in Greece and the range that the EVs offer, such vehicles can only be utilised for daily urban and peri-urban mobility. Therefore, in order to use EVs for longer distances, fast charging networks must be deployed across the main national highways. Charging networks could be made possible through private enterprises with the aid of public space allocation from the government or financial and tax incentives for these companies. The second aspect also relies on the existence of well-developed charging networks in Greece but can also be applied to other countries. It is related to the way EVs are marketed whether as primary cars or secondary vehicles. Currently it is in fact too difficult to convince a buyer who has no other car to buy an EV purely for urban and peri-urban use thus leaving them having to use mass transport media for longer distances. This means that currently, dealers will have to market EVs as secondary vehicles to people who perhaps would like to replace a second larger and less efficient car they have, just as the interviews indicated. By doing so it is possible that more EVs can be sold this way rather than trying to compete head to head with a conventional vehicle. Consequently, this approach can also replace a number of vehicles with EVs thus contributing to the reduction of the carbon footprint from transport. Marketing EVs as a primarily main vehicles could only become viable in the future when EVs will be able to offer better range or in the current case of Tesla models. Choosing an EV as a replacement for a secondary conventional vehicle may also be problematic given the fact that EVs might be more expensive in terms of a sale price. Therefore, governments need to give enough incentives to a buyer. These could be financial or rewarding to the driver such as access to bus lanes, city centres with restricted access to conventional vehicles as well as designated parking.

The smaller cost of maintenance of EVs is also another matter that could potentially deter manufacturers from producing such vehicles. Despite this fact official distributors do not really have much say in whether the automaker will decided producing EVs or they will ask them to start importing them in certain countries. A dealership could potentially lose money from maintenance of EVs but implying that seller might discourage potential buyers from buying them seems far-fetched at least in the Greek market based on the interview results. In more mature markets this factor could be valid but has not been explored during the interviews.

The paper's results despite being limited to two companies, they are representative of the market based on the availability of the EV distributors and models in Greece. Although the literature review findings were based on the U.S. market, the interview results demonstrated that many of these issues regarding the EV sale process are actually

valid. Although the literature review indicated a very specific issue within the topic of EV market penetration, that of the difficulty in selling EVs due to dealerships, this does not seem to be the case in the Greek market. Both current distributors of EVs in Greece have shown high level of professionalism and have invested in promoting these vehicles as alternative and sustainable mobility; therefore trying to deter people from buying an EV for the reasons mentioned in the literature review would be bad for their image and the product. Focusing on aspects such as the high price of an EV and its reduction through government incentives, the lack of infrastructure in Greece and the reason why other distributors are hesitating to enter the market, would be more productive. The sale process itself might become more problematic in the future when more players enter the Greek market, yet currently this factor does not seem to be the problem why EVs are not selling in Greece.

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