EXAMINATION OF ORGANIZATIONAL CHANGE AGAINST THE IMPLEMENTATION OF TRANSPORTATION MANAGEMENT SYSTEM (TMS): CASE OF SARL NOUVEAU POLE

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Abstract
This paper aims to examine the possible resistance to change induced by the implementation of the Transportation Management System (TMS) by SARL Nouveau Pole. TMS is one of the key technologies used by companies notably in the field of transportation and logistics for the tracking of goods and vehicles. Like any technological infrastructure, the implementation of TMS might be faced by a resistance to change by the employees that would prevent the company from reaching the desired objectives from the system's implementation notably when it comes to sustainability and fuel reduction goals. This study is based on structured and semi-structured interviews with key informants from SARL Nouveau Pole and many drivers as well as direct observation and assessment. The results allow us to conclude that the TMS implementation by SARL Nouveau Pole was not based on the consultation and the involvement of the drivers and the other employees. This indicates that the objectives of economic and ecological driving are not taken into account by the top management.

***Keywords**: Organizational Change, Eco-driving, Transportation Management System, SARL Nouveau Pole.*
***JEL Codes :** O32, Q52, R41.*

Résumé
L'objectif de cet article est d'examiner les éventuelles résistances au changement induites par la mise en place du Système de Gestion des Transports (TMS) par la SARL Nouveau Pôle. Le TMS est l'une des technologies clés utilisées par les entreprises notamment dans le domaine du transport et de la logistique pour le suivi des marchandises et des véhicules. Comme toute infrastructure technologique, la mise en œuvre du TMS pourrait se heurter à une résistance au changement de la part des employés qui empêcherait l'entreprise d'atteindre les objectifs souhaités dès la mise en œuvre du système notamment en ce qui concerne les objectifs de durabilité et de réduction de la consommation de carburant. Cette étude est basée sur des entretiens structurés et semi-structurés avec des informateurs clés de la SARL Nouveau Pôle et de nombreux chauffeurs ainsi que sur l'observation directe et l'évaluation. Les résultats nous permettent de conclure que la mise en place du TMS par la SARL Nouveau Pôle n'a pas été basée sur la concertation et l'implication des chauffeurs et des autres salariés. Cela indique que les objectifs de conduite économique et écologique ne sont pas pris en compte par les gestionnaires de l'entreprise.
***Mots clés :** Changement organisationnel, Eco-conduite, Système de Management des Transports, SARL Nouveau Pôle.*

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Introduction

Algerian companies become more aware of the importance to seek the use of technological tools in their management and operational procedures in order to face their environmental threats. Diverse technologies are at the service of economic entities nowadays with more integrative possibilities. However, our focus on the transportation and logistics sector would allow us to understand the crucial dominance of the Transportation Management System over other systems.

TMS is not a mere tool for operational follow-up in the company, but rather a strategic tool that has a mid to long-term impact on the activity of the company. Its main objective is to automatize the transportation activity of the company by recording and tracking all the processes of the transportation which allow to determine the available fleet, the used capacity, the optimal paths and timetables (Giaglis, Minis, Tatarakis, & Zeimpekis, 2004). Consequently, companies that use TMS seek better efficiency regarding delivery times, capacity use, and transportation costs reduction.

Furthermore, TMS also enables the company to ensure efficient driving, one of the elements of sustainable transportation that represents now one of the major challenges of the transportation sector. Whenever we address this sector nowadays, we must seek sustainability, whether the transportation activities occur in the urban or non-urban area, and whether they concern the transportations of people or of goods and products. Such a principle is crucial to the company's societal responsibility and the handling of their environmental externalities. The term which has also been referred to as Eco-driving has been defined as the driver's behavior that enables the reduction of fuel consumption and CO_2 emissions (Mensing, Bideaux, Trigui, Ribet, & Jeanneret, 2014). Two other terms are related to efficient driving or to be more precise, they together form this concept, the first one is economic driving which indicate the type of diving behavior that allows to reduce costs and the second one is ecological driving that refers to driving in a way that reduces negative environmental consequences as in CO_2 emissions.

Many principles must be followed in order to apply an efficient driving such as smooth acceleration, efficient deceleration, and avoiding excessive braking and early gear changes (Van der Voort, Dougherty, & van Maarseveen, 2001; Waters & Laker, 1980). This has been supervised by diverse technologies, some of which are more sophisticated such as Fiat's application (Fiat, 2010) or by traditional methods like the monitoring of fuel levels before and after every trip.

Hence, the transitions required by TMS implementation are of an organizational, managerial, and operational nature thus many internal and external factors could hamper the proper use of the system, among which its compatibility with the hierarchical system as well as the compatibility of the organizational culture (Perego, Perotti, & Mangiaracina, 2011). This global reorganization of the company would allow a better management of the transportation fleet and consequently induce less operational costs.

However, the above-mentioned benefits might not be reached if there is a resistance to change within the organization from employees who could refuse anything that troubles the comfort and stability they were used to in their workplace. This could be related to the reorganization of the organizational environment or the direct use of the system and how to behave towards it. Top management has to adopt a vigorous methodology to implement a new technology such as TMS into which, all the transitional aspects must be considered (Jansson, 2013).

Our case study was realized at SARL Nouveau Pole. It was created in 2009 by the top management of Group Bachir Rachid that is considered one of the dominant organizations of the steel industry in Algeria. SARL Nouveau Pole's main function is to offer the other companies in the Group transportation and logistics services and was part of the Group's project for ERP implementation. This project represented a step ahead for the company that begun using Transportation Management System (TMS) for the tracking of its fleet and the different transportation operations. Hence, a successful TMS adoption relies heavily on thoughtful preparation by the top management.

We formulate our problem as "Did SARL Nouveau Pole implement and uses TMS efficiently that would allow the company to reach the advantages of this system?"

To answer this problem we ask the following questions:

1- Did SARL Nouveau Pole implement TMS efficiently?
2- Is SARL Nouveau Pole using TMS to implement eco-driving?

We have formulated the following hypotheses to answer our study questions:

H_1: SARL Nouveau Pole TMS implementation management contributed to eliminate the resistance to organizational change.

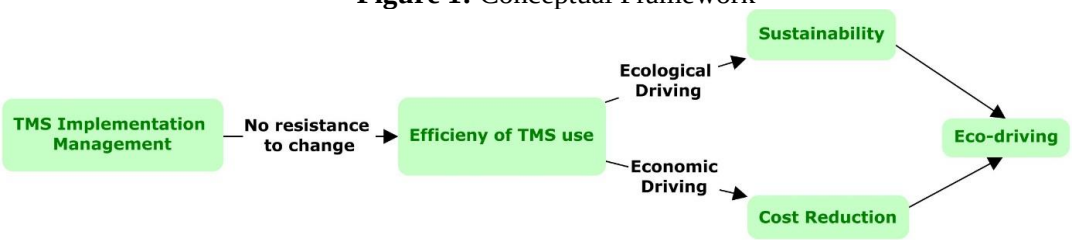
H_2: The use of TMS by SARL Nouveau Pole contributes to the implementation of ECO-driving principles.

We divide this hypothesis into two sub hypotheses as:

a- The use of TMS by SARL Nouveau Pole contributes to the implementation of economic driving.

b- The use of TMS by SARL Nouveau Pole contributes to the implementation of ecological driving.

Figure 1: Conceptual Framework



The aim of this paper is to shed the light on the experience of TMS implementation by SARL Nouveau Pole and the management of changes occurring consequently, where we find from one hand, the employees constrained to perform their tasks differently than they used to do before. From the other hand, the managers would obtain more information that offers more power and control over the company's activity. Its importance lies in the fact that TMS affects the jobs of employees from different hierarchical and educational levels.

Previous studies:

We have not found enough research material in the Algerian field regarding the implementation of new technologies, and more specifically, logistics information systems and the induced resistance to change by the employees. Here we present four papers that are the most related to our research.

1. How Much Does the Organizational Culture Contribute to The Introduction of ICT? Case of ENAFOR, ENTP (ACILA, 2016)

This study investigated the role of the organizational culture at the two national companies of the petroleum sector (ENAFOR- ENTP) by the realization of several interviews. It lead the

researcher to conclude that the integration of ICT (the ERP system) at the company level is based on the duplication of strategic approaches and generic IT tools, without real adaptation to a specific configuration and culture. In this regard, the companies must reconsider the constitution processes of the company's culture and its development in light of using different information technologies such as the ERP.

2. **Organizational and managerial changes induced by the implementation of an ERP: case of the company ALCOST Bejaia (Radia Slimani & Moussa Boukrif, 2016)**

This paper analyzed the experience of the company ALCOST Bejaia with the implementation of the ERP and the nature of the organizational and managerial changes induced consequently. The objective of the researchers was to understand the approach made by the decision makers in the company to manage the changes resulting from the ERP implementation and the opposition of the employees towards these changes in order to underline the difficulties that occurred during the implementation and define the success factors for such a project.

3. **What role for actors in a process of change? Case of the implementation of an ERP in an Algerian public company (Radia SLIMANI & Moussa BOUKRIF, 2016)**

In order to determine the role played by the different actors in the company whether they are top management or the employees themselves, in the project of an organizational change, this article investigated the implementation of the ERP at ALCOST Bejaia. Analyzing the decision making process allowed to determine the influence played by every actor in the organizational changes and the decisions made.

4. **GIS-based approach for optimized collection of household waste in Mostaganem city (Western Algeria) (Abdelli, Abdelmalek, Djelloul, Mesghouni, & Addou, 2016)**

This paper proposed an optimization method using Geographical Information System- GIS by reducing time and the traveled distance of municipal solid waste collection vehicles. The creation of optimal routing allows to reduce collection cost and polluting emissions (carbon oxides, carbon dioxides, nitrogen oxides and particulate matter). The results of the optimization touched to travelled distances, collection time, fuel consumption, and polluting emissions. The scenario proposed by the researchers reduced the travelled distance by 71.81%, the fuel consumption by 72.05% and the total cost of the collection by 46.8%. As for the polluting emissions, carbon oxides are reduced by 60.2%, carbon dioxides by 67.9%, nitrogen oxides by 74.2%, and particulate matter by 65%.

The above mentioned studies consider the implementation of the ERP in public companies, which does not include the sustainable dimensions we wish to discuss when implementing TMS. As for the last one, it considers the use of GIS for optimization objectives which is close to the function of TMS and has proven its ability to reduce pollution, time and distance.

This paper is structured as follows: the first section presents the theoretical background of the concepts related to our research, in the second section, we present the company and the methodology followed in order to reach the desired results. Finally, we interpret the results of our study and we conclude with recommendations.

1. Theoretical Background:

Our literature review is mainly divided in two parts; the first one is reserved to Transportation Management System, while in the second part, we determine the nature of organizational change in light of introducing new technologies.

1.1. Transportation Management System:

Transportation Management System is one of the most important technologies used in the field of transportation and logistics; in the following, we will present its definition, its function, and the obstacles that face companies to use it properly.

1.1.1. Definition of Transportation Management System:

Transportation Management System is defined as a system ensuring the automatization of the transportation activity and the different processes related to it. It aims at helping the company to resolve complex problems that might occur with the transportation management. For instance, determining the optimal number and capacity of trips that would serve many customers or many destinations at the same time. TMS serves for defining an optimal timetable and paths to follow by the vehicles (Giaglis et al., 2004).

TMS is basically made of three sub-systems: firstly, the back-end system is a decision making module that uses real-time information produced by algorithms of routing, planning and fleet monitoring. It relies on the integration with the ERP to extract the data of the customers, the network, the fleet and the details of the shipping. Secondly, the wireless communication system ensures the communication between the back-end and the front-end sub-systems using onboard devices and positioning systems. Lastly, the front-end is the user's tool to connect to the TMS, which comprises a mobile service and a tracking system that offers routing information (Perego et al., 2011).

The role of Transportation Management System relies in fulfilling the following functions (Giaglis et al., 2004): Planning and decision-making, where we can use it to determine the most efficient transportation plans taking into consideration the different circumstances of the transportation activity, such as the cost, the available fleet, the type of the merchandise and its packaging. TMS also serves for the execution of the transportation plan and the thorough monitoring of all the physical operations and the administrative procedures as well as the real-time traceability. Finally, reporting is an important function and allows the managers of the transportation department to automatically obtain key performance indicators, thus realize a diagnostic of the activity and compare the performance with the planned or the past situation.

1.1.2. The advantages of TMS:

Many advantages have been reported after the proper implementation and use of the Transportation Management System, (Helo & Szekely, 2005; Li & Zhao, 2019) we sum them up in the following:

It allows a better organization of the transportation activity by the traceability and the automatic reporting of the transportations. The obtained information could be later analyzed for the optimization of the performance and the desired benefits. The travel paths can also be optimized which ensures a better capacity utilization and the serving of many destinations and/or many customers by the same travel reducing therefore the operational costs notably.

Other intangible benefits of TMS could be resumed in the ability to track on time the transported merchandise by the users of the system as well as by the customers who ordered this merchandise. Following a real time optimal plan, this leads to obtain more exact delivery times and a better invoicing system, which contributes consequently to the enhancing of customer service and the reduction of operational costs.

We may also add to the previous advantages the environmental ones that result from the reduction of the number of transportations and an optimal capacity use thus reducing as well the pollution produced by the vehicles and the fuel consumption that will be discussed later on.

1.1.3. Obstacles of TMS:

The factors that might exercise an influence over the top management in order to make the decision to implement TMS could be divided into internal and external factors (Perego et al., 2011).

a. Internal factors:

Many factors could influence the implementation of TMS such as the company size or the size of the company's fleet; a small fleet could not justify the financial investment. The financial obstacle is therefore a major obstacle against the use of new technologies in general since the cost does not just represent the amount of resources needed to purchase the system, but it includes as well the other technological infrastructure needed to implement alongside TMS such as the networks, mobile devices, GPS chips, and connected vehicle dashboards. The return on investment for this type of projects is difficult to assume and calculate. Consequently, top management could be unable to determine the repayment period.

Other factors that have an impact on the decision to acquire and use TMS are the level of development of the current technological infrastructure and its compatibility with the system as well as the compatibility of the organizational culture.

Personal training could also be a major obstacle notably in the presence of a resistance to change within the organization. In some cases, the resistance to change does not come from the employees, but rather from the decision makers themselves. The training must be backed up by a company policy, by coaching and monitoring of human resources due to the need for the transfer and the acquiring of knowledge and skills (ACILA, 2016).

b. External factors:

The supply chain partners can have an influence on the implementation of TMS or any other technology for that matter. In the purpose of working in an integral and collaborative way, these partners might favorite to work with companies that have already implemented the needed technology for the supply chain integration or are up to acquire and use it. This is crucial for information sharing above anything else. Upon this, we can deduce that the possibility to integrate TMS with previously existing technology throughout the entire supply chain is a weighing factor as well. Incompatibility problems could cost largely.

1.1.4. Eco-driving:

Eco-driving aims at reducing fuel consumption and CO_2 emissions, not to mention the rapid vehicles' depreciation because of the excessive acceleration and deceleration in unsmooth driving. It has also been called efficient driving and it was defined by the proper utilization of the vehicle that reduces the fuel consumption therefore reducing CO_2 emissions, which is the outcome of an environmentally friendly behavior of the driver (Mensing et al., 2014). From this definition, we can understand that eco-driving has two major objectives: from one hand, reducing fuel consumption, which is also the goal of economic driving and from the other hand, reducing CO_2 emissions that is the aim of ecologic driving. Both terms form together eco-driving or efficient driving.

Eco-driving manages transportation operations economically and efficiently when it comes to energy consumption that follows a U-shaped curve that has the minimum level of consumption in top gear at around 70-80km/h which is considered an optimal speed for the vehicle. Since the impact of the drivers' behavior on different fuel consumption levels for the same vehicle is no longer a question (Larsson & Ericsson, 2009; Van der Voort et al., 2001), transportation companies above all should consider the implementation of Eco-driving principles and train their drivers accordingly. The driver's behavior rely on gear shifting,

speed choice, acceleration, and deceleration therefore, the difference in consumption between the most and the least economic drivers could reach 15% (Waters & Laker, 1980). Another study concluded that the drivers, who can reduce acceleration, follow a smoother driving routine and avoid unnecessary stoppages can reduce consumption by 14% without increasing the trip duration (Van der Voort et al., 2001).

Fiat has created an eco-driving application to reduce CO_2 emissions and fuel consumption through reconsidering the role of the driver. In order to pursue this behavioral change approach, Fiat managers believe that it is the company's responsibility to inform the driver of their driving behavior consequences and explain to them the concept of eco-driving, its principles, and its results. The reduced levels due to the use of Fiat's application were by average 6% while the best drivers reached 16%. To be more specific, the following elements contribute to eco-driving: consistent speed by 15%, smooth acceleration by 29%, efficient deceleration by 25%, reducing acceleration and deceleration by 29%, and early gear changes by 31%. It was also concluded that eco-drivers drive better than the others due to their ability to predict traffic stoppage and restarting that allows them consequently to drive more consistently (Fiat, 2010).

TMS could have a similar outcome as to Fiat's Eco-driving if used properly, yet the success of any driver support tool depends on a few elements. Firstly, the company should offer the drivers precise and non-contradictory information; Secondly, it must consider the context of the trip (weather conditions); Thirdly, the outcome expected from the driver should not be too high to accomplish in parallel with the transportation to perform; Lastly, it must consider the difference between urban and non-urban conditions (Van der Voort et al., 2001).

1.2. Organizational Change:

In this section, we will define organizational change, its management methods and its principles, and finally, the resistance to organizational change.

1.2.1. Definition of Organizational change:

In our research, we consider the following definition of organizational change as the transformational process of the organization from an obsolete state into an efficient and more profitable state. This process could be initiated by environmental pressure and it affects the entire organization or parts of it (a department or a service). Organizational change might touch to the organizational structure and the management methods applied (Graetz & Smith, 2010). The introduction of an organizational change represents in itself, a questioning of the previous functioning of this organization where the employees were used to a certain stability in their automatisms and tasks.

1.2.2. Management of organizational change:

From the previous literature, we can obtain five different types of organizational change management (Graetz & Smith, 2010) :

a. The hierarchical model (Classical):

In this case, the change is planned and set in place by the top management in the form of the following steps: problem diagnostic, alternatives determination, selection of the best alternative, preparation of the implementation strategy, transmission of orders and directives, supervision and control of changes. The thorough following of these steps would ensure the success of the implementation that is set in a hierarchical order inspired by the classical school of management. Accordingly, the organization is a mechanized entity, into which individuals' behavior is predictable.

b. The organizational development:

This approach takes into consideration the employees' participation in the management process thus; it gives an importance to the human factor. The manager's role in the change management lies in three major points, beginning by communicating and explaining efficiently the change to be implemented to the concerned human resources, and then he would plan the responsibilities of these individuals according to their expectations and perceptions of this change as well as the collaborative mechanisms that join them. Finally, the manager presents the tasks to be performed and the consequent reward system to appreciate their performance. The success of this method depends on the measures taken by the top management to accompany the process of change such as the rewards system, the communication policy, and the consultation procedures set in place.

c. The structural model:

This model focuses on the structural constraints whether they come from the organization itself or from its environment. In order to surpass these constraints successfully, some aspects play a major role such as the organizational aspects like the company size, or the organizational context where we can find serious hampering factors such as the market competitiveness or uncertainty, and finally, the manager's attributes. This later is considered as a reorganizer who should reset the organization's environment to cope with the new constraints. Yet, this model was criticized for not specifying the change management steps as much as it has explained the causes of the change.

d. The political model:

This method considers the organization as a political entity run by relations of power. It is admitted then that in this entity exists a multitude of parties with a diversity of interests and as in every political environment, the most powerful agents are the ones who can affect the most the change process. For this change to go smoothly and find success eventually, the interests of the different actors in the company should be minimal and non-contradictory with the project's objectives.

e. The psychological model:

The organizational change is compared to a collective learning process into which, the change is built progressively through the elaboration of new organizational capacities. The top management has to create the proper atmosphere that helps the employees to construct the change and learn together. This requires adequate strategies to accompany the change process and face the possible difficulties that might occur.

All the above mentioned models; regardless of the differences in their approaches, they all give more clarification on the change management and underline the importance of the human aspect of this process except for the hierarchical model.

1.2.3. Principles of the organizational change management:

The process of change management is crucial for the survival of companies; this process begins at the moment when a dysfunction appears at the organization and lasts until an effective solution has been implemented by the company. Many steps have been set up in the previous literature as summed up by (Radia Slimani & Moussa Boukrif, 2016):

- The management begins by a diagnosis of the status quo that relates to the functional and the social aspect of the organization;
- Setting the objectives of the change and the means to be used in order to implement the new project, thus establishing a clear vision of the organizational change;

- Ensure the employees awareness of the need to implement the change by a thorough explanation of its objectives and the adopted approach;
- Designing the managing team of the organizational change;
- Defining the implementation plan with all the actions to be taken to concretize it with the resources needed to achieve its objectives;
- Acknowledge the employees' behavior, attitudes, and culture and act upon them to guarantee the successful achievement of the underlined objectives;
- Train the employees and communicate intensively during the process;
- Encourage the employees to take incentives that could contribute to the success of the change process;
- Support the managing team with experts in change management;
- Include the employees during the entire process that would allow them to contribute the maximum of themselves;
- Discuss the concerns of the employees during the change process;
- Manage the emotional aspect, the resulting resistance to change and the issues of power.

1.2.4. Resistance to change:

The implementation of new processes or work methods could lead to the appearance of opposing tendencies towards these changes. As a consequence, the benefits desired from these processes could not be reached. The term has been coined in 1948 by (Coch & French Jr, 1948) referring to the emotional factors that produce aggressive feelings, frustration, and undesirable behavior by the employees.

This resistance stems from diverse factors, such as individual factors, collective, cultural or those related to the quality of the change management, the organizational system itself, the frequency of changes or regarding the implemented change itself (Bareil, 2004).

Even if the resistance to change has been considered as a negative impact of the organizational change, being a cause of failure and an inevitable obstacle facing the implementation of new ideas or new projects, yet it has also been considered a natural reaction on behalf of the employees. These later ones might only seek to maintain a certain stability in their everyday routine in the company and avoid all sources of uncertainty in their environment. The resistance to change might as well be regarded as an indicator of the attachment of the employee to his company and the social relationships he has formed within (Jansson, 2013).

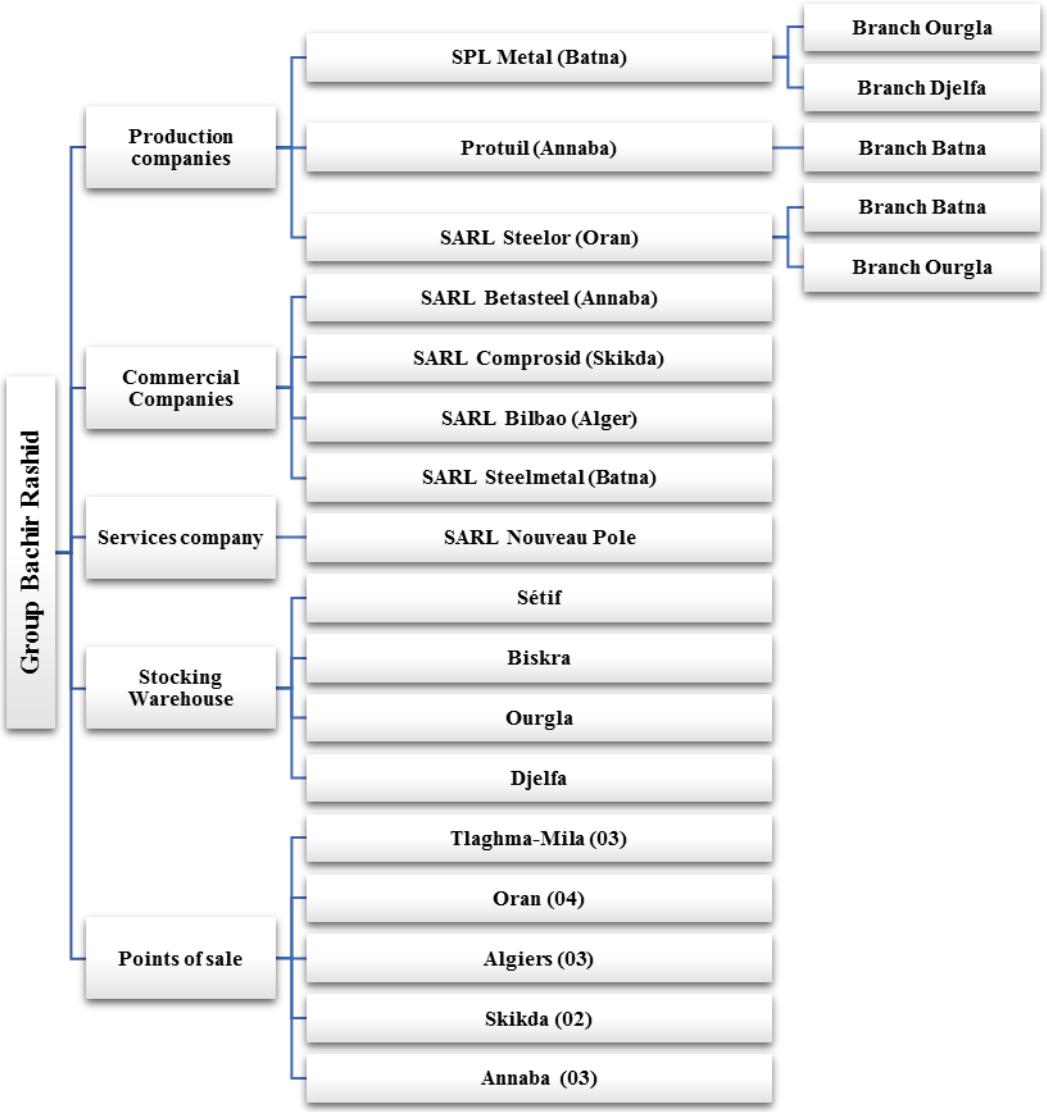
2. Case Study:

In this section, we start by presenting the sample of our study and the methodology followed in our research. After that, we present the results of our investigation beginning by the use of TMS by SARL Nouveau Pole and we proceed to the answers and analysis of our case study.

2.1. Presentation of the company:

Regarding the number of companies owned by the steel industries Group Bachir Rashid and its increasing number of warehouses and points of sale, SARL Nouveau Pole was created in 2009 in Batna in the aim to serve the companies of the group and to cope with the profound market changes and its competitiveness. The Group begun its activity in 1991 and detains currently 03 manufacturing companies, 04 commercial companies, 15 points of sale and 04 warehouses across the country with a total workforce of 484 employees as shown in figure 2.

Figure 2: Organizational Chart of the Group Bachir Rahid



Source: Made by the researchers based on administrative documents

SARL Nouveau Pole has 45 employees and detains a fleet of 35 trucks of a capacity of 40 tons each. The activities of transportation that are realized by SARL Nouveau Pole include the delivery of products to the end customers as well as the transfer of products and raw materials between the companies, the warehouses, and the points of sale of the Group that are located in Annaba, Skikda, Mila, Algiers, Setif, Biskra, Ourgla, Djelfa, and Oran. The trucks also transport the imported raw materials from the port to the importing company's warehouse. Asides from that, the drivers might also be asked to transport documents or employees on a mission along their travels.

2.2. Methodology of the research:

We have found limited research regarding Transportation Management System in Algeria, thus the case study method appeared to be most appropriate in order to reflect an exploratory

investigation (Polyviou, Croxton, & Knemeyer, 2019) on the management of the implementation process of this system in the Algerian environment. It allows us to make an in-depth observation of the phenomenon of organizational change in different functions, and to determine its impact on the company. Since TMS is already in use by the company, our analysis is a post-implementation study that aims to understand the approach made by SARL Nouveau Pole to introduce TMS as a new element of the organizational culture.

In order to conduct a case study, researchers must find an environment of openness and acceptability of information sharing. As for SARL Nouveau Pole, being part of Group Bachir Rashid, it has enabled us diverse access levels to information yet not completely open. To familiarize ourselves with the field of research, first we begun by a semi-structured interview with the logistics manager of the group to ensure the proper project description and acquire the data that would shape our interviews. These later have been conducted following the structured guide as it appears in appendice 01 during the period from February to September 2021. However, we gave the respondents the opportunity to express themselves and include further details on the practical difficulties and recurring problems during and after the TMS implementation process, with the logistics managers, 07 drivers, 03 commercial agents, and other employees from diverse functions in order to ensure distinct perspectives and represent different managerial levels.

The interview guide aimed also to assessing the attitudes of the different actors towards this organizational change and allowed us to carry out a quantitative study. We have followed several steps as made by (Velcu, 2007) to analyze the data which begun during the interviews phase, then it continued during the transcription of the answers and their analysis in light of the objective of our study.

Concerning the observations, they aimed at identifying the motivations for TMS implementation, the indicators for the success of this implementation and its perceived benefits by the respondents. Archival information was useful to compare the status of the company before and after TMS implementation. Finally, we have sorted out the answers by Microsoft Excel 2013 for the data treatment and the simplification of the presentation of the results in graphical illustrations.

2.3. Results:

2.3.1. The use of TMS by SARL Nouveau Pole:

Since SARL Nouveau Pole is a member company of Group Bachir Rashid that begun the implementation of Oodoo in 2018 and proceeds to develop its needed functions internally, Transportation Management System is used as an integrated function of the ERP. This integration facilitates the access to TMS by the entire members of the group, and not only by SARL Nouveau Pole employees. In order to use TMS, all the trucks are equipped by GPS chips. This offers on-time monitoring of the transportation activities via Google Maps.

The tracking allows the following of the transported articles and their characteristics, the source and the destination of the travel path, the time of the departure and the possible duration. An image of the merchandise could also be included in the system in case there is a need to organize the reception area.

The dashboard can also indicate if the transportation is served for an external agent where we have to provide an invoice or if it is served for one of the partners of the company (One of the companies of the Group). If it is the case, the request of the invoice has to be justified for the reduction of the use of paper. As an example, the accounting department could request invoices as proof of transactions.

The system can also provide the driver with an automatic invoice that has to mention the traveled mileage and the nature of the product in order to allow him to get the performance bonus. TMS has an automatic reminder system that helps the transportation managers to renew the necessary legal documents of the trucks before their expiration (the insurance, the technical control, and the taxes). Other options are available but not used for the moment such as the connection of the scale that weighs the trucks to the ERP and the access to the system through mobile devices by all employees.

2.3.2. The Management of TMS implementation by SARL Nouveau Pole:

1- Can SARL Nouveau Pole serve all the needs of the Group?

In most cases, the fleet is sufficient and well organized to serve all the companies appropriately. Yet, external agents have been needed occasionally as in the case to retrieve raw materials from the port since the Group does not regularly import steel reels. Third Party Logistics is a common practice for the transportation activity; it involves the according of a service to a logistics service provider in order to ensure efficiency and effectiveness based on short or long-term contracts (Yan, 2018). However, if we consider the Group Bachir Rashid globally, instead of outsourcing the transportation activity to an external service provider, it has created SARL Nouveau Pole, which would allow the other companies to focus on their core businesses and consequently reach higher levels of competitiveness.

2- Does SARL Nouveau Pole serve companies outside the Group?

Even if SARL nouveau Pole has a legal independence, as all the companies in Group Bachir Rachid, yet it was created to serve the needs of its partners in the Group. Added to that the fact that it has to seek transportation service providers in some cases. The organizational chart above clearly indicates the wide network to serve by SARL Nouveau Pole.

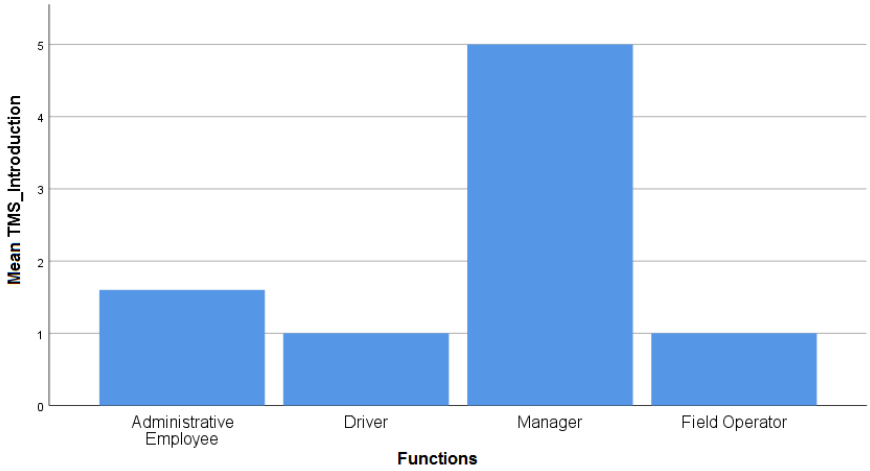
3- How did the general management introduce the implementation of TMS?

The presentation of TMS implementation to the different actors of the company must be preceded by a field diagnosis, by which the top management understands the status quo and identifies the procedures to accomplish and the actors to participate in this project. Such diagnosis has not been operated by the managers, who would not have been able to determine consequently the employees' reaction towards this organizational change.

To evaluate the introduction method of TMS implementation into the company, we asked the interviewees if this procedure was realized by a general assembly directed by the CEO of the Group or by the head of SARL Nouveau Pole. The top management could also chose to post it among the employees or communicate it by emails, or by any other means. The obtained responses indicate that the implementation decision has not been communicated by meetings nor by postings, and that they were informed at the time of the implementation, which reflects a Taylorist-type conception of change.

According to the logistics manager, the CEO intended to implement an ERP since it represented for him a key factor for competitiveness of the steel industries market. Hence, his decision to support the initiative of the ERP development that came from the logistics manager, who would suggest the needed tasks and the IT manager, who proceeded to design and develop the ERP based on "Oodoo", an open-source ERP. The TMS implementation was part of the ERP developed package and was highly supported by the top management as well.

Figure 3: The Introduction of TMS Implementation by SARL Nouveau Pole



Source: Made by the researchers based on data analysis

4- Did the general management justify the choice of the TMS?

The success of any organizational change depends largely on the justification of this change to the concerned employees that aims at making the employees aware of its importance; therefore, they would participate positively in the process. Since the implementation idea and its development originated from the logistics manager and the IT manager, they represented the team to conduct and manage this organizational change. However, as much as the top management supported the ERP implementation, and therefore, the TMS implementation, yet, it has not conducted any formal procedure that involved the employees and the drivers in order to introduce this change nor to justify the choice of this system over other possible alternatives.

5- The general management communicated sufficiently to train for the TMS use:

The respondents declare no efforts made by the implementation team to explain the implementation reasons or the impact expected from the use of the TMS. The team has only trained the administrative employees to the appropriate use of the system and its functions, which they have stated to find not enough for the requirements of their jobs. This contradicts with the statements of the managers who consider the system easy to use and find the training given largely sufficient. According to one of the commercial agents of the company:

"The team conducting the project set up a date for the implementation and proceeded to train the concerned administrative employees on how to use TMS. Further explanations were given by phone communication or by email whenever needed".

For the employees, it seemed like an invasion of their workplace since the implementing team have not explained nor justified their task. They have also complained in their interviews about the access given to them by the top management that they find too restricted because all operations realized on the system have to be validated by the managers and the inability of the employees to modify the operations they have entered or correct their mistakes. We can consider this a major factor to initiate a resistance to change since it puts the employees in an uncomfortable situation where they might acquire undesirable perceptions of them by the top management.

"All the operations entered in the system during one working day are not validated until the manager checks into the system and performs that. Any mistake we realize is straight communicated to the top management and we do not have the authorization to cancel or modify the entry"

No type of training was dedicated for the drivers, whether it regards the options offered by TMS in tracking and organizing the transportations activities nor for the optimization of costs.

6- The TMS is used for traceability of the trucks and the merchandise:

The administrative employees that we have interviewed totally agree on the traceability options of the trucks and the merchandise. This option is useful particularly for commercial agents who need to communicate the delivery dates and times to the customers. They would also follow the trucks who would deliver than, immediately would load new merchandise and take off; traceability options allow them to prepare the documents and the load on time, thus reducing any delay and enhance the drivers' satisfaction towards the delivery and pick-up procedures. However, the employees can only access the information about the delivery time and location and only the top management have the access to the delivery characteristics. The drivers have not been informed completely by the installation of the GPS chips on their trucks.

Figure 4: The Use of TMS by SARL Nouveau Pole in Traceability

Source: Made by the researchers based on data analysis

The use of the TMS for traceability has been confirmed as well as by a previous study (Belkacem Bouzida & Merzoug, 2021) that included participants from all the companies of the Group Bachir Rashid as shown in the below table:

Table 1: Evaluation of TMS by the Group Bachir Rashid

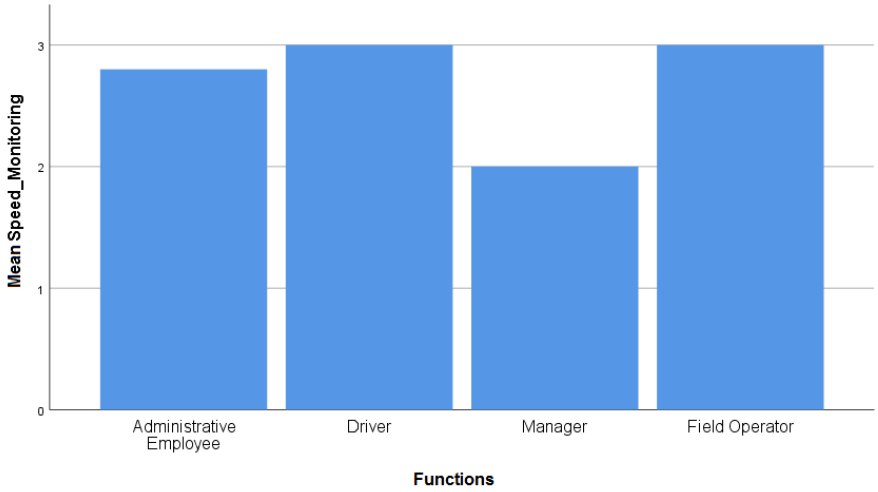
	Mean	**Std. Dev.**
1. The company uses TMS to plan transportation resources.	4.07	1.552
2. The TMS contributes to the organization of the transit area and the docks.	4.13	1.408
3. TMS improves transport activity by tracking vehicles and goods.	4.50	1.225
	4.23	**1.395**

Source: Belkacem Bouzida, I., & Merzoug, S. (2021). Impact of logistics information systems on supply chain optimization: Case of Group Bachir Rachid. Journal of Sustainable Development of Transport and Logistics, 6(2), 60-80.

7- The TMS is used to monitor the speed of the trucks:

The interface of the TMS allows the employees to check the speed of the trucks, make sure the drivers stay in the legal limits and follow the predesigned paths. Nevertheless, the policy of the Group allows the drivers to have more independence and improvise when needed. A slight change in the determined path does not require the top management to react. This relates to the recruitment procedures of the drivers that represents in itself an important task that the top management handles carefully. As a consequence, the drivers are trusted with the vehicles and the merchandise, and for the logistics managers, since the creation of SARL Nouveau Pole, only two road accidents has happened, and one of them involves the detachment of the steel rods off of the truck, which is not the responsibility of the driver.

Figure 5: The Use of TMS by SARL Nouveau Pole in Speed Monitoring



Source: Made by the researchers based on data analysis

8- Has the general management communicated the definition of Eco-driving to the drivers?

Some aspects of the use of TMS require employees' participation more important than others. As an example, we state the need of positive contribution of the drivers to apply eco-driving. They should be well informed, trained, and mostly, motivated to change their usual driving style to another that is economic and more ecologic. To ensure the participation of all the drivers in this project, the top management cannot force this change upon its employees and expect positive results.

When asked about the eco-driving principle, the interviewees had to be given more details and explanation, even the logistics managers seemed to be unfamiliar with the concept. We had to explain the definition of eco-driving, and the difference between economic driving and ecological driving, and if SARL Nouveau Pole has established the term in its work philosophy even if referred to differently. All the respondents agree totally that the company did not implement any procedure to drive economically nor to reduce CO_2 emissions and be more sustainable.

9- Does the general management allocate eco-driving related bonuses?

To encourage the drivers to contribute in implementing eco-driving principles, the top management must set in place a system of bonuses for the drivers with the least negative reports and the drivers with the best eco-driving levels. TMS must be equipped with a

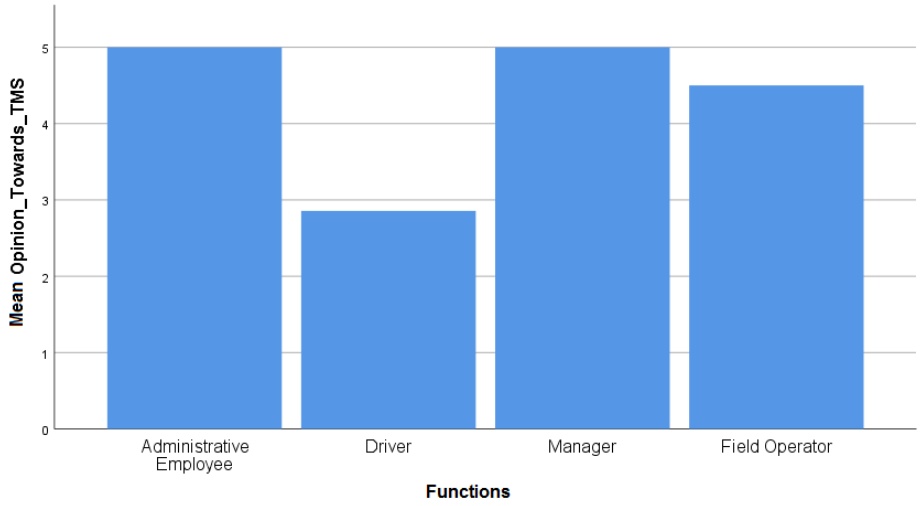
notification system that allows the managers to follow the performance of the drivers. Appropriate dashboards that can calculate the fuel consumption levels and the CO_2 emissions must also equip the trucks. However, SARL Nouveau Pole has only placed GPS chips on its vehicles and the TMS interface is only developed to trace the merchandise and display its characteristics. The company does not even follow the fuel consumption levels before and after every trip.

10- What is your opinion towards the implementation of the TMS?

We have concluded our interview with an assessment of the employees' attitudes towards the implementation of the TMS; we found that the manager and he administrative agents had very favorable opinions about the TMS. The field operators expressed favorable attitudes while the drivers were mostly neutral. We should note that we could not explain to the drivers all the options that the TMS provides for the top management since they have not been informed by the presence of the GPS chips. Besides, the company has not trained them to drive economically or ecologically, which would be monitored by the TMS, so they consider the system irrelevant to their jobs.

As for the administrative agents, they are favorable to this system for the traceability and for its integration to the ERP, which reduces their daily tasks and entries into the systems. However, they believe their opinion towards the implementation is not important since it comes by the orders of the top management.

Figure 6: The employees' attitudes towards TMS implementation



Source: Made by the researchers based on data analysis

3. Discussion:

The implementation of a new project by companies must begin by a diagnosis of the status quo, which enables the managers to understand the dimensions of the existing situation and its dysfunctions. This fundamental step for the success of any change project was part of the persuasive initiatives made by the Logistics and the IT managers to convince the top management of the importance to implement an ERP and consequently the integrated TMS as well. This diagnostics was made based on comparison with the competition and the market threats, and it has not included the human factor and its reaction towards the change.

Consequently, the change project was forced upon the employees by the top management through the implementing team with a Taylorian Model. They have not provided any plan of communication that aims at informing the employees of the change to be introduced, to justify this choice of Transportation Management System as an integrated part of the ERP in use, nor to include them in the change process.

As for the training provided during and after the implementation, it can be considered as a failure due to its dedication towards the technical aspects of the system and their practical use, and it has not implied the methods to facilitate employees' integration and their adaptation to TMS. The provided coaching was insufficient to avoid the resistance to the organizational change and no motivation plans were set in place to encourage the concerned employees by the use of TMS to participate positively in the implementation project or the efficient use of the system. Therefore, these employees have been passively resistant to the organizational change by not trying to learn or optimize their learning of the system, and by never declaring a negative comment toward the TMS to their superiors.

What made them more reluctant to express their opinions about the implementation and the use of TMS is the fact that it is integrated to the ERP that has been internally developed by the Group, they fear that their comments might be taken personally by the implementing team.

Regarding the traceability, our case study confirms that the use of the TMS is aimed mainly toward this option, but for speed monitoring, the top management has not given it the importance it requires. Avoiding road accidents must always be prevented by proactive measures. For that, the lack of accidents registered throughout the years is not the only indicator for appropriate driving, and even if the type of the goods transported by SARL Nouveau Pole, which are steel products, and are not that sensitive to reckless driving, yet the value of this merchandise should have the top management reconsider speed monitoring options.

According to our findings, we can state that SARL Nouveau Pole did not engage properly to establish measures that would eliminate the resistance to organizational change after the implementation of the TMS, thus we decline **H_1:** SARL Nouveau Pole TMS implementation management contributed to eliminate the resistance to organizational change.

For **H_2:** The use of TMS by SARL Nouveau Pole contributes to the implementation of ECO-driving principles, we have proved in a previous study that the use of TMS contributes to enhancing the efficiency and reducing costs as shown in table 2 (Belkacem Bouzida & Merzoug, 2021). Yet, this does not touch to economic driving principles that focus precisely on the reduction of fuel consumption. We decline consequently the first part of this hypothesis: "The use of TMS by SARL Nouveau Pole contributes to the implementation of economic driving".

Table 2: Impact of TMS on Cost Reduction and Efficiency at the Group Bachir Rashid

	Cost Reduction	**Efficiency**
Kruskal-Wallis H	3.804	3.935
df	3	3
Asymptotic Sig.	0.283	0.269
Exact Sig.	0.288	0.257
Point of probability :	0.000	0.000

a. Test of Kruskal Wallis

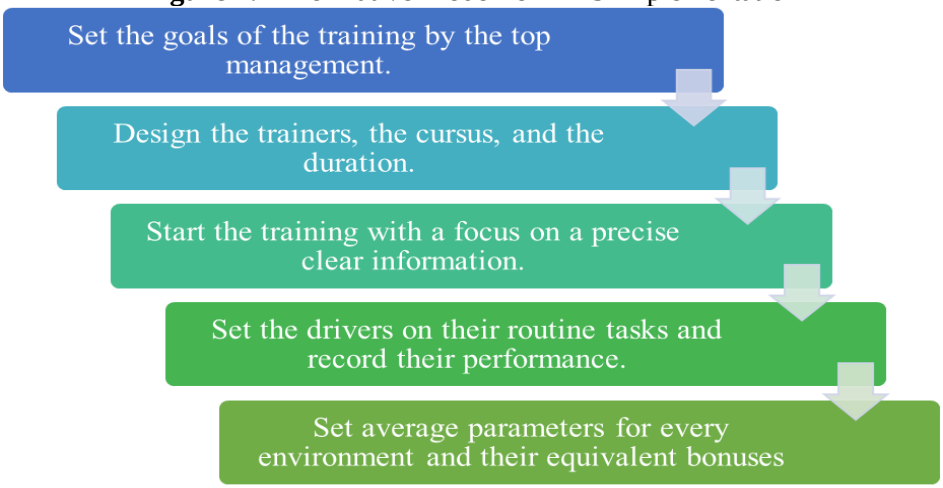
b. Regrouping Variable : TMS

Source: Belkacem Bouzida, I., & Merzoug, S. Ibid.

No efforts were found to be made by the top management to introduce ecological driving and we refuse the second part of this hypothesis: "The use of TMS by SARL Nouveau Pole contributes to the implementation of ecological driving". In conclusion, all the hypotheses are refused.

Even if the company has not set a strategy in place to support its employees before or during the implementation process, it is still possible to make corrective measure notably if it would consider to invest in sophisticated dashboard on its vehicles to facilitate the monitoring of activities or in other options reinforcing the use of the TMS. We suggest then the following normative model:

Figure 7: A normative Model for TMS Implementation



Conclusion:

Transportation Management System is a key technology for the service of logistics activities and the transportation sector. Our study aimed at investigating the reasons behind the non-optimal use of the TMS due to the resistance to organizational change at SARL Nouveau Pole. The implementation of the system is an opportunity for the company to enhance its management methods, and represents in itself the awareness of the managers to keep up with emerging changes and new technologies.

However, the implementation of the TMS that was forced by the top management on the employees without including them in any process would prevent from reaching the desired efficiency of the system. A rigorous approach to implement changes into the organization is crucial for the desired success. A better communication of the system's objectives would allow SARL Nouveau Pole and the entire group to reach the optimal benefits of TMS. The communication plan has to explain the objectives clearly and valorize the employees' contribution to the use of the system.

The training is an important factor that contributes to the success of the project since it helps the employees ensure self-confidence towards the requirements of the new system, thus, accept the TMS and eliminate the resistance to organizational change.

Research Contribution:

This paper represents the first study aimed at analyzing the resistance to change to the Transportation Management System in Algeria. The studies of the use of this system in Algeria in general are under-researched context. Considering the growing market of

transportation and logistics service providers, more studies should investigate the technologies used in this sector and analyze how to reach their optimal efficiency and effectiveness in the Algerian economic circumstances. Our findings prove the rising awareness of the importance of technologies such as the TMS, yet it was not implemented in a way that could have prevented the resistance to change.

Managerial contributions:

Our paper has implications for companies who use already TMS, intend to implement one or any other technology for that matter. We encourage the managers of these companies to be more proactive and include their employees whenever they plan to introduce an organizational change. Considering the constant spread of the implementation of these technologies that require important financial investments, companies are required to set better strategies for the implementation and the support of their employees to adapt to this change.

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Appendice:

Interview Guide:

1. **Can SARL Nouveau Pole serve all the needs of Group Bachir Rachid?**
2. **Does SARL Nouveau Pole serve companies outside the Group Bachir Rachid?**
3. **How did the general management introduce the implementation of TMS?**
   - ☐ By a General Assembly directed by the CEO
   - ☐ By posting
   - ☐ No meeting or posting
4. **The general management justified the choice of the TMS:**
   ☐ I agree totally ☐ I agree ☐ Neutral ☐ I disagree ☐ I disagree totally
5. **The general management communicated sufficiently to train for the TMS use:**
   ☐ I agree totally ☐ I agree ☐ Neutral ☐ I disagree ☐ I disagree totally
6. **The TMS is used for the traceability of the trucks and the merchandise:**
   ☐ I agree totally ☐ I agree ☐ Neutral ☐ I disagree ☐ I disagree totally
7. **The TMS is used to monitor the speed of the trucks:**
   ☐ I agree totally ☐ I agree ☐ Neutral ☐ I disagree ☐ I disagree totally
8. **The general management communicated the definition of Eco-driving to the drivers:**
   ☐ I agree totally ☐ I agree ☐ Neutral ☐ I disagree ☐ I disagree totally
9. **The general management allocates eco-driving related bonuses:**
   ☐ I agree totally ☐ I agree ☐ Neutral ☐ I disagree ☐ I disagree totally
10. **What is your opinion towards the implementation of the TMS?**
    ☐ Very favorable ☐ Favorable ☐ Neutral ☐ Unfavorable ☐ Very unfavorable