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Original Article

Expense management for green transition in businesses for sustainability: Factors affecting electric vehicles depreciation management in transportation enterprises in Vietnam

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Abstract: The study's goal is to analyse the factors influencing the effectiveness of expense management, particular devaluation expense, for means of transport in transportation enterprises as they transition to greener modes of transport, notably electric modes of transport; in other words, to investigate the Effectiveness of Depreciation Management for Electric Vehicles (EDMEV). The study conducted a survey of 36 transportation enterprises in Vietnam and discovered that 23/36 planned to transition to green modes of transportation, specifically electric vehicles. However, the process of establishing financial planning, particularly involving depreciation cost accounting and management for fixed assets, continues to present both objective and subjective challenges. In-depth interviews with ten experts (including accounting staff, managers, and planning department staff) were conducted to determine the main factors that have a substantial impact on EDMEV. From there, the study used the previous interview content to conduct additional interviews with 110 accounting staff, managers, and planning department staff from businesses operating in this field. The research used the EFA method to identify some factors influencing the EDMEV, as well as regression analysis to assess the level of influence of these factors on EDMEV in related financial projects. The study tested 7 groups of factors (Legal, Human, Software, System, Characteristic, Age, Size) and found out 2 groups of factors that had less statistically significant impact: Software and Age. From there, the study proposed a number of groups of solutions for businesses in the industry.

Keywords: Depreciation expense, electric vehicles, transportation enterprises.

1. Introduction

The transportation sector plays a critical role in global sustainability efforts, and electric vehicles (EVs) have emerged as a pivotal technology in the industry's green transition. When converting to green transportation, transportation businesses need financial plans to

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ensure that the transition will be profitable. However, in making revenue and cost plans, performing accounting for costs related to fixed assets that are EVs according to actual exploitation is a very difficult problem (Braekers et al., 2016). Managing EV assets brings unique challenges, particularly in terms of depreciation, given the high initial costs and distinctive operational demands of EVs, including battery life and charging infrastructure. Accurate depreciation management for EVs is essential for transportation enterprises, as it directly affects financial planning, asset valuation, and cost recovery strategies, impacting profitability and investment decisions.

Due to the lack of complete data and research on depreciation management of EVs, researchers investigating the costs of EVs often assume the same depreciation rates for EVs as for conventional vehicles (Hagman et al., 2016). Contrast this with (Lévay et al., 2017), where the depreciation rate of EVs was supposed to be different from conventional vehicles due to technical characteristics. Therefore, businesses must research the implementation of depreciation accounting for their EVs to come up with reasonable financial plans, ensuring compliance with the actual exploitation situation.

This study aims to address these challenges by identifying and analyzing the factors that influence EV depreciation management within transportation companies, with a specific focus on Vietnamese enterprises. Vietnam represents an ideal case due to its emerging transportation sector, which is increasingly adopting EV technology amid rising government support and environmental awareness. Unlike in high-income countries with well-established EV infrastructure, Vietnam faces infrastructural and regulatory challenges unique to developing markets, offering a valuable case study on depreciation management under less predictable conditions.

We employ a mixed-methods approach, including in-depth interviews, exploratory factor analysis (EFA), and regression modeling, to investigate the factors affecting EV depreciation in the transportation industry. By examining these dynamics, we contribute to the literature on sustainable transportation and asset management, providing insights relevant to emerging and established markets alike.

2. Literature review and hypothesis development

2.1. Managing the depreciation of EVs in the transition is complicated

Multiple researches have demonstrated that the devaluation of EVs is more complicated compared to that of normal petrol vehicles. In their study, Gilmore and Lave (2013) were pioneers in examining the expenses and decline in value of vehicles equipped with various power systems. It was discovered that vehicles with improved fuel efficiency exhibit distinct patterns of depreciation and require more complicated management.

Dexheimer (2003) examined the determination of appropriate depreciation values for EVs using data from over 24,000 publicly available used vehicle in US, Norway, and Germany. The calculation findings indicate that effective management of electric vehicle depreciation requires careful consideration of aspects such as age, mileage, and purchase cost in order to develop a rational management approach. Guo and Zhou (2019) conducted an analysis of EVs in the US from 2010 to 2016. Both parties reached the same conclusion that EVs experience a higher rate of depreciation compared to gasoline vehicles.

When gasoline vehicles are used, the management of their value and duration aspects of depreciation differs from that of new EVs. Consequently, the information required for managing used EVs will also differ from new ones (Wróblewski & Lewicki, 2021).

Battery depreciation is a major cost factor for EVs and significantly impacts the overall lifespan and depreciation of the vehicle. Nevertheless, the battery's duration is not constant; it can be increased by 4% to 50% by properly managing battery degradation during the charging process (Hoke et al., 2011). Applying various charging techniques can effectively prolong the lifespan and enhance the durability of the battery, hence influencing the rate of depreciation. In their study, Felipe et al. (2014) demonstrated that implementing a partial recharge strategy can result in substantial cost savings. Specifically, they found that using partial charging led to average cost savings ranging from 1.2% to 1.7% compared to the empty charging strategy (Dallinger, 2013) . In order to mitigate the expense associated with battery degradation in EVs, In their EVRP model address the issue of battery depreciation cost, which is resolved using the differential evolution algorithm (Barco et al., 2017).

Many researches have tried to develop some models to manage the depreciation expense better. Goke and Liao (Goeke & Schneider, 2015; Liao et al., 2019) propose that managers should take into account the depreciation cost while modelling the Electric Vehicle Routing Problem with Time Windows (EVRPTW) model. This involves batteries or vehicles per kilometre. The researchers utilise A Large Neighbourhood Search (ALNS) and a hybrid genetic algorithm to analyse their models (Pelletier et al., 2016).

Intangible wear and tear focuses on depreciation due to better technologies on the market . From an environmental perspective, many studies show that older cars have poorer performance and more outdated technology, which is associated with a higher environmental burden and increased risk of lawsuits (Lukić et al., 2016). This creates more pressure on the green transition.

2.2. Factors affecting depreciation management

Many studies examine the current accounting-related legal document system and offer comprehensive guidance to improve depreciation management. The law has undergone thorough study and provides a crucial foundation for organisations to apply as a guide. For instance, regulations governing the overall depreciation schedule and the appropriate depreciation techniques for certain car models (Ovsiychuk & Demin, 2010).

H1: Well-defined legal regulations on depreciation accounting (LGL) positively affect the effectiveness of depreciation management for EVs (EDMEV).

According to some researches, human resources are especially significant. Managerial reports are separate from accounting reports in an organisation because they are created for management purposes. Managers are interested in the actual depreciation of vehicles, which can be modified flexibly (Zhu, 2020) .

H2: Qualified human resources (HMN) positively affects the effectiveness of depreciation management for EVs (EDMEV)

Accounting software systems, asset management software, tracking software and others will help staff members by providing accounting data for asset and depreciation management. Software is a potent instrument that can help perform depreciation expense management in an efficient manner (Soysal et al., 2012).

H3: The efficient software system (SFW) positively affects the effectiveness of depreciation management for EVs (EDMEV).

The effectiveness of depreciation management is also significantly impacted by the means of the transportation system; factors such as the quantity, kind, and brand of vehicles as well as shared and linked vehicle systems all have an impact on the depreciation management of the vehicle system (Donati et al., 2008).

H4: The well organized EV system (SYS) positively affect the effectiveness of depreciation management for EVs (EDMEV).

Depreciation management will be less complicated if the vehicle is operated at a stable battery level, operates at a low frequency, or has a stable charging station system. When the vehicle is driven at a high frequency, the battery level fluctuates, and there isn't a charging station nearby, the irregularities will get harsher and make management more difficult (Save et al., 2019).

H5: Stable characteristics (CHA) positively affects the effectiveness of depreciation management for EVs (EDMEV).

Besides that, Enterprise age and Size are frequently cited variables in financial management literature. Older enterprises are generally more experienced with capital-intensive asset management and may have developed more sophisticated financial strategies and depreciation policies, enabling them to adapt more effectively to the unique characteristics of green vehicle depreciation. Larger enterprises often have access to advanced technology, financing options, and skilled professionals, which facilitate more precise and strategic depreciation management for green vehicles. This makes it likely that larger enterprises can better manage the unique depreciation risks associated with green vehicles.

H6: Enterprise age (AGE) positively affects the effectiveness of depreciation management for EVs (EDMEV).

H7: Enterprise size (SIZ) positively affects the effectiveness of depreciation management for EVs (EDMEV).

The research overview reveals that the transition from gasoline-powered automobiles to EVs necessitates greater consideration in business management accounting. It relates to the 3 main aspects: time management, value management and related vehicles' components management.

The management of depreciation in practice will be effective if changes related to depreciation are statistically recorded, continuously updated and depreciation values are recorded in the books close to the actual price reduction (Nechaev et al., 2017) . Thus, updating value changes, management of detailed value changes and accurately determining value changes will be three aspects of the effectiveness of vehicle depreciation management over time.

Numerous studies have been conducted in Vietnam on the factors influencing the application of managerial accounting for expenses in businesses (Yen, 2024). Various cost types in a wide range of industries, including the building, manufacturing , and food were mentioned. However, because EV projects are still relatively new in the Vietnamese market, no comprehensive study has been conducted to analyse depreciation management for EVs.

For transportation companies in Vietnam, in the process of transition to EVs, if they can manage vehicle depreciation costs well, it will ensure the construction of reasonable exploitation and make suitable plans related to repair, maintenance, and upgrades for vehicles as well as plans for liquidation and replacement of vehicles.

This emphasises the need for further research into how electric vehicle depreciation is managed in practical scenarios, particularly into the factors influencing companies' operations during a certain time frame.

3. Research methods and data

General description and the process of research

The study conducted 2 surveys to determine the factors affecting EDMEV. The number of enterprises intending to transition to green transportation in Vietnam remains limited. Based on data from the Ministry of Transport, the research team was able to identify only 36 companies with public commitments to green and sustainable development and initial actions toward a green transition. Of these, only 23 companies have concrete plans and have conducted thorough research on the transition process, indicating a stronger commitment to adopting green transportation practices.

Data were gathered through structured surveys and interviews with key personnel in finance and operations through direct phone calls and face to face interviews to capture a comprehensive view of depreciation management practices.

We employed exploratory factor analysis (EFA) to identify and validate underlying constructs, followed by regression analysis to assess the impact of each factor. The EFA results, verified by Cronbach's Alpha and KMO testing, confirmed the reliability of our variables.

After the EFA test, and 2 more control variables, AGE - Age of the enterprise (taking value = 1 if > = 10 years, otherwise = 0) and SIZ - Enterprise size (takes value = 1 if it is a large enterprise, otherwise = 0).

The research process (see Figure 1).

The survey number one:

Purpose: Develop a questionnaire with criteria to evaluate EDMEV activities and identify factors affecting EDMEV.

Respondents: 10 accounting staff, managers, and planning department staff who are responsible.

Survey format: In-depth interviews, group.

Survey results 01 show that there are 5 main groups of factors (including 12 small factors) for the independent variable.

Based on the literature review and the survey's result, depreciation management for electric vehicle projects identified 5 major categories of aspects (with 12 subgroups). On the dependent variable side, the group discussion decided to use 2/3 of the content for the dependent variable: "Planned frequency of recording changes to DEV" and "Planned tracking fluctuations of EV details". The content "Accuracy of Planned DEV and actual DEV" is not suitable for the research sample because most businesses have plans but have not implemented them yet.

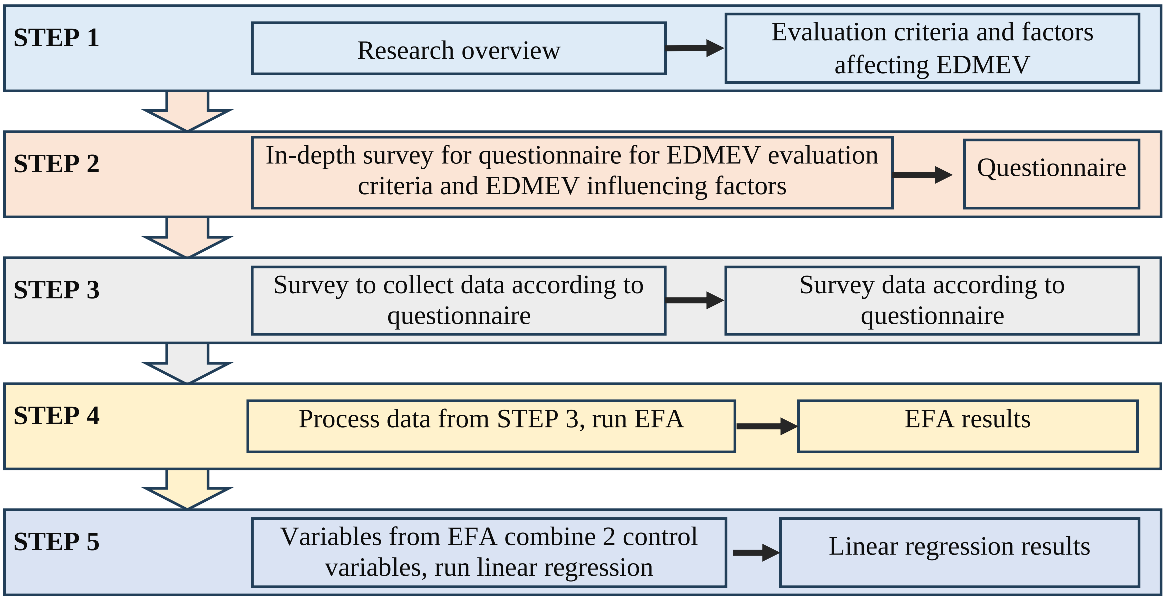

Figure 1: Research process
Source: Designed by the author.

Table 1: Current situation EDMEV and difficulties for EDMEV

Legal regulations on depreciation accounting for green transport vehicles.
Lack of technical regulations with in-depth parameters when depreciation for EVs, only depreciation for general vehicles.
Depreciation can only be changed once per vehicle, which is inconsistent with the dynamic and uncertain changes of assets.
Financial accounting personnel capacity.
Experience in providing exploitation and depreciation plans related to EVs has only been conducted in a very small number (5 projects in a total sample of 36 enterprises).
Actual depreciation accounting has a large gap with vehicle depreciation in implemented projects, demonstrating the low judgment ability of financial and technical accounting personnel.
Software system.
Most mode updates are done manually, and errors easily occur.
Vehicle depreciation is allocated according to regulations installed on most software, with little customization according to actual needs.
The electric vehicle system plans to operate.
The larger the number of vehicles in a project, the more difficult it is to manage.
The more expensive the electric vehicle, the more difficult it is to manage depreciation.
Most still lack flexible links with outside parties, especially in exploiting operations and battery charging.
Electric vehicle specification.
The current exploitation frequency is very high, affecting complex depreciation work.
The level of depreciation of the battery and the vehicle depends largely on how the vehicle is operated with the battery. Whether the vehicle is maintained at a stable threshold or not will affect the reasonable determination of the vehicle's depreciation value.
Charging stations are not convenient, making it difficult to evaluate the impact of charging on depreciation to determine depreciation.
The effectiveness of depreciation management for EVs. Most businesses only manage depreciation costs once a year, a few have a management plan every 6 months and only 1 enterprise has a quarterly management plan. Most businesses do not manage to separate EV components to manage depreciation, especially the vehicle's battery. A small number of companies plan to purchase asset management and tracking software abroad to track details of components such as chassis, engine, battery, and electrical system of the vehicle.

Source: Author's survey.

Table 2: List of abbreviations

EV	Electric vehicles	HMN	Human
DEV	Depreciation of EVs	SFW	Software
EDMEV	Effectiveness of depreciation management of EV	SYS	System
LGL	Legal	CHA	Characteristics

Source: Compiled by the author.

Table 3: Factors affecting EDMEV and EDMEV evaluation

No.	Content	Label	Related research	Expected effect
I	Legal regulations on depreciation accounting for green transport vehicles	LGL		
1	The completeness of regulations on depreciation methods	LGL1	Wielhouwer and Wiersma (2017)	+
2	Reasonable regulations change depreciation methods according to reality	LGL2	Ovsiychuk and Demin (2010)	+
II	Financial accounting personnel capacity	HMN		
1	Experience in planning projects to exploit EVs	HMN1	Abdullah et al. (2022)	+
2	Ability to predict variable depreciation costs when operating green transportation	HMN2	Zhu (2020)	+
III	Software system	SFW		
1	Update the latest documents on accounting for means of transport	SFW1	Soysal et al. (2012)	+
2	The software supports the allocation of depreciation costs related to means of transport	SFW2	Sheng et al. (2010)	+
IV	The electric vehicle system plans to operate	SYS		
1	Small number of vehicles	SYS1	Sadeghian et al. (2022)	+
2	Types of vehicles are few	SYS2	Donati et al. (2008)	+
3	Flexibility of external resources	SYS3	Sheng et al. (2010)	+
V	Electric vehicle specification	CHA		
1	Low exploitation frequency	CHA1	Cai et al. (2022)	+
2	Maintain a stable threshold for the battery in the vehicle when operating	CHA2	Save et al. (2019)	+
3	The convenience of charging stations	CHA3	Apostolaki-Iosifidou et al. (2017)	+
VI	The effectiveness of depreciation management for EVs	EDMEV		
1	Planned frequency of recording changes to DEV	EDMEV1	Desai et al. (2024)	+
2	Planned tracking fluctuations of EV details	EDMEV2	Desai et al. (2024)	+

Source: Compiled by the author.

From there, the following research hypothesis can be built:

Determine the sample size in survey Number 2: for the sample size for EFA, the minimum sample size is calculated as (n = k * number of observed variables), typically with k set to 5 or 10. With 12 observed variables and k = 5, the minimum sample size is 60. For multiple regression analysis, using n = 50 + 8k with 5 independent variables yields a minimum of 90. Thus, a sample size greater than 90 is recommended.

Survey number 2:

Purpose: Determine the current status of EDMEV and evaluate factors affecting EDMEV.

Survey method: through a 5-level Likert scale where level 1 is disagreed, level 2 is low agreement, level 3 is moderate agreement, level

4 is high agreement and level 5 is complete agreement.

Participants: Planning for EVDM management is the task of a group of several staff members and the authors can reach only 110 members.

The results of survey 2 will be used to conduct regression test with the addition of two control variables: age (AGE) and size (SIZ). The regression model has the following form:

EDMEV = β0 + β1*SFW + β2*SYS + β3 *CHA + β4*SIZ + β5*AGE + β6*HMN + β7 *LGL + ϵ

+ β0, β1,…, β7: Regression coefficients for each independent variable

+ ϵ: Error term

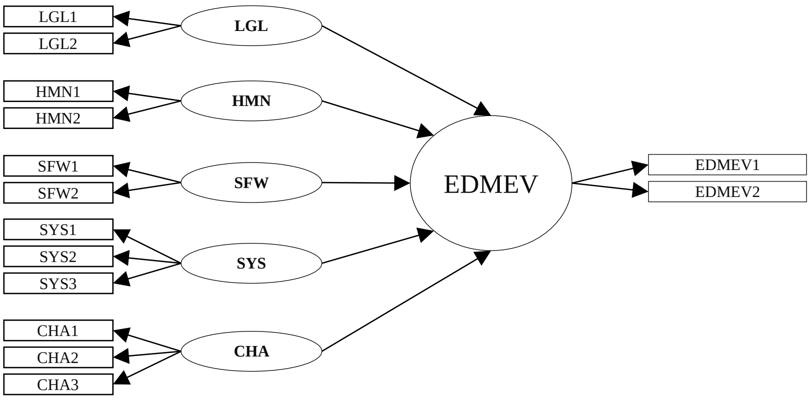

Figure 2: Diagram of research hypotheses for the EFA model
Source: Designed by the author.

4. Results

Results after EFA test are presented in the following Table 4.

Table 4: Results of EFA rotation matrix

					Cronbach's Alpha
LGL					0.782
HMN					0.771
SFW					0.812
SYS					0.723
CHA					0.622
EDMEV					0.778
KMO					0.665
Bartlett's test					Sig. = 0.002
% cumulative					67.342%
			GROUP		
	1	2	3	4	5
HMN1	.810				
HMN2	.789				
CHA2		.887			
CHA1		.776			
CHA3		.765			
LGL2			.765		
LGL1			.659		
SYS1				.882	
SYS2				.801	
SYS3				.789	
SFW1			.654		.792
SFW2				.682	.765

Source: Author compiled from results from SPSS software.

Table 5: Regression coefficients

Model	**Unstandardized coefficients**		**Normalization coefficient**	**t value**	**Sig**	**Multicollinearity**	
	B	Std	Beta			Tolerance	VIF
Constant	0.109	0.021		0.290			
LGL	0.201	0.011	0.298	2.112	0.016	0.831	1.204
HMN	0.302	0.048	0.410	2.110	0.032	0.570	1.754
SYS	0.195	0.019	0.238	1.922	0.034	0.755	1.324
CHA	0.212	0.009	0.305	2.017	0.018	0.560	1.786
SIZE	0.023	0.023	0.112	1.912	0.011	0.649	1.541
AGE	0.113	0.026	0.162	1.012	0.082	0.549	1.821
R							0.726
R Square							0.667
Adjusted R Square							0.601
Sig F change							0.000
F							15.221
Durbin Watson							1.801

Source: Author compiled from results from SPSS software.

All 5 groups of variables show that the Cronbach Alpha coefficient is at a good level, fluctuating around 0.6 and 0.8, and larger than the prescribed level of 0.5.

Results of performing the tests: KMO = 0.665; Bartlett's test has Sig.= 0.002 < 0.05. The study also shows a cumulative % = 67.342% > 50%. Thus, the results of the above tests all meet the requirements for exploratory factor analysis.

Among the variables, factor loading of software system, factor SFW1 "Update the latest documents on accounting for means of transport" have simultaneous loading factors in both groups of 0.654 and 0.792 with a distance of 0.138 < 0.2, so this factor needs to be eliminated.

Factor SFW2 "The software supports the allocation of depreciation costs related to means of transport" loaded in both groups, group 4 and group 5, have loading factors of 0,682 and 0,765, respectively. The distance between these two factors is 0.083 < 0.2, so this factor needs to be eliminated.

The reason why SWF1 has a similar answer with the LGL group is that the current legal system has clear regulations on depreciation and is allowed to change depreciation methods and update depreciation regimes once during the lifetime of the asset. For means of transport, the regulations are quite clear, but there are no specific regulations on new means of transport such as EVs. The legal document as well as updating the legal document on the software have quite similar effects. As soon as there is a new legal system that is more complex or flexible, the software will also have updates to that complexity or flexibility, and the ability to limit or support the implementation of depreciation will fluctuate quite similarly.

The reason why SFW2 is uploaded in 2 groups, both SFW and SYS, is because the cost allocation is carried out automatically, but according to the initial input value and the choice of depreciation method of the accountant, the software itself is not able to make suggestions or decisions on how to depreciate appropriately. If the transportation system is complex and diverse, the software will require more complex data entry, causing the answer for the group of software factors (SFW) supporting reallocation to have a similar answer to the vehicle's system (SYS).

Thus, software variables need to be eliminated from the model. Regression analysis then only has 4 variables: HMN, CHA, LGL and SYS.

Before regression analysis, the author used two additional control variables: Company Age (AGE) and Company Size (SIZ).

Regression analysis:

The regression model with adjusted R squared reached 0.726, showing that the independent variables explain 72.6% of the dependent variable. Durbin Watson = 1.801 in the range 1 < DW < 3, so the model has no autocorrelation.

The AGE variable has Sig = 0.082 > 0.05 which means there is no statistically significant correlation, The reason is that electric vehicle transportation activities are currently very new to all businesses, including those that have been implementing electric vehicle transportation.

The regression model is as follows:

DEP = -0.109 + 0.298*LGL + 0.410*HMN + 0.238*SYS + 0.305*CHA + 0.112*SIZ

Thus, “Financial accounting personnel capacity” is the most important factor in the reasonableness of depreciation methods, with a coefficient of 0.410. The “Ability to predict variable depreciation costs when operating green transportation” is because the highest assets are often exploited for a long time. If the ability to forecast is better, the financial accountant will be able to provide a time frame and depreciation level that is closer to the actual exploitation ability. This finding is consistent with the assessment of the role of human resources in implementing fixed asset accounting (Barney & Wright, 1998) .

The second factor is the “Electric vehicle specification”. The characteristic factor number 2 of “Maintain a stable threshold for the battery in the vehicle when operating” is the factor that significantly affects the DMEV. The stability of the battery is not only related to the age of the battery but also directly related to the age of the vehicle. When the battery is properly charged and the vehicle operates in a stable state, the depreciation of the car will be lower; which is consistent with (Pelletier et al., 2016) .

The third factor is the legality, especially the fact that vehicle depreciation can only be changed once for an asset during use, which limits depreciation adjustments according to actual situations and applies pressure on financial accountants.

The fourth factor is “The electric vehicle system plans to operate”. A large number of vehicles and types of vehicles in the same system will greatly affect how effectively the vehicles are exploited.

The fifth factor is the size of the company. The larger the company, the more it is able to be proactive in its charging station system, vehicle system, and exploitation method; instead of having to rent batteries, rent charging stations, connect with other logistics businesses, or combine different stations, which makes determining time and depreciation more convenient.

The factors that showed no statistical significance in this analysis are the software system and the age of the company. While the software system has often been highlighted in previous studies, the results here indicate differing perspectives among respondents on its impact on management efficiency. Some respondents believed strongly that software and data digitization would enhance operational efficiency, while others regarded software merely as a supportive tool. This latter group emphasized that the effectiveness of software depends mainly on the skills and knowledge of those who use it. They argued that with proficient users, excessive reliance on software is not essential, suggesting that its role in enhancing efficiency may be secondary to user expertise. Conversely, if users lack the necessary skills, it results in a waste of software resources; many studies believe that software factors are very important (Leite et al., 2016). The company’s age does not serve as a distinguishing feature since the transition to EVs is new for both large and small enterprises.

5. Conclusions and recommendations

This study offers important insights into the factors influencing EV depreciation management within Vietnamese transportation companies, addressing a critical issue in sustainable fleet management. The study concludes that five main factors—personnel capacity, vehicle specifications, legal constraints, system complexity, and company size—strongly influence electric vehicle depreciation management efficiency (EDMEV). Skilled financial accounting personnel play the most crucial role by ensuring depreciation methods align with real vehicle usage. Stable battery performance reduces depreciation costs, while legal constraints on adjusting depreciation increase forecasting demands on accountants. Large companies, with more control over infrastructure, benefit from easier depreciation management. In contrast, software and company age are less significant, as effective software use depends on user expertise, and electric vehicle operations are new for most companies.

Our results suggest that enterprises can improve EV depreciation management by investing in skilled human resources and optimizing EV fleet systems. From a regulatory perspective, there is a need for flexible policies, which would enable transportation enterprises to align financial reporting with operational realities

Subsequently, a number of recommendations can be proposed as below:

- Organizations should employ skilled accountants and technicians to accurately predict the appropriate degree of depreciation based on the actual operational circumstances. Enterprises may execute management accounting activities in addition to the management activities that are mandated by law. Management accounting is the application of accounting in accordance with management objectives. Consequently, companies are entitled to establish their own methods of managing depreciation values that align with their perspective and orientation.

- Vietnamese legislation should be more adaptable in permitting businesses to modify the depreciation method multiple times for an asset. This would enable accountants to collaborate with technical personnel to frequently adjust the timing and value of depreciation after EVs are implemented in practical operations, in a flexible manner. By granting flexibility in changing the depreciation method, the estimation of depreciation costs can closely align with reality, so ensuring that the business's profit level adheres more closely to the planned objectives, rather than being influenced by the depreciation under the fixed plan.

- In order to ensure the stability and optimal performance of EVs, it is essential to establish efficient connections with various cooperative support systems such as battery maintenance, charging stations, car sharing, and automobile rental services. A comprehensive network of numerous firms can optimize the use of EVs, assuring their efficiency at an optimal level. This network aims to prevent situations when vehicles run out of power or have battery-related issues, thereby maintaining the longevity of the vehicles. It is essential for large enterprises to take the lead in developing efficient models for electric vehicle utilization.

- Companies ought to emphasize both software upgrades and enhancing the expertise of staff in associated software, rather than primarily focusing on upgrading complex software and wasting resources. It is essential to work with the technical team in order to adapt depreciation in a flexible manner, in addition to proactively implementing management methods (time, value, components). In particular, businesses ought to avoid depending on software (this factor has been eliminated) because the core factor is the capacity to coordinate and determine staff (the leading factor).

Future research could expand this study by examining external factors, such as fluctuating fuel costs, market competition to understand their impact on EV depreciation within the transportation sector.

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