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STUDENT REPORT

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CHANGING THE WORKING ENVIRONMENT BY CHANGING PEOPLE

Master Thesis

4th Semester

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Title: [Changing the working environment by changing people]

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Supervisor: **[Felicia Micalus]**

Project group: **[NO]**

SYNOPSIS:

This project analyze the roots of the causes that generates challenges within the organisation when is about to change the technology and thus, the management. This case study focuses on the elements affected by the change and the main one is the people and, on the possibility, to overcome all these challenges. Theory use in the project help. Methods have been used to help in the process of collecting data.

Viorel PETREA

[Name]

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By signing this document, each member of the group confirms participation on equal terms in the process of writing the project. Thus, each member of the group is responsible for all contents of the project.

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ABSTRACT

This thesis focuses on the challenges generated by the technology implementation in the concrete production division of an organisation and how to overcome the implementation barriers. The way that the head management, which represents the engine for change, had chosen to address the change, had a major impact on the result of the technology implementation.

The development of the thesis was conducted using an abductive approach and primary data were collected using four semi-structured interviews with people from different departments. Secondary data was collected only from the literature review and the author consider the case study as an approach for the research design.

This thesis contributes to Lewin's Three Steps Change Model, to Fishbone Diagram and Leavitt's Diamond Model, models used for analysing the specific context of the area studied.

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PREFACE

I would like to express my appreciation for support, and participation to all the individuals that contributed to this thesis to some extent. The present project would not have been possible without them.

First, I would like to thanks the organisation for their willingness to offer me valuable information that gave me the opportunity to conduct this project. Thanks to the Logistic Manager who approach me for collaboration regarding the studied field.

Furthermore, I would like to express my recognition to the Production Manager, to the Business Improvement Manager and Sales representative for giving me a part of their valuable time to participate in the interviews.

I want to show my recognition to our Master Program Study Administrator Charlotte Zoey Søndergaard.

Finally, I would like to express my gratitude and appreciation to my supervisor, Felicia Miclaus, who offered valuable assistance, support and guidance when I requested.

Reading guide

In this project, the references are presented and organized in the reference list. Figures, models and tables are numbered according to the chapter number. Pictures, figures, models and tables with no references attached are developed by the author.

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1. INTRODUCTION

Any organisation that is experiencing or intends to perform a change management operation must consider all the aspects and consequences of such a process before starting to draw the road that reaches to the implementation process. The implementation of new technologies should follow the same path. The implications of the change affect every part of the organisation and thus, challenges that come hand in hand with the benefits may affect considerably the process of implementation and could lead to unsatisfactory results, completely or partially.

This project is about a multinational company, a major player in cement and concrete production, which express their wish to remain confidential. Relatively new on the local country market, the company bought the facilities from another important player and in any acquisition situation, there was a need to make some changes on the technological side, especially to be able to connect existing equipment with the existing digital systems of the organisation. At the moment that this project started, the process of change, the implementation of new technologies has already started and it was in an intermediary phase. Some of the systems were already implemented and give the possibility to test them, to work in a real-life context and this offer the possibility to measure the implementation and to offer feedback. Some other systems were not implemented entirely, and they were during the process of implementation at different levels.

Like any other change, together with the advantages, there are also many challenges that impact the result of the change. Same happens with the studied organisation which was expected to get positive results for the systems already implemented and also to encounter some challenges. But the challenges turn out to be more than they expected and thus, one of the managers, the Logistic one, decided to work with the researcher in an academic context to get an external opinion about the situation. The external opinion brought an objective answer to the situation since it has no interest in any of the results.

Besides the external opinion for the situation, the study aims to analyse the causes that led to all these challenges, to identify the roots of the causes and in the same time to offer a possible solution that may help the organisation to turn the result of the change into a more positive one.

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The research was done as a case study with four of the departments of the organisation, and the purpose was to find what will be the implication of technology implementation if the process of implementation is not performed properly.

The motivation of the researcher came from one of the elements studied in this case, the people. The study revolves around people, which are at the same time, during the whole process, in three situations or states. The first state is the generator of the errors that led to challenges, the second one is when they suffer because of the change. The third one, people are the solution by being able to fix all these issues and making their new working environment as their new comfort zone.

1.2. ORGANISATIONAL DESCRIPTION

The mother organisation of the studied company is one of the world leaders in concrete and cement production. The group started in western Europe in the 20th century and succeed to expand in more than 30 countries. They have more than 90000 employees around the globe, activating in more than 3500 locations. The studied company is relatively new in the local country market, they have more than 750 employees in more than 35 locations. The researcher focused only on the locations from the Capital area, which are 5, including the headquarter.

2. PROBLEM STATEMENT

How can an organisation implement new technologies with fewer challenges?

Research question one

What generates unsuccessful implementation?

Research question two

What are the challenges of technology implementation and how to overcome them?

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3. DELIMITATION

Since the organisation is a multinational company acting in more than 30 countries, the researcher focused only on one of the branches. Moreover, on that branch focused to work with one of the regional divisions. Within the regional division, the studied field was concrete production.

4. LITERATURE REVIEW

This chapter is meant to offer a better understanding of the relevant literature within the field of interest through different authors and experts' vision. The review allows the researcher to understand what means all these technologies used and their implications and the changes faced by the organisation studied.

4.1. TECHNOLOGY

For most of the world industries, industrial production represents the central spine. Talking about industrial production, we consider both aspects of it, the manufacturing industry which is characterized by discrete processes and the production in process plants where there are more continuous and batch processes (Dotoli et al., 2017). Many of the present products represent yesterday imagination or science-fiction and if before it was hard to imagine a high level of imagination in a factory, today, the industrial factory becomes more and more automated to be able to achieve high levels of efficiency and the desired quality (Mitchell et al. 2012). In time, the research on factory automation revealed important facts and some of these factors are the increases of competitiveness among companies and in some cases among countries on one hand and on the other hand, manufacturing was the engine to promote productivity and innovation and in this way many successful technologies were identified and applied in practice through the innovation chain. (Mitchell et al. 2012).

The phenomenon of automation was an interesting field for social scientists since the industrial revolution because once was considered to introduce the division of labour for the assembly line the

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human engagement started to decrease due to the work performed by the machines. (Leung et al. 2018).

According to Karl Marx, if you let the workers without their meaning of work, they will become alienated and since then, the machines were improved continuously and became more and more effective and sophisticated and were able to provide a cheap substitute for human labour. (Ibid.)

This led to strong debates between economics and other scholars' disciplines, about the effects of automation on the labour markets and its consequences on employment (Ibid.).

The opinions are split, while some economists consider that even though the automation replaced human labour, at the same time complement their work and made possible in the end the opportunity for creating more jobs than could possibly destroy (Ibid.). In contrast, some other economists consider that automation is continuously increasing and transform human labour in something obsolete (Mokyr et al. 2015).

In most of the cases, cost and feasibility are the driven vectors which decide the level of automation (Rudnev 2010) and the purpose of automation it is not necessary to replace the human factor, it is also successful in assisting the human labour and improving the quality(Kunigahalli et al. 2008). There is no doubt that the trend in human factor activities and the machines uses is changing and human activities become more qualitative and more complex. (Rudnev 2010)

The level of automation could be either simple, as is the case of simple mechanization or could be very complex as for example a fully automated system.

Partial automation refers to the case of automation of particular production processes and can be found where the human factor cannot perform the process control due to the complexity and the speed of the processes and in this situation is required to replace the human factor with automatic apparatus. (Rudnev, 2010). By the book, the production unit it is semi-automated or partially automated and this setup offers the best efficiency when the manufacturing unit it is built to be automated from commencement and in this setup, it is included also, the automation of the control process. (Ibid.).

The integrated automation production connects the power supply functions with the production unit ad with the plant in an interrelated unified system. The system will work according to a pre-decided

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self-adapted program which will limit the human factor to only supervising controlling the entire system (Ibid.)

The ultimate level of automated production is fully automated one. It is designed to transfer all the control and monitoring operations of the sophisticated system to the automatic control unit (Ibid 2010).

In 2018, CEMEX, an important player in the field of cement and concrete production, the same field with the researcher field of study, succeed to develop a cement production plant with a 100% level of automation and using a remote control system which makes possible the plant control from (Cemex 2018). From its central location in Monterrey, Mexico, the innovative remote control system developed by CEMEX, it is able to operate in real-time and continue the plant, and in the same time, to track and collect data from 14 cement plants, 25 kilns and 86 grinding mills, all of them in Mexico and the same system being coupled with monitoring system of another plant in Colombia and one more in USA. This kind of system is able to provide important data about each stage of the production process and important information about the performance and the conditions of the equipment installed to operate the plant(CEMEX 2018). The persons that monitor the systems have the possibility to take rapid actions, either corrective or reduce the deviations which may affect the safety procedures or cause any environmental and product quality issues (CEMEX 2018).

In the end, when it is to decide what level of automation to use in the construction field or in the maintenance activities, according to Skibniewski et al. (1993), partial automation is more suitable and efficient than the case of full automation.

Besides automation, the internet is another technology necessary for the current field of study. The internet started to connect people, companies and large communities and suddenly the horizon become larger and larger and the limits of knowledge were expanded. The industry could not be a part of this, and automation allowed the machines to be interconnected and their sensors were able to offer more and more data (Bhagyashri et al., 2013). The industrial process, through this exchange human machines, could be understood much better. Bersin(2017) defines the Internet of Things (IoT) as being that architectures that connect all the technology to perform actions and this is done in a specific way to do something new. The IoT becomes possible together with the development of

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specific technology (Bauer et al., 2014: 186) and this made possible the development of many domains like traffic management or medical aids or industrial automation. (Bellavista et al., 2013). Trough IoT transparency of information is assured and the flow of data will be increased (Saxena 2017) which make brings important benefits to the company by reductions of cost, better tracking of products, flexibility, etc. (Zhou et al., 2015). Companies will start to capture different sets of data, with the possibility to select what kind of data to store and analyse and how to interpret them in the future in order to meet the customer's expectations and in order to categorize the customers (Merrifield, 2016).

Industry digitalization is taking place nowadays (Viswanthan, 2017) and factors like attitude, behaviours, goals, experience are quantified much better and understood through the use of technology and data collections and gives the opportunity to companies to shape their internal resources and to increase customer satisfaction (Shavit, 2017)

But the massive volume of data it is not necessary to be valuable if the companies cannot succeed to analyse this data or to categorize them and if the data are able to generate value-added services then the companies must find ways to mitigate the complexity of the IoT and technologies (Mulholland, 2014) and a proper data management flow together with accurate data or information represent important tools to help in IoT complexity (Ibid.)

Bhagyashri (2013) mention that the future of technology it is brought closer by the IoT and some of the advantages offered by it are flexibility, increased scalability, a fast reaction in any planning and all of this in an integrated environment.

As it is known, technology refers to digital systems, devices and their application and incorporates concepts from many disciplines (Bakanlığı, M.E., 2006) and offer new chances to manage and control the operations and resources of a company with profitable operation as a result (Altukhova et al 2018).

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4.2. TECHNOLOGY IMPLEMENTATION CHALLENGES

Whenever decided to implement new technology in the organisation, managers should consider this technology implementation as a factor of changes in all the area of the business. Together with these changes it possible to face some barriers in the implementation or in the use of the newly implemented technology. In order to perform an efficient and desired change, all these possible barriers encountered during and after the implementation, and here considering also the time when these technologies are only ideas or possible solutions for company, must be identified and formulated so that the solutions to overcome them could be considered and implemented before and during the implementation process.

Depending on the field of business and on the type of activities and the technology found to be suitable for implementation, there are different possible variations of barriers and in literature, there are different perspectives about possible barriers and how to overcome them.

Thompson(2016) presented a few types of technology implementation barriers visible in any type of business and to enumerate some of them, all the time there are people who act and oppose the change, there will be always issued of integration, investments are required for any technology implementation, understanding the need for new technology, training is mandatory in any change, concerns about the resources, etc.

In order to face fewer technology challenges, the organisations must identify and choose the proper technology compatible with their thinking (Woodworth, 2011). Consequences are the environment's alteration, workforce exploitation and extremely hierarchical organization. The appropriate technology let us think of a scale suitable for people activities which activate in decentralized groups and promoting autonomy without taking into consideration the need for better efficiency (Ibid.)

Treumann (2014) had the same consideration about technology barriers and he focused more about the insufficient support for innovation and leadership, on the required period to make changes, on the social implication, on current process and procedures, stress regarding work and overloaded personnel.

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Looking at the barriers mentioned above, there are different ways to overcome them and Thomson (2016) stressed that a clear presentation and support in understanding the change that might affect the roles of the employees, represent an important solution to deal with the sceptics. It is mandatory to work according to a well-understood plan and in this plan to use proper training which will make possible to reach positive and desired outcomes (Ibid.) The plan must be sustained by a long term strategy which will assure the proper human and financial resources and all of this achieve a feasible implementation (Ibid.). Besides the plan, the use of different examples is necessary, to be able to demonstrate that the change is planned and come with certain benefits, and to increase the trust over the business once the technology is ready to produce effects (Ibid.)

4.3. CHANGE MANAGEMENT

More and more companies wish to accomplish sustainable development and new concepts like clean technology, eco-friendly processes or sustainable design, became an important driver for an organization to adopt change management actions (Thakur et al. 2019).

According to Caprarescu (2008), if the phenomenon or the process is either replaced or altered or transformed, we are dealing with change.

While the organisation confront technological advances and the global marketplace, that rapidly transform the environment and increasing its complexity, the interest in the change management increased accordingly (Rafferty et al., 2013).

The management of change in case of an organisation has as foundation those concepts of change that implies forecast, coordination, control, organization and engagement as management functions (Ricardo, R., 1995) and this change management is looking to identify the specific sources that oppose change and the ways to overcome those forces (Kotter et al.1979).

So, the change is really important for each organization when they try to adapt to a fast and continuous change of the external environment and Braica (2013) emphasize that the organizational

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change should not be perceived as a crisis and should be considered as an ongoing transformation within companies.

Any planned change if failure, could be attributed to many factors, but one of the most important issues is represented by the employees attitude regarding the change (Rafferty 2013) and change readiness represent those beliefs, attitudes and intention of an individual regarding the extent to which the transformation is needed and the capacity of a company to assume and perform these changes (Ibid.).

The change must be considered as an important aspect of an organisation and included in organisation philosophy (Braica 2013).

In the end, change is different depending on each situation and those processes and actions that provoke the change readiness are different at the individual, group or organisational level (Rafferty 2013).

5. THEORY

In this chapter, the researcher describes the theory used to understand the cause of the phenomenon and at the same time to help the researcher to find a proper solution for the case. The researcher will present each model individually and will provide reasons for choosing these theories.

5.1. FISHBONE DIAGRAM

The purpose of this model is to identify the roots of the issues in order to find the proper tools for solving the problems. The model is also seen as a cause-effect diagram and it was developed by dr. Kaoru Ishikawa, a Japanese quality control expert, and with this model, he was trying to avoid those specific solutions that were meant to solve the issues of a much more serious problem (Rouse, 2015). This model is a helpful tool in identifying the root causes, not just the symptoms of a problem and this is the main reason why the researcher opts to apply it in this case study.

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The shape of the diagram looks like a fish and the way it is designed it allows for a structured brainstorm activity which could categorize and sort the ideas) When the brainstorm session is complete, the diagram helps the researcher to establish which are the cause and at the same time to establish a hierarchy by rating those causes (Ruse, 2015).

The diagram is designed to work from right to left and on the right side, where is the head of the fish (see figure 5.2.1), it is stated the problem that the researcher intends to analyze and the possible causes will be portrayed on the small branches (www.cms.gov). The diagram is split into two parts, on one side, the left one is the part where the causes are presented and are separated into major cause categories. Once a possible cause is considered to produce negative effects, it is placed next to the belonging category (www.project-management-skills.com). This is the way that the diagram is built.

The second part of the diagram is the right side, that is the place where the effects are introduced.

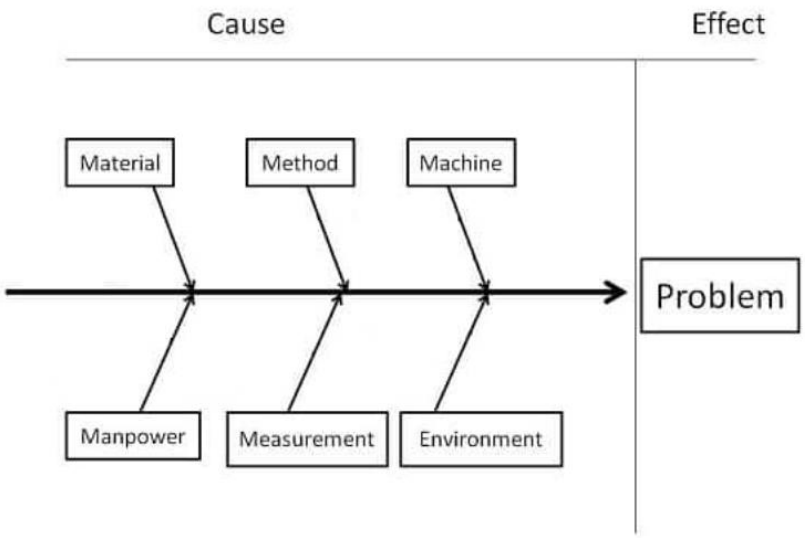

Fig.5.1.1Fishbone-diagram (Source:https://pmstudycircle.com/2014/07/fishbone-cause-and-effect-or-ishikawa-diagram/)

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The fishbone diagram can be used in any sector of the business and according to each industry there has to be a categorization of the causes taking in consideration the requirements (Ibid.) For example, in the manufacturing industry, a possible categorization could be as the one presented in Figure 5.1.1 and this include, material, method, machines, people, etc.

When drawing the diagram and started to identify causes (see fig 5.1.2), the researcher should consider 6 steps as follows (www.asq.org):

1. Introduce the problem statement(Ibid.)
2. Identify the most important cause category of the problem(Ibid.)
3. Draw the categories in the diagram as branches(Ibid.)
4. Brainstorm to identify the causes(Ibid.)
5. Dig deeper for causes to understand why it's happening like that and introduce sub-causes(Ibid.)
6. Identify the causes of the roots(Ibid.)

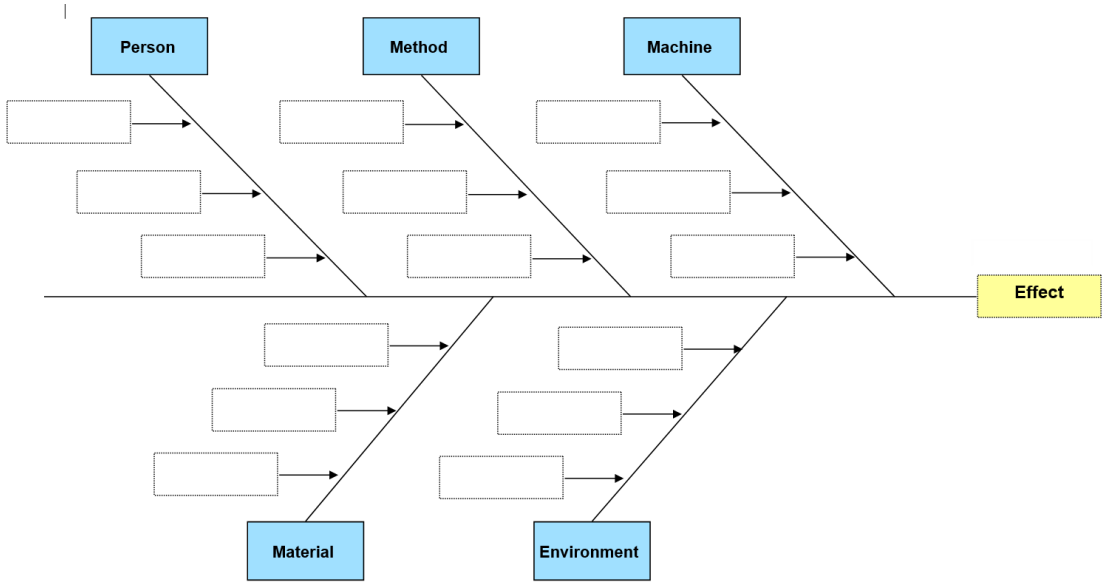

Figure 5.1.2 The Fishbone diagram template
(Source:https://uihc.org/sites/default/files/documents/asset-3737.doc fishbone diagram template)

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Any beginning step in solving a problem is to know exactly what is to issue that must be analyzed and the first step is to assure that the issue is the real problem that causes unsatisfactory results. When the research is sure about this conclusion, he must draw the problem on the effect side of the diagram, the head of the fish.

The second step comes naturally and is strongly correlated with the first one. Once the real problem is identified, then a brainstorm session must follow in order to identify the main causes categories that made possible the specified problem.

After the first brainstorming, the main categories must be introduced in the diagram and this represents the end of step 3.

In the fourth step, all the possible causes must be taken into consideration either major one or not that important. When all the possible causes have been identified, the researcher could proceed to draw them in the diagram under the responsible category.

In the fifth step, the researcher must continue with the brainstorming, going deeper and deeper to understand why those causes are in place and made possible the appearance of the problem.

The last step is the step where the roots of the causes are identified and give the possibility to the researcher, when the diagram is complete, to move further in analyzing the hole diagram and to opt for the proper solution to solve the problem.

5.2 LEAVITT'S DIAMOND MODEL

Nowadays, seems to be a period of changes in many sectors of the business and many companies try to perform changes in order to keep pace with the new technologies discovered, to stay close with the concurrency or just because they want to do things differently. But not all the time these changes are successful and the difference could be done by the way in which the decisional factors in an organisation view the change (www.edisciplinas.usp.br). Managers can perceive the change as a change of only one part of the organisation, as an isolated process and this could be a major error, or

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they can view the change of a part of the organisation as a change which more or less affects the whole organisation (Ibid.).

Every part of an organisation is connected to the rest of the parts and if there is a change performed to one of the parts, for sure there will be an impact for the rest of the organisational parts (Ibid.).

Harald J. Leavitt designed the Diamond model in 1965, also called as System model (Cornford 2013) and his model represents a tool for understanding the relationship between the main factors of an organisation which will contribute in designing and performing a successful change (www.edisciplinas.usp.br). For this is useful the Diamond model and this is why the researcher chose to work with this model for the present case study.

In figure 5.2.1, Leavitt presents the main four interdependent organisational parts, parts that are related to each one (Cornford 2013).

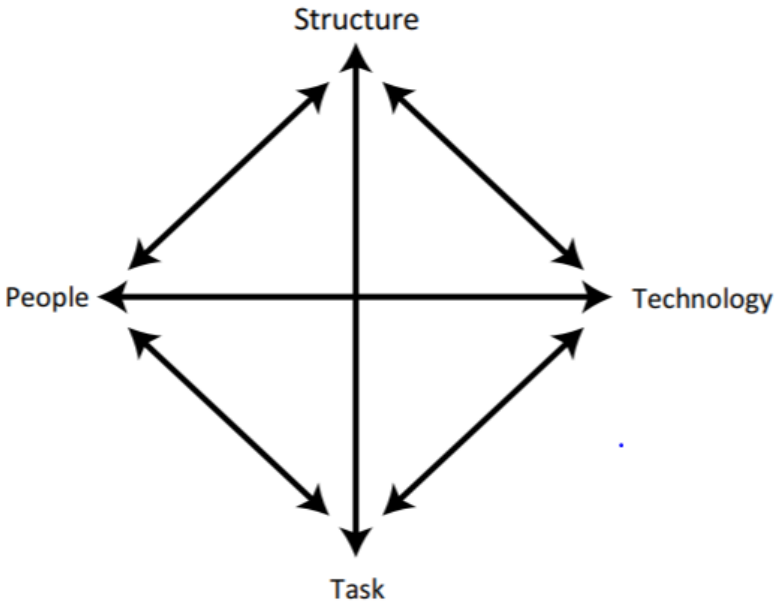

Figure 5.2.1. Leavitt's diamond: the basis for a sociotechnical view of information systems.
(Source: http://www.dphu.org/uploads/attachements/books/books_3326_0.pdf)

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As shown in the picture above, the main key elements are:

- Technology - machines, devices, digital systems which help to perform the task(Febriansyah, 2016)
- People - personnel who work with technology to perform the tasks (Cornford 2013)
- Tasks - activities that people want to perform (Ibid.)
- Structure - the structure of a company (Febriansyah, 2016).

Leavitt suggests that there is a strong relationship between these four factors described above and whenever we consider doing change to one of them, it is more likely to encounter consequences to at least another one or even to the rest of them (Cornford 2013). That is why, before considering making a change of one of the factors, managers should consider studying the impact on the other factors (www.edisciplinas.usp.br). Leavitt had a socio-technical view and he expresses that in any situation that we consider to study, we must evaluate technologies influence human resources and at the same time how people influence the way technologies works (Cornford 2013).

A classical example of this is when a company intends to either use technology to a higher level or when totally new technology takes place (www.edisciplinas.usp.br). In this case, when the technology is changed, automatically the People component will be affected. It means that the persons must be trained to be able to work with the new technology, in some cases the human factor will be reduced which will let space for a certain level of uncertainty for the remaining employees (Ibid.) Moving further, the structure will be changed due to the possibility to give a certain position to some employees and may reorganise the structure. A task could be changed if the process will be changed (Ibid.)

No matter what type of change is desired to be made, simple or complex, Leavitt's Diamond model is a good tool to perform change analysis and to be aware in advance about the impact of change in any part of the organisation(Ibid.)

When using the model, there are 2 important steps as follows:

1. The step where each part is defined(Ibid.)
    - Tasks- the key activity and routines identifications (Ibid.)

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- People - people and their skills and attitudes which positive or negative affect the change (Ibid.)
- Technology - tools for change and key equipment and processes (Ibid.)
- Structure - the model in which personnel is grouped(Ibid.)

2. The step of the impact analysis (Ibid.)
    - each component will be analyzed and the analysis will allow determining the way and level of change for each component part (Ibid.)

The analysis performed through Leavitt's Diamond model will allow the researcher to draw the possible barriers that may appear and how to deal with them when the studied organisation started to change the digital systems and to raise the level of automation and technologies used.

5.3. LEWIN'S TREE STEP CHANGE MODEL

Kurt Lewin developed the model in the 1940s and is in general about the change. He's model, known also as "Unfreeze-Change-Refreeze" model, consists of 3 phases (Mulder 2012, unfreeze stage, change stage, refreeze stage (Ibid.)) (see fig. 5.3.1)

Each phase is characterized by special actions that the organisation must consider in order to perform the change successfully

Changes in an organisation occur often because most of the time if organisations opt for not doing any changes, to stagnate, is equal with the decline (Mulder 2012). The model was chosen by the researcher because it represents a simple tool to overcome the barriers of the technology changes within the studied organisation.

When performing a change, managers must consider overcoming the forces that create people's resistance and do not let people change their old habits (Mulder 2012). In a way is normal because they feel much more comfortable with a stable situation (Ibid.) Changing represents a disruption of that stable and comfortable environment and routines and this makes the operation of changing even harder (Ibid.)

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Change is a multi-stage process(see fig. 5.3.1) and it offers the possibility to build a plan for change and to consider all the aspects in advance (mindtool team 2017). Understanding the process of change is crucial for the desired change and according to Lewin any step to produce the change must be preceded by a strong motivation in relation to the change (Ibid.).

The main focus of the model is on human resources(Mulder 2012).

In the first stage, the Unfreeze stage is the stage where the employees are aware of the change and where the emotions and opposing forces are present (Ibid.) It is the step where the status quo will be broken and are required actions to prepare the people for coming changes and the most important to make them understand why the change is necessary (mindtool team 2017). Good communication will overcome all these forces like uncertainty and doubts and the employees will be more open and willing to change (Mulder 2012). In this step, employees must be involved in the process of change and this will accommodate them much faster with the new environment (Ibid.).

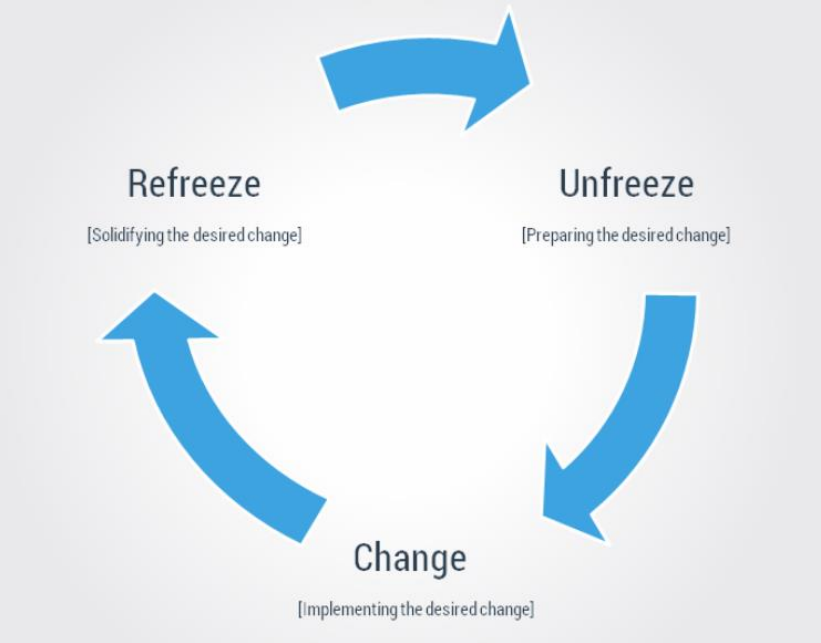

Figure 5.3.1 Lewin's Change Model
(Source: https://www.toolshero.com/change-management/lewin-change-model/)

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The first step is always the hard one and in the process of change it is advisable to create a controlled crisis which will perform changes in the core of the organisation with the result of a successful change in the beliefs, attitudes and values (Ibid.) this will be the foundation stone in creating a new equilibrium and could represent the motivation mentioned by Lewin (Ibid.)

The second step, the change step, is the step where employees start to change, to let the uncertainty aside, and to find different ways to make their life and work easy(mindtool team 2017). In general in any case of change, people need a certain period of time to accommodate with the new situation and to understand the value of the change, but in order to implement a successful change, it is very important to shorten the period of implementing the change and in this way the employees will not return to their previous habits(Mulder 2012).

The third step, The refreeze one, is the step where the employees accepted the changes, most of them found the value in it and the organisation must use accordingly the new procedures for strengthening the new habits and at the same time to monitor the possible reverse to the old habits(Mulder 2012). This last step is the reward step and managers must make use of this tool in order to secure the change.

6. METHODOLOGY

In this chapter, the researcher elaborates on the methods used in the present case study and will provide reasons for why he chose to work with these methods.

6.1. THEORY DEVELOPMENT APPROACH

According to Saunders et al. (2016), there are approaches to theory development as follows:

- Deductive - when the conclusion comes logically from a set of premises. You start with a theory and this theory is tested through data collection(Ibid.).
- Inductive - when the researcher starts by collecting data to understand the case and results in building a theory(Ibid.).

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- Abductive - when the researcher uses both methods mentioned above, data collection is done to understand the phenomena and identify possible patterns which will help to modify an existing theory which will be tested through additional data collection (Ibid.)

The researcher has used for this project the abductive approach. The idea was to work from the beginning without any preconceived theory about the problems of the organisation and to be able to avoid as much as is possible any biases. In this way, the researcher had the possibility to perform the first interview to explore in-depth and understand exactly what are the challenges of the organisation without being constrained by any theory directions.

Saunders et al. (2016) explained in detail how the how can a researcher could move from reasons to research (see table 6.1.1)

	Abduction
Logic	In an abductive inference, known premises are used to generate testable conclusions
Generalisability	Generalising from the interactions between the specific and the general
Use of data	Data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test this through subsequent data collection and so forth
Theory	Theory generation or modification; incorporating existing theory where appropriate, to build new theory or modify existing theory

Table 6.1.1 Abduction reasons to research (source Saunders et al. 2016)

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During and after the first interview, the researcher understood that the challenges are regarding technology implementation and human resources. The rest of the interviews were conducted according to an initial set of questions guided by the theory specifications. Saunders et al. (2016) stressed that when using the inductive method, when trying to explain the different phenomenon, the researchers make use of qualitative data collected in different specific methods. For the current case, the researcher collected only qualitative data and also documentary secondary data as academic books, academic journals, relevant magazine articles and websites. The combination of the approach methods was a result of the data collection and not necessary a pre-established approach.

6.2. RESEARCH DESIGN

The present project was conducted as a case study and Apli et. al (2019) defines the case study research as

"a qualitative approach in which the investigator explores a real-life, contemporary bounded system (a case) or multiple bound systems (cases) over time through detailed, in-depth data collection involving multiple sources of information, and reports a case description and schemes", which is valid for the current case.

The studied field results from the problem statement which is followed by the theory sections where the researcher present in details the theory used to answer the research questions and in the end to be able to overcome the challenges of the organisation. The project structure is portrayed in fig 6.2.1
and in order to conduct the study, different tools or methods presented in the theory section must be applied when the process of data collection is performed, the interviews in this case.
The methodology section provides more details for the reader about the way this case was conducted, what decisions were made, about the approach used, in general about the whole process of answering the research questions. The sections after the methodology are the analysis section and consist of different themes that the author chose to get a deeper understanding and do a proper analysis.

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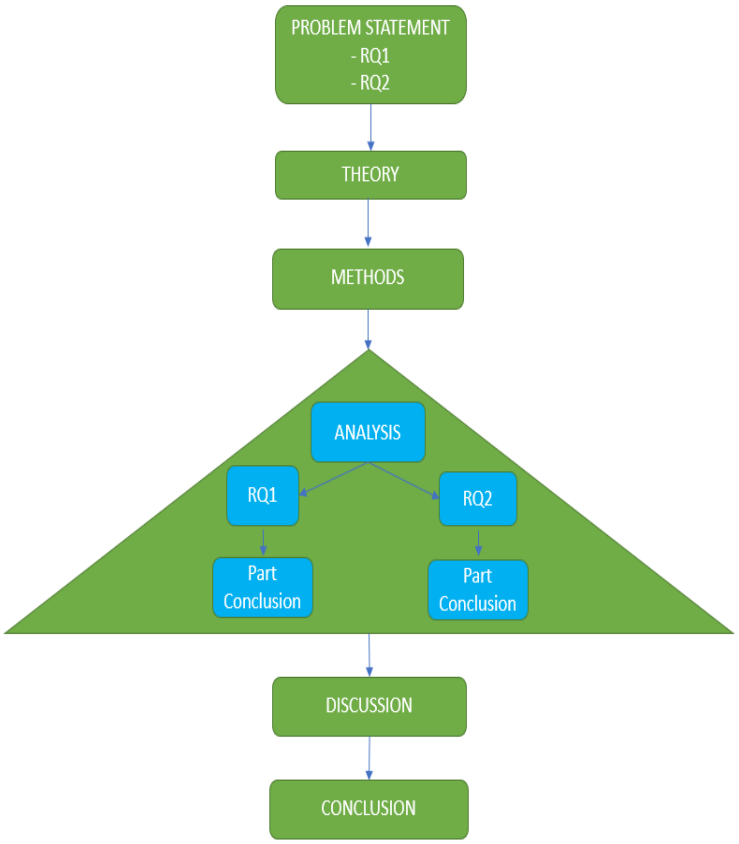

Figure 6.2.1 The structure of the project

Is the section where the author applies the theory working with both research questions individually. Through the analysis questions, the researcher intended to find the causes that generate the unexpected results of technology implementation and also to establish the relationship between different component parts of the organisation that may affect other parts when any changes are performed. In the end, the analysis is meant to offer possible solutions to overcome the challenges of technology implementation. Both sections of the analysis will have a part conclusion in order understand and emphasize the findings of the theory application and this parts will be followed by the discussions of the findings and the conclusion of the project.

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6.3. ACCESS TO THE FIELD

Through this section, the researcher will present how he reached to the studied organization got access to the specific persons for data collections.

The researcher contact with the studied organisation was possible through a common acquaintance with the logistic manager of the organisation. Having some discussion about an unrelated topic with the present studied, the researcher was asked if he can offer his perspective regarding organisational changes and technology implementation. During the discussion and taking in consideration that the researcher has the only experience due to the courses studied in his Msc. in Operation and Innovation Management, the researcher came with the proposal to study the problem in a case study which will benefit both sides. The researcher with a master thesis topic and the organisation with a possible solution or better understanding of the issue. Once the researcher and company's representant agreed about the study, the next step was to establish the way of working and about the resources that the Logistic manager was able to offer for conducting the study. A non-disclosure agreement (NDA) was signed for the confidentiality of the data. The Logistic Manager expressed his wish that the company organisation must remain undiscovered during the study and that also the number of the persons interviewed will be limited to 4 interviews. The condition of the researcher was that the persons that will be interviewed must be chosen by the researcher, in order to collect proper and relevant data for the project, condition which was accepted by the company's representant. It was also accepted for the researcher to have more discussion with different persons, others relevant than the ones with the interview, but without recording or taking notice.

There was a preliminary interview during the first unestablished meeting, where company's representative present in a short verbal description the whole current situation of the company and the changes that were established to be done and also the ones that were already implemented, discussion which gave the researcher a preliminary understanding about the field of study and about the requirements of the organisation. Any other data, which will be secondary data for the current project, were collected using academic sources and databases like EBSCOhost, Google Scholar, PRIMO, or relevant magazines and websites.

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6.4. PRIMARY AND SECONDARY DATA

Collecting data from different relevant sources and using different ways to collect them it is a necessary operation in order to understand the whole context of the problem and understanding the specificity of the topic. The researcher started to collect and analyse secondary data from relevant sources and relevant for the project. The secondary data allowed the researcher to gain knowledge about the studied field and also to see what others said about the topic. When making use of secondary data, the researcher must be considering to work with that that were collected by other authors and possible for other purposes (Saunders et al. 2016). The further analysis of this data could give a better understanding of the topic or context and could also offer a different perspective on the research field (Bulmer et al. 2009). These data can be found as raw data, published articles or summaries, etc. (Saunders et al. 2016). Secondary data have an important advantage regarding research resources because the researcher spends relatively a short period of time to collect them and these data are permanently available (Ibid.). Another advantage of this type of data is could be comparative or specific in context and could deliver an expected analysis result which may help in identifying trends. From another perspective, the secondary have also some disadvantages and one major one is represented by the fact that those data were collected by others for the same or different field and in this context the researcher does not have to much control on the secondary data. This type of data has a certain limitation in the situation of a case study, in general, are not enough to answer to the research questions and that is why the researcher proceeds to collect primary data.

Primary data were collected in a form unstructured interview, only one in the beginning and without taking notes, four semi-structured qualitative interviews plus participant observations in two of the organisations batching plants. The main advantages of participant observations, in this project the researcher performed only pure observation due to the requirements of the company, is that of participating in the real environment of the studied field and the researcher is actually in the middle of the action, in the middle of the people that he wants to observe and this opportunity offers a better understanding about the context, about the operations performed by the people within the organisation (Saunders et.al 216). Conducting the semi-structured interviews, the researcher had the possibility to gain more knowledge about the field of study, about the context and the main issues of

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the organisation that are meant to be study in this project and in the same time, had the possibility to see different perspective of the persons interviewed about the same topic. The researcher opts to use the same interview guide for all four interviewed persons with the intention to observe the point of view of each one regarding the problems of the organisation when implementing new technologies. It was helpful to see what are the expectation of each one and what is each one opinion about the ones already implemented. Even though the advantages of the semi-structured interviews and observations are considerable, they come also with some disadvantages. They are always time consumers and could be easily affected by the biases of the researcher. Considering these disadvantages, the focus of the researcher was to build carefully the interview guides and especially the interview questions, avoiding personal beliefs(Johnson et al. 2004).

6.5. REASONS FOR THE INTERVIEWS

The purpose of this subchapter is to express the reasons for choosing the persons interviewed.

6.5.1. INTERVIEW WITH PROJECT MANAGER

The project Manger was chosen for an interview due to its duties to implement new technologies. He is part of the company since the organisation established his operations in Romania. Besides the other interviewed persons, he represents the headquarters, he is part of the management who decides where the organisation should go and what changes needs. The Project Manager was the proper person to describe the new process and the changes desired by the decisional factor. Furthermore, he could have given insights about headquarters status of the implementation, about the expectations of performing these changes, about the resources used to perform all these changes and how the decisional factor communicate with the ones affected about the changes.

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The Project Manager has grown with the organisation. He was performing activities starting the lower level when he was hired as a teenager engineer starting in the organisation as a plant operator and continuing as a plant manager and nowadays as a Project Manager for technology implementation. He has 14 years of experience in the concrete productions and all of these led to the researcher concludes that an interview with him will bring more valuable and relevant benefits for the case study.

He was the person that could offer more details about the technologies intended to use, a detailed description of the desired final result and what was the new direction of the organisation.

6.5.2. INTERVIEW WITH PRODUCTION MANAGER

Technical Manager came into the organisation at the same time as the Project Manager. He joined the organisation in the same position as a plant operator and through time he succeeds to become the Technical Manager of the organisation. In contrast with the Project Manager, he represents the production unit, exactly tone of the department affected directly and considerable by the changes required by the decisional factor. He and his co-workers had to change the habits and the systems that were used to work before.

Besides this, he was one of the persons that should offer feedback about the status of the implementation and to prepare the plant machines and his department's people for change.

His experience was vast and the position in the organisation entitled to express opponent decision in case of results of implementation that may affect the plant activity since his work and results were directly affected. He was the link between the decisional factor and the production unit and these represent enough reasons to choose him for an interview.

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6.5.3. INTERVIEW WITH LOGISTIC MANAGER

The Logistik Manager was the person that made possible this case study. He was concerned about the challenges of the new technology implementation and wanted to have an external view regarding this issue. He is on the same side as the Production Manager. He is performing the activity in close relations with the technical department, working directly with the planning department. The activity of his department had to be changed considerably since the new systems were supposed to offer a better operating system to perform logistic activities and to enumerate some of them, activities of tracking the trucks, planning the routes and trips plus simulation for future concrete deliveries.

The Logistic Manager has an experience of 12 years in the concrete production field, he started in this branch as a planner, after that, he moved to the sales department and in the present, he is acting as a Logistic Manager.

He was seen as able to offer valuable information about the way the logistic activity was performed previously, during and after the technology implementation and the consequences of the performed change. His department is key within the organisation since is delivering the final product to the customers and any change of the organisation may produce positive or negative effects in the way that the product is delivered to their customers. Together with the sales department, the people working in those two departments are in direct connection with the customers and in order to not affect the relations with customers, their activity must be performed at the highest standards in order to deliver quality in the specified time.

6.5.4. INTERVIEW WITH THE SALES REPRESENTATIVE

The main reason for choosing a sales representant for the interview it was the fact that his department was not that affected by the change and the researcher considered his opinion as being neutral to a certain level. His department will face some changes but in a small percentage compared

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with production and logistic departments. The main change that implies his department is that of a service or product offered to its customers using different resources and ways of producing it. The sales representants could rely more on organisation resources and process and based on this, the promises made to the customers will be much easy to accomplish. Another reason for the interview is the feedback that sales representative could get it from customers and in this way we can confront the perception of the customer receiving the goods produced in the old way and customer's perception after the technology is implemented. The sales representatives are working closely with the logistics department and the planning team from production and for this reason, the researcher performs the interview in order to see those departments, logistics and production which were affected considerably by the change, from another point of view, trying to get a different perspective.

6.6. METHODS DISCUSSION

In this section, the researcher discusses and reflect on different methods used for conducting the project and why these particular methods were chosen. Performing a qualitative researcher we are able to collect a set of data that is matching with our knowledge. The qualitative methods give us a clear view about life perception of individuals and how do they position in relation with others and we should consider this based on the fact that people position themselves in relation to others and make judgements based on their own life experience. The level of understanding different fields it may affect the process of collecting data and that is why we should pay more attention to how we position in relation with studied topic.

Regarding interviews

The purpose of using interviews was to collect valid and reliable data which will kelp the researcher to answer the research questions. The essence of the interviews is to make use of proper questions

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and besides this to be able to retain as much information which will be used for further analyses (Saunders et al. 2016)

There are different types of interviews and each one is important depending on the possibilities to collect data or on the context. depending on the structure and each one coming with his own advantages and disadvantages, the interviews could be as follows:

- structured(Ibid.)
- semi-structured(Ibid.)
- unstructured(Ibid.)

According to Saunders et al. (2016), semistructured interviews uses an in-depth approach , the data obtained through semi-structured interviews, in general, are analysed qualitatively(Ibid.) and offer to the researcher to use multiple themes and specific questions with the purpose to cover the whole field of study(Ibid.).

Based on this, the researcher decided to use semi-structured interviews.

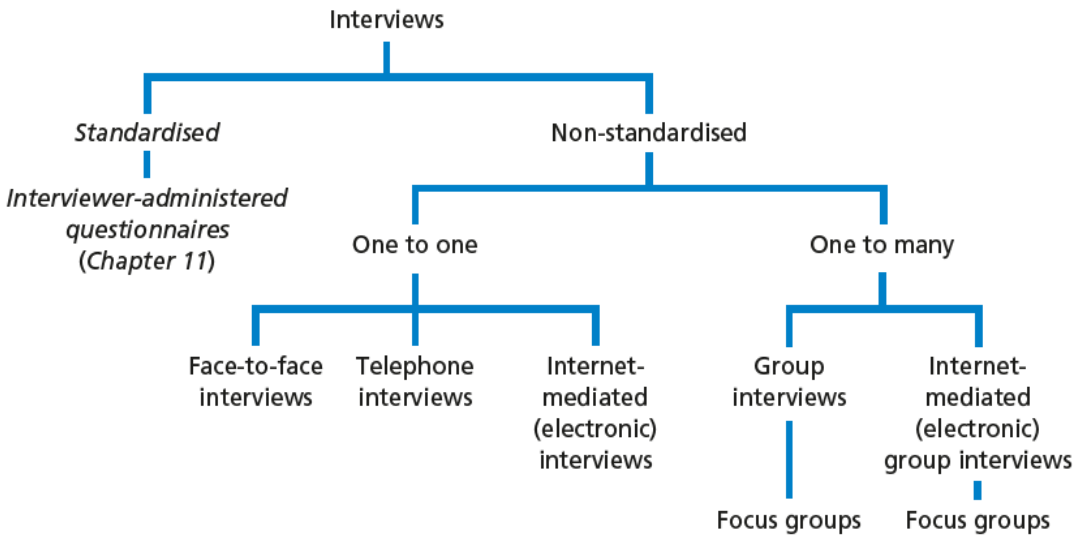

Figure 6.6.1 Different forms of an interview (source Saunders et al. 2016).

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Even though the persons participating in the interview process have a different position in the organisation, the researcher decided to use the same interview guide for each participant in order to see the point of view of each one regarding the same theme. The goal was to understand better what are the approaches of each one and to identify the main roots of the problem. The semistructured interviews being open-ended, offered to the researcher the possibility to ask extra questions based on the answers received and those answers from questions outside the interview guide, gave data specific to each one field of working, specific data to their own departments.

Using semi-structured interviews allowed the researcher to cover the main areas identified through the fishbone diagram as being the causes of the problem.

The form of the interview was on one to one basis, face to face since it was just an interviewer and an interviewee, using non-standardized interviews (see fig. 6.6.1)

The researcher used the same interview guide to be able to get answers for the same themes, but in reality, each interview was affected by the data obtained in the previous interview like the approach of cumulative interviews. The researched themes were the same but the extra questions tried to cover some other areas identified in the interview with previous persons. As mentioned above, During the interview, the researcher made use of extra questions data were considered to provide data for the analysis and also to understand exactly the information offered by the person interviewed. The interviews were face to face and the researcher try to make the atmosphere as comfortable as he can in order to have an open discussion and to get the maximum from that conversation. During the interviews, the researcher made use of audio recording to be able to save the whole discussion and perform lately the transcript of the interview which became the basis for the analysis. Besides the recording, notes were taken for extra questions, in order to not miss the ideas since the researcher let the person to finish his answer. before conducting the interview, the researcher asked for permission to record the interview in order to store the data for analysis and he got permission from all 4 interviewed persons. That was a sense of respect for the person in front of the researcher and in the case of refuse, the researcher would have to respect his decision.

The first interview with Logistic Manager, which was also the first interview made, it was more of a formal interview with unprepared themes and questions since it occurs to a meeting with a different purpose. The researcher tried to ask as many questions as his experience allowed him and also tried

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to get more details about the problem of the organisation. There was no recording for this interview and no notes were taken but it was enough to set the stage for the other 4 interviews and observations. Based on the information provided by the first interview, the researcher was able to have a pre-understanding about the organisation and the business field and this pre-understanding allow the researcher to build the interview guide, knowing what kind of information needs for the case in order to answer the research questions.
The interviews were performed in an exploratory way and the data collected are more likely to give insights about what happened, how did it happen and eventually why happen (Saunders et al. 2016).

Regarding Observations

Saunders et al.(2016) stressed that the observations are neglected by many and there not too popular for management research, however, watching or observing people's behaviour and actions, should be a strong tool in technological changes if the purpose of the research questions is to establish what people do and in what way they are doing or acting (Ibid.).

There are 4 approaches regarding observations as follow (Ibid.):

- 2 traditional approaches(Ibid.)
    - Participant observation
    - Structured observation
- 2 technology-mediated approaches(Ibid.)
    - Internet-mediated observation
    - videography observation

Since the observation represents a good way to enrich data collection, the researcher decided to do participant observation(see fig. 6.6.2) in two of the organisation's plants. The reason for adopting participant observation was the fact that the researcher could enter into the environment of the persons observed. The method is qualitative

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and lets you discover the meaning of the actioned performed(Ibid.)

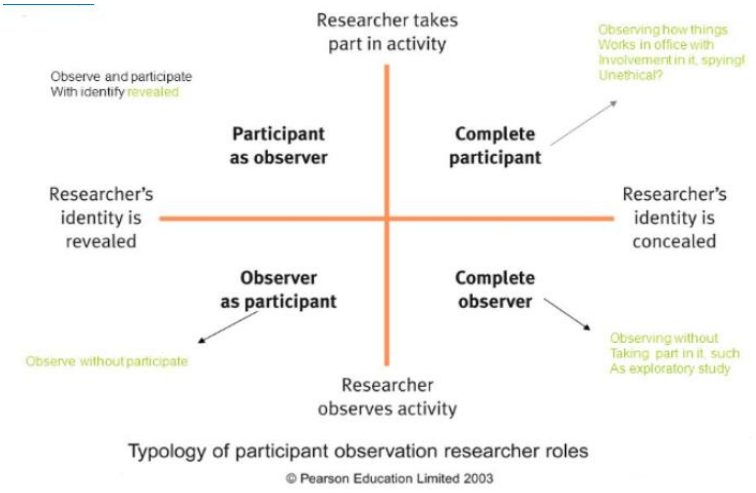

Figure 6.6.2 Participant observation roles
(https://slideplayer.com/slide/5116634/)

The researcher performed two sessions of observation and he was allowed just to observe and also to have some discussion with persons observed but without recording or taking any notes. That was the request and the researcher confirmed. He acted as a pure observer.
This method allows the researcher to perform a deep understanding of the environment where the people are acting, to observe different activity or reaction of people, to observe the perceptions about their social life, to observe how they act in an uncomfortable situation or under pressure, etc.

For the researcher to be able to answer the first research question, to identify the roots of the problem, it is mandatory to observe many of the operations that involve people and machines. Starting from this, the researcher through participant observation intended to see people acting naturally at their workplace. The plant functioning was observed in order to understand what will be the changes and what means a certain level of automation. Observation and discussion were made in the central dispatcher is the planning team. Through discussion the researcher was able to

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understand how they do the planning and what are some of the challenges encountered. There were a few discussions with the truck drivers to observe their behaviour and how they manage the crisis situation. Laboratory was another place for observation in order to understand the importance of quality and how is the process of collecting samples.

Regarding literature review

The literature review is an important chapter of this project and could be difficult because the researcher has to make judgments covered by reasons about any readings and at the same time, he must arrange the results in the form of a review (Saunder et al.2016). In general, this review is done in the early phase of the project, when the researcher has to gain more insights about the studied field but the process of reviewing the literature must continue during the project development.

The researcher must understand the concepts and ideas about the studied field and any debates regarding the topic and that is why performing a literature review becomes an important process. The researcher performed the literature review in order to find what others have said about the studied filed, what was published and what is still under evaluation. A literature review is also a tool for the researcher to broaden his horizons regarding the studied area in order to gain knowledge and for research question clarification (Ibid.). Only the literature that matched the studied field became part of this review and according to Saunders et al. (2016) this it refers to Critical Literature review, which is one of the three ways of conducting a literature review.

Databases	Truncation symbols* (Number of characters)	Example	Finds
EBSCO*host* Databases	* (one or more)	Techno*	Technology, Technological, etc.
ALL (Academic Search Premier Business Source	"-" (match entire string of words)	"technology implementation*"	Delimitation of articles not including the string 'techno*'

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Premier etc.)	AND (include both terms)	IoT AND "Internet o Things*"	Exclusively articles including both terms
Primo** aub.aau.dk	OR (either/or both terms)	IoT OR "Internet o Things*"	Articles including either/or both terms
Google Scholar***	Automatic stemming. (Finds alternatives to the origina stem, which remains intact)	Technology	Technology Not Technological

Keywords	Synonyms and relevant concepts
Automation	Automat*
Technology	IoT, "Internet of Things", "Industrial internet", digitali*" "Automat*"
CM	"Change management"

EBSCO*host*	Keywords
Contains	Automat* OR "Automation"
Contains	IoT OR "Internet of things" OR "Indust* internet" OR digitali* OR "digit*
Contains	"Change" OR " Change management"
Google Scholar**	Keywords
Contains	IOT OR [internet of things] OR [industrial internet] OR [digitalization] OR [Automation] OR [digitally integrated] OR [digital transformation] AND [Technology] OR [Technology implementation] AND [Change Management]

* Only shows Truncations used in this project's literature search

** Google Scholar does not recognize the truncation asterisk (*)

Table 6.6.1: Example of the literature search

The critical literature review allows for a constructive analysis which can generate a clear view about what is known and what is not known regarding the studied field (Ibid.)

The approach was to use the Integrative review, which is a type of Critical review and according to Saunders et.al (2016) represents

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"critiques and synthesises representative literature on a topic in an integrative way to generate new frameworks and perspectives on a topic".

The researcher must express the parameters of the research and this is an early step and once these first parameters are in place, the researcher will keep searching and adapting the parameters and all this operation performed taking into consideration the research question.
During the life project, the problem statement and research question did not suffer modification so the literature review was not conducted changing the focus or the field.
The literature review is correlated with the approach of the project because depending on the approach of the research, the literature review is either used to find theories that must be tested with data collection and this is the case of deductive approach, or the data will be used to develop theories as in the case of the inductive approach.

Figure 6.6.3 Literature review steps
(source: https://guides.lib.monash.edu/researching-for-your-literature-review/1)

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According to Lawrence et al. (2012), there are 6 steps for conducting a successful literature review (see fig. 6.6.3) and for this, the researcher must be systematic and working according to food plan and all the time to keep records of the search(Lawrence et al. 2012).

For this project, the literature review was conducted to understand the specificity of some terms like technology, technology implementation, automation or change management, etc.

The need for understanding different terms and operation that the organisation will face was for establishing the correlation between different themes and how are each other affected by the other in case of any change.

The importance of the changes that are about to come into the organisation may generate different changes and barriers in implementing the new systems and what other authors said about all these technologies, technologies barriers and change management it helped the researcher in understanding the meaning of each term and actions and their consequences and also helped to find the theories that will answer the research questions.

Table 6.6.1 shows the way that the literature review was performed and represents just an example to portray the operation of searching.

The literature review was conducted to collect data from different sources for further understanding of the terms and study development. The sources used were, for example, AAU Library, Google Scholar, EBSCOhost Primo academic books, journals, published articles and any relevant website, etc. The researcher tried to control the search operation in order to reach a small number of possible results and research was done considering continue to use information from relevant sources with a significant number of references.

Regarding primary and secondary data

As mentioned above the gap in the literature attracts naturally the need to collect other types of data, in this case, primary data. Primary data were collected through 4 semistructured interviews and a formal interview with Logistic Manager(App.1) It appears to be a conflict of interests between, on one side, the Project Manager who is the promoter of the technology implementation and in general is offering just

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the advantages of the change. On the other side, there is the Logistic Manager, the Production Manager and the Sales representative. These last ones will be directly affected by the change and they have a different opinion compared with the headquarter opinion about the change. They accept the change realising what advantages could offer, but at the same time, they reveal also the disadvantages which are not few.

Using the same interview guide and different methods for collecting data, permitted to the author to make use of the triangulation and this allows the researcher to measure the same phenomenon from different angles and using different data sources and types of collection.

Practical issues

This section presents the practical aspects of the present case which were considered relevant when collecting and analysing the data. As mentioned, an NDA was signed for data protection and the process of working with the case it was done in a structured way. The whole process was transparent,

The researcher used agendas in order to track the status and to follow the deadline for the case and at the same time to prepare the next steps in project development.

Since the project is made by one single person, the researcher avoids the issues generated by a group of people, like leadership, conflicts between the members but encountered the problem of communication with the organisation. Due to their busy activity, the interviews were postponed several times and this leads to a time crisis.

6.7. VALIDITY AND RELIABILITY

Qualitative research could be defined as a type of research that generates outcomes extracted from real-life and is trying to extrapolate to the same situation and understand them (Golafshani, 2003). According to Patton(2001), for the qualitative research, the proper approach is the naturalistic one

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which is trying to define phenomena in its context and the most used methods to collect data is represented by interviews and observation which is also the case for the current study.

An important fact in qualitative research is the credibility of the study which has to be proved by the researcher (Golafshani, 2003). For this type of research, the tool for trust is exactly the one that conducts the study and validity and reliability is assured in general by the hard work and capacity of the researcher (Ibid.)

The challenges regarding validity and reliability come into reality when the researcher is conceiving the study, when is performing the result analyse and when is measuring the quality of the study (Patton 2001).

One of the expectations from this project is to perform research with high quality and which is able to generate a credible outcome. For this to happen, the researcher considers using criteria like validity, reliability and logic.

Validity is helping the researcher to realise if the study is performing what is supposed to perform and in order to achieve this, the researcher must perform the research using only valid instruments and efficient methods of collecting data (Golafshani, 2003).

For this project, the researcher had to perform interviews with persons occupying a different position in the organisation and therefore, there were different points of view regarding the same theme. The interviews were conducted to obtain different insights and to assure that this study was performed covering all the aspects of the studied topic. Reliability used to be more common for the quantitative studies but nowadays, many researchers started to use it also for qualitative studies.

Reliability refers to the credibility of the study and let's further researcher count on the study because of the repeatable results during the research.

For this study, the research was conducted using multiple sources for data collection from previous authors that have studied the topic and this allowed for the exploration of different authors opinion (Ibid.). The problem of reliability in this project was addressed by triangulation which is able to strengthen the study(PAtton 2001), a cross-verification of the data collected from different interviewee thus, the researcher could analyze multiple facets of the same reality.

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7. ANALYSIS

The purpose of the present chapter is to answer the research question and thus, the chosen theory described in the theory chapter will be applied in order to solve the problem statement of this project.
To answer the first research question, the researcher used the Fish Diagram to identify what are the roots of the cause that generate the negative results of technology implementation.
in the second part of the chapter, the researcher analyzed the research question two by using Leavitt's Diamond model to describe the change that is going through the organisation and the interconnection between the 4 blocks. Besides this for the second research question, the researcher applied Lewin's Change model to offer ways to overcome the challenges of technology implementation.

7.1. RQ1: WHAT GENERATED UNSUCCESSFUL RESULTS?

The organisation is activating in the field of concrete and cement production. It is formed of 3 division. The Cement Division, The Aggregates Division and Concrete Division.
Our study refers to the Concrete division of the organisation which is based in In Bucharest and operates 5 concrete batching plants on 4 location. The location in the north side of the site has two batching plants on the same location. The Concrete Division split into two major parts. One part is the headquarter which has its own location together with some of the departments like financial, procurement, safety, accounting, strategy, marketing, controlling, juridical, etc. and the second part is formed of Logistic Department, Production Department and Sales Department which are based in the batching plants offices in the southern location. The last three divisions are led by a Concrete Manager which has an office in the same place. The Production Manager is responsible for the plant managers, one in for each batching plant, plant operators which are three in each plant working in tho or three shifts, the plant raw-material loaders which are 2 for each plant, , the electricians, the quality team which has a quality responsible in each plant, etc. The Logistics Department is responsible for the central dispatcher and planning team which is working in two

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shifts and there are two dispatchers in the central dispatchers and two in each plant locations, for the concrete trucks and concrete pump drivers. The sales department which has a sales representative for each location.

The concrete production business is a field where you know when you start but the ending hours may vary a lot for most of the persons implicated in the production, delivery and planning. There are many variables, internal and external that generate extra hours.

"in our business, there are many extra hours generated by internal and external factors. We are working in shifts and if the first shift has a fixed program, the second one does not know when they can go home." (App1. LM, p 5)

Currently, the decisional factor decided to perform some major changes in the operational part in order to have efficient processes, to reduce costs and to avoid as much as possible the errors provoked by the human factor. The decision was taken at the headquarter and some of the major changes are the implementation of new technologies, changing the operating systems and moving to more performant one, Command Alkon and SAP. (App.1, p 4)

" COMMAND ALKON is the brain, is the new operating system, which englobes COMMAND BATCH for the recipes, planing, orders, everything and is responsible for data collection which is delivered to SAP." (App.1, p 4)

Another change is addressed to the logistic department by introducing new tools for tracking, planning and prediction and better control of the entire activity.

"It is meant to help in the process, to reduce the time for planning and production. The system will ask to introduce certain variable and data and will return the plan for production and delivery, it

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will give prediction to calculate the required time to produce desired concrete quantity and how long it takes to be delivered to the customers " (App.2, p 10)
Another change will be the possibility given by the new system to control the plant from a distance. (App.3, p14).

"*solutions like Remote system which allows the plant control from a distance" (Ibid.)*

The need for change was felt by each department and represents an important step to make the work easier since the old model used to perform the daily activities it was outdated. It had also good parts but overall it was generating many conflicts and the work was not efficient at all.

"I *am not against technology. I really need to make my working life easier, but I want realistic system with positive results, or at least to take into consideration all the aspects and the challenges"(App.2, p 12)*

The organisation was and continues to be known in the market as a company that offers highly qualitative products but this started to be insufficient. Quality must be sustained by complementary services, for example delivering in time and a fast reaction of the organisation in case of unexpected situation. (App.4, p 20)

"Yes, it is true, we are known for quality and the added value will be the required time. " (Ibid.)

In theory chapter, the author explained in detail the Fishbone Diagram which was seen as a proper tool to understand the challenges of the organisation by identifying the roots of the causes that generates the challenges.
Based on the information offered by the interviews and brainstorming session to understand what are the causes for the negative results, the researcher identified the main major causes and sub

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causes responsible for implementation challenges and some negative results and these are portrayed in the figure 7.1.1.

The main causes and sub causes are:

- People
    - Low motivation
    - Behaviour
    - Lack of training
- Technology
    - maintenance
    - low response in an emergency
    - major errors
- Procedures
    - Lack of procedures
    - Incomplete procedures
- Manpower
    - Limited staff
    - Missing specialists
- Management
    - Poor communication
    - Behaviour
    - Pressure for a result no matter what

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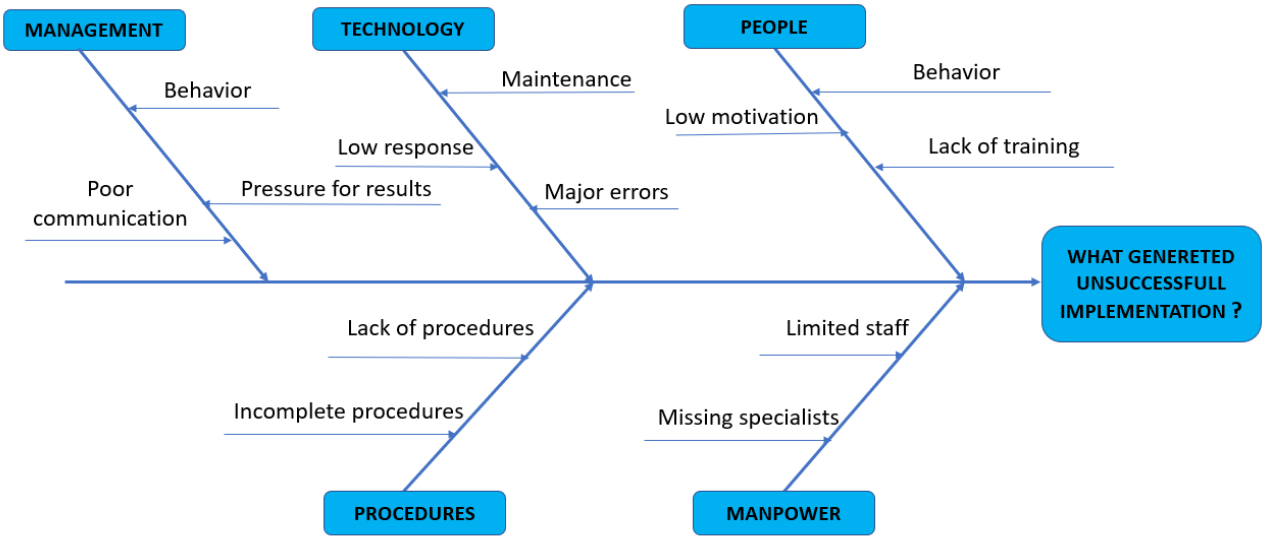

Figure 7.1.1 Fishbone Diagram

- **People**

When it comes to studying any organisation, human resource is one of the most important resources. This is the case also for the studied organisation, were people plays an important role in achieving daily tasks, in developing the organisation and implementing solutions.

As the Logistic Manager mentioned, the human factor is really important to perform the tasks.

"*I still consider that the human factor is very important"* (App.2, p 12)

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But besides the importance of the human factor, the researcher is looking for the problems generated by the people. In this analysis, the researcher will not discuss the importance of the human factor which is valuable and the engine of the organisation but will analyze and identify only those aspects and actions, regarding people that represent the cause for a bad environment and which generated a defects implementation of the new systems.

As mentioned before, in the organisation, people are the engine that makes everything possible but at the same time, any error generated by them has a major impact on the whole organisation, from head management until production and delivery. People are responsible for their errors because they do their errors, but in many cases, we could say that is not their fault or against their will they reach situations when errors generated by them. An important factor that led to bad decisions or misunderstandings, is the overloaded human resources combined with uncertainty and extra hours at work.

"Yes, now the people are overloaded many times" (App.1, p 3)

"Offff, there is a high level of uncertainty among the people because they know that the highest is the level of digitization, the lower is the number of people needed. For sure and they know, some of them will lose their job (...) They are stressed and concerned about their future. Even though the system will help us to reduce extra hours because we are facing this right now and is not the case of sending the people at home, people are still a concern with unemployment." (App.1, p 6)

The implementation of the new systems was meant to improve the quality of work, to help in the process this is not happening or at least is happening partially. We can't blame the people, especially the ones involved in production and delivery, but they should find ways to adapt to any situation. They are responsible for a bad environment at the workplace, even though other people generate all this situation and by this the researcher refers to the people involved in management, who use a poor communication regarding the change, but this will be discussed in the next section, as I mention the people affected must find ways to adapt. We are living in a world that is changing often, in order to keep the path with

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technology development and innovation and there is no organisation to which will offer stability and fewer changes that may lead to uncertainty and taking the people out from their comfort zone.
Another aspect is the quality of the people involved in the daily routines. Lower quality of the human resources to a certain level, lead to conflicts. Errors in the system generated by people may come either from stress and tiredness, but could also come from a lower level of qualification of people. Any major change, most of the times, implies to redistribute the task to other people and if they are not skilled enough to be able to perform the new tasks, the risk of errors is higher. These situations may be avoided if the people in the organisation will be trained much better. If the people that take decisions will avoid the lack of training and focus more on the employee development by offering proper training, on long term period in order to raise and develop new skills for their employees than this aspect of lacking training will not generate any more challenges in the organisation.
This is confirmed by the Production manager which stated,

"There are conflicts but the source of conflicts is people, not the systems. The human factor is not performing. The headquarters expects the system to work efficiently but the human resources are lacking in quality" (App.1, p7)

"(...) for sure the training process was not that intense and developed enough. " (App.4, p 19)

Behaviour is another aspect of the people which affects the implementation and the well functioning of the operations. There are cases when people should consider more to the well functioning of the company than their zone of comfort Especially when the procedure does not cover some areas, people should take action in order to assure the flow of information or at least to not cut the chain of production

"Each one is doing his part but nobody crosses certain limits because they consider not being their job. The employees do not think beyond their duties, they are not willing to realise that their work is connected with some other work, or that their work can affect others work. They don't want to see that

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the duties are interconnected and we should act as one body. We should work as a team but it is not possible when an individual thinks just to his comfort"(App.2, p 10)

This kind of behaviour affects the teamwork as an approach and an organisation at this level is relying on teamwork and interdepartmental connection. The situation becomes even worse when an unconstructive behaviour is combined with low motivation because. Even though the motivation is affected by the miscommunication of the real goals of change, the successful results will become visible slow or never. A lower motivation affects the capacity of workers, the daily task cannot be performed as it was supposed to be and the organisation's development will suffer at the end.

- **Technology**

Moving to another main cause, the researcher found in technology an important root that feeds the challenges of the implementation.
The new systems implemented are able to offer important benefits but at the same time they could generate major errors and situations when the production process will stop for hours. Even though some errors of the technological systems are provoked by the human factor, the systems are not able to restart faster.

"Most of the time is easy and faster to correct a human error, while the technology errors are much harder to fix them. Sometimes you have to wait too long for the proper person to repair the mistakes. " (App. 2, p 10)

The system requires human intervention to eliminate the errors and is possible that the specialists who can fix the issues to not be easy to find or to be slow in response due to their geographical position on different continents and with a time zone difference of 5 hours.

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"It depends, could be in India, but for sure is on a different continent than us and we encounter communication problems due to different time zone and this is a big deal because it can block the production for several hours. " (App.1, p 4)

The location of the specialists in the system is also a major problem for maintenance. There are local persons trained for systems intervention, but the level of their experience with the system is very low. Besides this, in certain situations the system is slow compared with what it was before. It is slow and rigid not presenting too much flexibility in case of unexpected situation and this is a cause of the challenges.

"At first look, the new systems look to be a little bit slow until the delivery phase" (App. 4, p 18)

There is not that much room to perform changes if there are special requests. Any change requires approvals to a certain level and the result will encounter delays.

Moreover, the configuration of the system in some cases is responsible for many challenges. One of the systems was procured with a basic configuration and this is why some of the operations may look not that efficient

"With the new system it was expected to get data in real-time and one of the systems it was procured with the basic option, the lower level of development, not using his best capacity and applicability." (App.4, p 18)

- **Procedures**

The procedures are either lacking in the organisation or are incomplete and led to misunderstanding in the operational field. The use of standard procedures establish responsibilities through employees and avoid misunderstandings regarding the role of each one. there is also a source of inspiration in case of an employee who does not know what to do in certain situations. Studying the data from the interviews, the

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researcher realised that in many situations, the procedures are missing or are incomplete which means almost the same, missing,

"The worst situation now is the delivery time which may be increased to some location and imagine the case of late delivery and combined with a wrong item due to the incomplete procedures." (App. 1, p 2)

If the procedures are not in place, generates challenges in all departments, starting from procurement, production, logistics and sales department. In many situations represents the saving tool because they are detailed and explain to everybody what to do and how to do in a specific context.

"So, we really need a procedure which should establish the limits and where is the case to cross those limits just to see the job done." (app.2, p 9)

- **Manpower**

Regarding the manpower, insufficient workforce generates many issues. Data analysis revealed that the organisation currently is experiencing a situation of insufficient manpower as the logistic manager mentioned in the interview.

" (...) nowadays we are facing a lack of human labour and the ones that are available are unqualified" (App. 2, p 12).

It is true that the missing human labour is a general thing in the market, but internal, in the organisation, the operations are done in a sub dimensioned structure due to cost reduction. So, it is a chosen fact to

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have fewer people to perform the operation but at the end, the unwanted effects of the manpower unavailability are visible and add more challenges in the process of change.

- **Management**

Together with the people's section, management is considered by the author to be the most responsible for the challenges encountered during and after the implementation. It is normal to be like this since the management consists of people and regarding the people, the author explains previously, why is the main one of the main roots of causes.
In many situations the head management of the organisation act as an enemy or concurrent for its employee. They are the engine for change. The people in the management of the organisation decided what is best for the organisation and how should be implemented.
Inside the management, the behaviour is responsible for many unpleasant situations and bad environmental conditions. It seems to care more about the profit than to make the employees' lives easier and easier work conditions, in the end, may generate much profit and the willingness of the employee to keep their jobs.

"The communication is poor and the management it looks like it does not care or cannot do it efficiently."(App.1, p 6)
" So, the plant employees were not informed properly. " (Ibid.)
"From my point of view, it would have been much wiser and logic that decisional factor to communicate much better with the employees and also to visit them in the site and to make them understand correctly all the changes in order to avoid the uncertainty." (Ibid.)

Management team's poor communication provoked a lot of uncertainty between the employees and the worse fact for the life of the organisation is the fact that, for a long period of time, the organisation must keep its employee, it depends on them. Their mood at work, their bad thoughts generated by the

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possibility of losing their jobs, it is not useful for the organisation and represents a big problem and an important source for challenges.

"Offf, there is a high level of uncertainty among the people because they know that the highest is the level of digitization, the lower is the number of people needed" (App.1, p 5)

"Not all of them but some still have feelings of uncertainty. Inevitably these kinds of thoughts are coming to you. People started to believe that they will be replaced by the systems and new changes and fur sure the human factor will be reduced." (App. 4, p 18)

To end with, in contrast with the above quotes which expresses the opinion of the production manager and the sales representative, the opinion of the Business Improvement Manager is totally in contrast.
"I felt that was not the case to experience uncertainty." (App.3, p 16)

There is no surprise for the author since the logistics and production managers are the one that fights every hey with the implementation and are directly affected by the change and the Business Improvement Manager represents the headquarters, the promoter of the project. It is so obvious, a fact proved also by the interview that the headquarters is presenting only the advantages and apparently it was not able to foresee many of the challenges that the technology implementation will encounter.

7.1.1. PART CONCLUSION

The Fishbone diagram made possible for the researcher to identify the roots for the causes that generated the negative result in technology implementation
There were analyzed the main 5 categories which are people, manpower, management, procedures and technology. From those 5 elements, people and management were identified as being the biggest sources for challenges having an important impact on the other elements, but the correlation

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between the elements that are affected by other elements will be further discussed in the analysis for the second research question.

Another important fact was the contrast between the promoter of the project which is the Business Improvement Manager and the rest of the interviewee. The contrast is obvious and while the first one talks only about the advantages of the project and not any other side effects, the rest of the managers discuss both perspectives, advantages and disadvantages. None of them is against the change, even though they talk about challenges and major issues, but they suffer mainly from the way in which the new systems are implemented. The attitude of the head management creates a lot of challenges and the worse case is when this bad attitude is combined with poor communication from their side.

Once the roots of the causes were identified, the researcher is able to move further with the analysis in order to answer the second research question.

7.2. RQ2: WHAT ARE THE CHALLENGES OF TECHNOLOGY IMPLEMENTATION AND HOW TO OVERCOME THEM?

The scope of the second research question is to discover which are the main challenges of technology implementation and to offer a possible solution to avoid the challenges, or at least to reduce them, in order to have a successful implementation.

7.2.1. LEAVITT'S DIAMOND MODEL

The approach of this model is in close relation with the model used for answering the first research question. Both models are analyzing almost the same aspects of the organisation but for different purposes and from different angles. This is one of the reasons for choosing the models.

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Two of the organisation's elements, people and technology, were analyzed using the fishbone diagram and the same is happening with Leavitt's model. The connection between the models is possible through the connection between the roots of the causes that generate the unsatisfactory implementation of technology and barriers encountered when implementing new technologies, barriers which may generate more unsatisfactory situations. Understanding the component elements of Leavitt's model and their possibility to affect any other element in case of changes plus the roots of the causes identified using Fishbone Diagram represent the basis for the second part of the analysis of the second research question where the researcher is using Kurt Lewin's three-stage model. Through Lewinn's model of change the researchers offer the possible solution for overcoming the barriers of technology implementation and thus, to decrease the number of unsatisfactory results of the organisation when implementing new technologies.

The four elements analyzed with Leavitt's Diamond Model are:

- People
- Tasks
- Technology
- Structure

According to Leavitt, the first step and one of the most important ones with the major implication in the successful implementation of change for any of the four components of the model, before considering the change, the management should study and evaluate the consequences on the other three elements. Identifying the required balance between all four elements, will lead to a successful implementation or at least to reduce the number of challenges.

When changing the technology, as it's happening in the studied organisation, inevitably the people of the organisation need to change accordingly. They must receive training to be able to work with the new systems implemented and due to human nature in continuous development, people may ask for raised salaries since they become more skilled and perform an operation that brings more value to the company, they could even ask for higher positions. The task within the organisation may be affected too, since the technology implementation is done to improve the efficiency, to decrease the human factor and thus, the remaining employees may be overloaded with some of the tasks that

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technology cannot cover. As Leavitt mentioned, any changes performed over one element has a small or major implication on the other elements. The same idea is expressed also by the Production Manager.

"I believe is mandatory the reorganisation because everything is changed, we need different people, some other position." (App.1, p 7)

Analysing the people's section, the researcher identifies the same major importance of this element regarding the possible barriers as it happens in the Fishbone analysis.
The analysis is done in two steps, the first step for defining the elements of the model and the second one is where the researcher analyses the impact of changes that are meant to implement.

- **Step 1**

People is one of the key resources in the organisation and one of the most affected by technology implementation. At the moment of change, they are characterized by a certain level of uncertainty regarding the future use of technology. Because of this, their response to the change is more of rejecting force even though there are many advantages to consider. But they could be motivated to be more acceptable with the change if the management will do a minimum effort to communicate properly and to be more present.

"I am limited in the decisions and I am seen as a part of the plant operation not as a deciding factor from headquarters. It will have more sense and value a higher implication from their management by being present, giving advice and to show to your employees that you care about them." (App.1, p 6)

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The organisation englobes many employees that are or will be underskilled at the end of the implementation and this it is a thing to consider.

"We are lacking the skilled human resources" (App.4, p 17)

Another element of the model is technology and is the element that is meant to be changed.
The technology element consists in on one side in automation which is about to be at a higher percentage and digital systems, the operating systems vital for plant functioning

"COMMAND ALKON is the brain, is the new operating system, which englobes COMMAND BATCH for the recipes, planing, orders, everything and is responsible for data collection which is delivered to SAP" (App.1, p 4)
"(...)SAP is the system that centralized all the generated data in the organisation. Based on this, SAP generates different analyses and reports" (Ibid)

Moving forward, the third element is represented by tasks and it consists of key actions as for example, taking orders, planning, concrete production and delivery. Within the task field could be also routine tasks as for example, delivery. There are also some routine tasks like preparing the plant for production, raw-material assurance, etc. The interconnection of these tasks makes the organisation act as a team, as one body.

"the duties are interconnected and we should act as one body" (App.2, p 9)

The last element that must be defined is structure. There is a clear hierarchy within the organisation and the absence of it will transform everything into chaos. The organisation is large in therm of people and locations and is organized in regional areas plus a headquarter in the Capital. The head

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management is located in the headquarters and under this management there are regional managers who are responsible for each zone. The capital region is apart because acting like a separate organisation, it has its own head manager, its own departments of planning, production, delivery and sales. Each department has its own manager

- **Step 2**

As mentioned previously, the primary change is done on the technology section. There will be a major change in the sense of a total change. New operating systems will replace the old one and also other programs designated for efficient work data are able to track the data and to make predictions. The operational unit will implement the changes and the new systems and other programs partially implemented will have to start their application, to be tested and to become the new way of producing concrete. But all these changes will have produce effects on the other elements and the impact could be major to one of them or less major for others. But the changes will produce effects for sure.
People section, as in roots analysis was identified by the researcher as being the most affected by the changes in technology. People of all levels will have to change their habits and behaviour and besides this, there is a need for complex and durable training in order to be able to work with the new systems.

"(...)they proceeded to give training to the people, to accommodate them with the changes, with the new systems, to be able to work correctly with the new systems, to reduce the human error as much as possible" (App.4, p 17)

This aspect raised many challenges because some of the employees were not prepared or not capable to perform new operations.

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"(...) nowadays we are facing a lack of human labour and some that we have them are unqualified" (App.2, 12)

The level of uncertainty among the people is not something to ignore, it's generating many challenges if there is not a proper communication of the goals of the change, in order to make people feel comfortable with the new changes. The worst scenario is when people consider that they will be replaced by technology and they start to look for a better working place in a period when the current company really need them to accomplish the daily tasks and to fulfil the implementation of the technology.

"People started to believe that they will be replaced by the systems and new changes and for sure the human factor will be reduced." (App. 4, p 18)

"And the question is, will they start to find another place of work for better stability?" (App. 4, p 19)

The next element affected by the changes in technology task. Maybe not that affect as people but the element will face some considerable changes and thus, challenges. One of the most important challenges will be the availability of the employees to be overloaded due to some tasks reallocation.
The new Remote systems when will be used will reduce dramatically the number of people necessary to control the plant and to produce concrete. Some of the employees must take the duties of some others and this will be an important challenge since this implies that some people to be overloaded. Task reallocation overload the human factor it represents a generator of errors and also to raise the risk level regarding errors.

"some of them will lose their job and the remaining one will be overloaded in many of the situations. So, people are not that happy" (App. 1, p 5)

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Besides the reallocation of some of the tasks, there is a need for new tasks and this raises another challenge. The new tasks must be taken by existing employees if they are skilled for this or capable to accommodate after proper training. Another way is to bring new minds to the organisation.

"It will be really hard to find skilled persons who are willing to expand their capabilities and to take some other duties to work with. To be overloaded." (App.2, p 12)

The last element affected by technology changes is structure. The implementation of the new technology makes room for new career advancement or the need to open a new position. The problem is that new technology implementation requires time. Time at the beginning of the stage where the Project Manager makes the team for preparing the implementation and time for the technology to be implemented. Besides the new position, or maybe the persons attracted to the organisation, the old positions must be strengthened. The people occupying them must get the proper training to gain the necessary information. All these situations generate challenges to certain level.

"Yes, I believe is mandatory the reorganisation because everything is changed, we need different people, some other position." (App.1, 7)

There are many challenges that may be generated from the required change of the technology and to overcome those barriers is not a simple process all the time. The issue cannot be ignored and trough the next model, the researcher will try to offer a solution to minimize the challenges and overcome the related barriers.

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7.2.2 LEWIN'S THREE STEP CHANGE MODEL

Lewinn's model is supposed to help the researcher built a solution for those challenges that may encounter the organisation during the stage of new technology implementation and after when the process is done.

Once the basis for this analysis is identified, by this the researchers mean the roots that generate the causes for unsatisfactory results and the challenges generated by the changeset the stage for the solution.

As it came out from the Fishbone Diagram and Leavitt's Diamond Model, the most affected most roots of causes and the most challenges were generated by the same element, people.

The researcher mentioned in the introduction of the project one of the motivations why he decided to work for this case, which is an interesting situation regarding the people. People generated the change, people encounter challenges because of these changes and people is the element that could change the result and overcome the challenges. This is a personal opinion of the researcher and represented the path to conduct this study

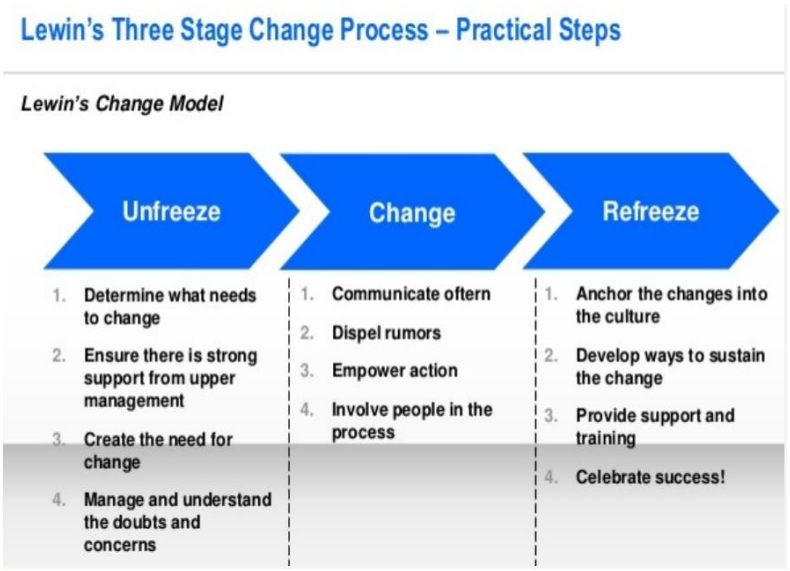

Figure 5.3.1 The Lewin's three-stage change model
(Source: https://culcshingmun.wordpress.com/tag/continental-airlines)

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The Lewin's model is one of the simplest models of change and consists of three steps which must be totally achieved in order to perform the change.
Even though the problem looks much more complex, the process of change does not require to be complex. The focus of the model is mainly on human resources and it matches perfectly with the people element that must be changed in the current organisation, element identified through Fishbone Diagram and Leavitt's model. As mentioned before, the key focus is people and the way that people understand the change represents the key to a successful change of the organisation.

- **Unfreeze stage**

One of the aspects referring to the first step is old habits and behaviour of the people of the organisation and it seems to be the hardest one to address the change. This first step set the stage for the change and requires from the engine of change to identify the need for change, to create the need of change for the other people and in the end to manage the forces acting in opposition regarding the change.

"The head management understood the need for digitalization if they want to be number one. Starting from here, we identify some projects, solutions like Remote system which allows the plant control from distance, centralized dispatcher system and not local as it was before, efficient mix-design."(App.3, p 13)

The engine for the change it was identified by the researcher as being the head management of the organisation represented by the Business Improvement Manager in this study which is also the Project Manager designated to implement the changes.
It is a proper period to present the advantages of the new technologies and at the same time to induce the need for adopting these new tools.

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"First of all, you have an advantage in the market. You have optimized batching plant and it gives you an advantage regarding productivity, you will have a higher produced quantity per hour, you can deliver from a different location using the remote system." (App.3, p 15).

To a certain level, this step was done but not continue until you break the equilibrium and allow the driving forces for change to be dominant. But for all of these, the engine of change must be actively present in the middle of the people and communicate straight and continuously, inducing the people the impression of massive care about their doubts. But as the analysis reveals, the process of communication is very poor and sometimes is missing.

"Exactly, regarding communication, we do not receive accurate information." (App.1, p 2)

"Actually, it is exactly what is happening now. And there are a lot of problems coming from poor communication, the inefficient flow of knowledge. They expect perfect communication between the machines but human communication is at a lower level." (App.1, p 4)

Communication is really important when you want to transmit messages, same the ways you use to communicate and for this, head management must reconsider their position.
To be successful with this step, the engine of change must assure the readiness of the people, must be present all the time by offering full support to the ones that they delegated the duties for people readiness and adaptation to the change.

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"The headquarter delegated these duties to me as a production manager to inform my people. I am a leader but I do not have the same authority as the headquarter. From my point of view, it would have been much wiser and logic that decisional factor to communicate much better with the employees and also to visit them in the site and to make them understand correctly all the changes in order to avoid the uncertainty. It is still not too late to do this, because we are still at the beginning with some implementation." (App.1, p 6)

This action will complete the first step and will let the management to move to the next one.

- **Change stage**

This step represents the moment when the people started to understand the change and proceed to solve their issues with uncertainty and they are open to trying new ways for their operations. This step is very sensitive and requires time because any change cannot be done fast and the role of the engine for change is crucial. They have to involve the people to, to let them operate the new system and offering the best support and the most valuable training in order to get faster results and the people to be able to work by themselves with the new tools. For this step, the managers shouldn't focus too much on the results and efficiency because is not possible to be efficient when you are learning.
There are a few key activities that will help to be successful with this step. One of them is the continuous activity of the managers for emphasizing the main advantages of the new systems compared with old systems. These require the same level of communication mentioned in the first step. Another important activity would be the from the manager's side to work from the middle of the team, to get closer to them and at the same time to make sure that everybody is working for the change to happen. The last one is to build a strong connection with the managers involved in the changing operation to assure that is the same level of understanding and thus, all the people follow the same path.

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- **Refreeze stage**

The last step of change is to refreeze the habits once the change is in place. The changes made must be strengthened because of the new habits are not fixed properly until becoming a new routine, the change process is not done and it is in human nature for people to return to their old habits. A successful tool for this step is the use of precise standard operating procedures. Managers must establish new procedure for every operation. As was presented previously, in the current organisation the procedures are not considered to be that important and that is why are missing in many cases.
"So the procedures are not as it is supposed to be" (App.1, p 2)
"The control was lacking, working without following procedures if they were." (App.3, p 15)

The engine of change must impose the use of procedures as a mandatory activity and this will assure that the new habits will become routines. The signs of complete change become visible at the moment when the organisation started to be stable having well-defined operation.
This simple model should fix many of the problems generated by the change of the organisation and conducted accordingly the researcher believes that will benefit the organisation in order to overcome the challenges.

7.2.3. PART CONCLUSION

Any organisation that faces challenges should analyse properly the causes that generate all the issues in order to have good understanding of what is happening and after to proceed in identifying and implementing solutions. Using the Fishbone Diagram the researcher was able to identify the roots of the causes that generated unsatisfactory result and the main one were people, management, manpower, procedures and technology.

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Once these roots where identified, the researcher proceed to identify what are the challenges generated by the changes in the technology element and through Leavitt's Diamond model, those challenges were identified together with some of the relations between the elements when a change is performed. As in the first analysis, people element was identified as being responsible for most of the challenges and thus, should be that element hat must suffer changes.

The solution for successful change was described through Lewin's model of change. The model helped the researcher to identify the engine of change, which was the head management.

8. DISCUSSION AND REFLECTION

The present chapter consists of four component parts: practical implications, theoretical implications, study limitations and future research. The section discusses what could be relevant for future studies and seeks to discuss how the current organisation and other practitioners could rely on the present case study.

8.1. PRACTICAL IMPLICATION

Through the analysis of this project, the researcher has expressed that the organisation should perform some changes in the way they understood the technology implication. In order to and the process with successful implementation, the organisation and more precise the engine of change is lacking in understanding how should be the thing dome. The head management looks to not realise that their actions or misactions generate feelings of uncertainty among the rest of the people. One of the reasons for these could be the fact that they just do not care about the rest of the employes or they have little knowledge about the meaning of change management. Therefore, one takeaway is that the organisation could realise by reading this paper about the importance of management

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readiness when the decision of change is in place. s the management ready to implement the change? Does the management know-how to address the change for a successful implementation? During the analysis, the researcher observed the importance of proper investments when the organisation deals with a change. Any necessary investment must be done in order to have the best solution and eventually the last technology when the goal of the organization is to be a leader in the market. These did not happen in all the cases with the current organisation and could represent a mistake that will be regretted later when the technology implemented at the basic level will start to show its weaknesses.

"With the new system it was expected to get data in real-time and one of the systems it was procured with the basic option, the lower level of development, not using his best capacity and applicability." (App.4, p 18)

Another generator of possible regretted errors is the fact that some employees in one part of the organisation do not have the proper knowledge about their own business.

"I must confess that the people working at the headquarter and there are many in all departments, do not know that much with what we are dealing here. They know in general about the activities but not in detail." (App.2, p 11)

It is up to the organisation if implements the findings of this paper. If they do so, there is a higher percentage to encounter positive results and this is possible due to the willingness of the departmental managers to implement the changes as it is stated in the interviews.

"Don't get me wrong. I am not against technology. I really need to make my working life easier, but I want a realistic system with positive results, or at least to take into consideration all the aspects and the challenges." (App. 2, p 11)

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This attitude should make things easier in the changing process and this kind of attitude together with a proper strategy for implementation where people with practical knowledge about the change will be involved will have as result a favourable finalisation of the change.

8.2. THEORETICAL IMPLICATION

In the beginning of the study, the researcher performed the literature review in order to gain a better understanding about the changes that are meant to be in the organisation and what possible, what kind of technology will be used for operation or will support changes, what other authors have said about the main theme of the project which is change management and what are the barriers of such change. During the literature review, the author, found relevant articles about the change management as a theme, about the implication of a less or higher level of automation in production and about the advantages of using new technologies. However, the researcher did not find those topics addressed to the current company field, concrete production.

The important fact was the common result of the theory used for analysis. The common outcome revolves about the human resources of the organisation which was at the same time the errors generator, the one that suffers because of the errors and the one that could fix the problems. The theories analysed the two elements people and technology from different points of view and for different purposes and the common result demonstrates the link between the theories and to some extent assures the validity and reliability of the analysis.

8.3. STUDY LIMITATION

In the context of a discussion regarding the study limitations, there are some facts that could be detailed. One of them is the possibility to generalize the present study and the opinion of the researcher in favour of the generalization. The studied area of change management, even though the change management is specific to each organisation, the main idea and challenges that may

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encounter are the same. We didn't have access too many internal information or the possibility to have interviews with some other position in the organisation and this fact could have limited the author for this study. Thus, any other data that was not available for the author could bring improvements to this study.

Another limitation generated by the organisation is represented by the possibility of the author to perform only 4 face to face interviews. There was no chance for the author to perform interviews with other positions in the organisation and no other chance to collect data in different ways.

8.4. FUTURE RESEARCH

Regarding future research, the author considers a valuable action to study the case after the total implementation of the new technologies taking into consideration all the findings of this paper. To study the result when the change is performed following a new approach, the one mentioned in this paper. It will be interesting to see if the engine of the change changes his approach and behaviour, what will be the response of the people. Thus, the recommendation of this paper will have the chance to be tested.

Another fact to consider for further research would be to check if some other types of collecting data will offer a different perspective about the real feelings and behaviour of the employees since the present study was limited to just four face to face interview

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9.CONCLUSION

The problem statement of the current thesis raises the question, 'What are the challenges of technology implementation and how to overcome them?' The researcher conducted the project using two research questions, which offers an important help to answer to the problem statement. Answering to the first research question, the author's intention was to investigate which are the roots of the causes that led to unsatisfactory results. moving further, the second research question seeks to identify the challenges of technology implementation and the way to overcome the barriers of the performed changed.

The Fishbone Diagram identified the 5 main elements that represent roots for the causes that provoked negative results. Out of these 5 elements, people and management were considered to be the ones that generate the most challenges. In the same analysis, the researcher revealed different approaches regarding the change. One approach of the Project Manager responsible for change implementation and who was expressing only the advantages of the technology without being aware of the associated challenges. The second one is a common approach of the other three persons interviewed. In contrast with the first approach, the opinion common to the other three persons, is to express both sides of the coin, advantages and challenges, even though they were the most affected by the change.

The constructive outcome is the fact that none of the managers is against the change and this behaviour let the possibility for successful implementation at the end. Maybe the most important finding was regarding the people since they are responsible for the negative results, especially the people from the head management.

Analyzing the research question two, the researcher could draw the main elements that generate challenges in the context of changing technologies and the most important one are again people, as in the previously mentioned analysis and technology. Those aspects were discovered using Leavitt's Diamond Model. Both analyses revealed a common factor that must be changed accordingly and this factor is the people element. At this point, the researcher could conclude that the element called people, is the one that must be changed considerably.

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Another interesting finding of the thesis is the fact that organisation development if there is a solution to implement, in any change, besides the decision of changing, the way the change is implemented has a major impact.

The last model used, Lewins's change model, brought the possible solution for a successful change. The solution is extremely simple and requires time and perseverance to put it in practice. The last model used it is applicable mainly on human strengthen the general idea that the people are responsible for the successful implementation and at the same time by generating errors and at the same time they suffer because of their actions.

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11. APPENDICES

Appendix 1: Transcript of interview with Production Manager

Appendix 2: Transcript of interview with Logistic Manager

Appendix 3: Transcript of interview with Business Improvement Manager

Appendix 4: Transcript of interview with a Sales representative