On the Contribution to the Alignment during an Organizational Change: Measurement of Job Satisfaction about Working Conditions

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Abstract

Introduction: Modern approaches to Occupational Health and Safety have acknowledged the important contribution that continuous improvements to working conditions can make to the motivation of employees , their subsequent performance and therefore to the competitiveness of the company. Despite this fact, organizational change initiatives represent a path less traveled by employees. Specialized literature has drawn on the fact that employees' satisfaction presents both foundation and catalyst for effective implementation of improvements to working conditions.

Method: Thence, this paper conceptualizes the alignment of employees through measurement of job satisfaction and uses the Bayesian Network to assess the influence of human factors, particularly the cognitive, emotional and behavioral aspects. To this aim, first Bayesian Network is evaluated through a cross-validation process and second a sensitivity analysis is conducted for each influential dimension: emotional, cognitive and behavioral.

Results: Results reveal that these three dimensions are interrelated and have a direct influence on job satisfaction and employees' alignment during the organization change. Also they suggest that the best strategy for enhanced alignment and smooth conduct of organizational changes is simultaneous enhancement of the three dimensions.

Practical applications: This study shows the influence of emotional, cognitive and behavioral dimensions on job satisfaction and employees' alignment during the organizational change.

Also it makes it clear how separate or combined improvements in these dimensions impact the alignment of employees what allows developing efficient and effective strategies for a successful change implementation and sustained alignment.

Keywords: Health and Safety, Human Factors, Organizational Change, Working Conditions, Alignment, Bayesian Network.

1. Introduction

Annually, reports and statistics in relation to work-related injuries, deaths and occupational ill-health reflect the heavy cost the worldwide pays every year due to deficiencies in Health and Safety (H&S) programs and poor working conditions.

In spite of increasing efforts to improve the quality of working life and make the workplace as rewarding and less threatening as possible, workplace injuries are still being a serious problem in many companies (Sadeghi, 2011; Holman & Axtell, 2016). Thus, as ways to improve their H&S records, many companies embark on the introduction of either, technical resorts involving new technologies, process modifications and substitutions to minimize the likelihood of workplace injuries to survive (Konlechner et al., 2018; Levovnik & Gerbec, 2018) or making organizational changes aimed at modifying some specific working conditions including restructuration and reorganization (Montano et al., 2014).

Changes in existing programs and structures seem to improve working conditions, but at the same time create a climate of uncertainty and ambiguity about outcomes and their sustainability. Yet, they might exacerbate the existing H&S problems and therefore fail at bringing about desired outcomes (Gerbec, 2017). Likewise, Sætren & Laumann (2017) have drawn on the fact that many work-related incidents and major accidents, for instance, Bhopal, Seveso, Gullfaks C incident, Macondo Blowout, Esso Gas Plant Explosion, occurred due to complex organizational and technological changes.

As commonly explained by researchers (Choi & Ruona, 2011; Rafferty & Restubog, 2017), factors influencing change outcomes fall into three main categories: (i) unsuccessful change processes, involving methods deployed to implement the change and inappropriate

organizational infrastructure to support the change implementation, (ii) the change content, for instance, modifications to the strategy and culture of the company and (iii) the change context, covering internal and external conditions having the potential to influence the company.

However many scholars (Napier et al., 2017; Rosenbaum et al., 2018) went as far as suggesting that the resistance of employees is the leading cause to these failures and confirmed that human factors and misalignment problems, which could be triggered by the change, are critical factors that warrant more attention and studies.

As might be expected, many theories and frameworks have been proposed, different empirical approaches have been developed and analyses have been conducted to serve the successful implementation and management of the change. Such as factor analysis (Reddick, 2011), regression trees (Li et al., 2016), structural equation models (Al-Ali et al., 2017), multi-criteria approaches (Gurumurthy & Kodali, 2008)…etc.

Despite numerous merits of methods applied by change management studies, they analyze current circumstances and assess the change implementation feedback. Moreover, they are unable to consider all causality reasons that lead to resisting the implementation of the change as a whole, while an effective implementation and sustainable alignment require more predictions on future changes and how an intervention on a factor or a set of factors will influence other factors in the system.

In this paper a Bayesian Approach is used to identify and assess the alignment during an organizational change considering the influential human factors using Bayesian Networks (BN). Indeed, the BN is considered to first, model the Joint Probability Distribution (JPD) of all factors based on the statistical dependency given by the Directed Acyclic Graph (DAG) (Enrique Castillo et al., 2016) and second, predict consequences of interventions to enhance the alignment.

To this end, the remainder of this paper is structured around five sections. The following section reviews the literature on the organizational change, strategies to the change management and human factors influencing the conduct of the change. Section 3 introduces data used and details methods used to assess the alignment during the organizational change. Section 4 presents the results of the study. Discussions and comments of findings are given in Section 5 while Section 6 concludes this study.

2. Background and Related Research

Changes to working conditions (i.e. reorganization, job redesign and restructuration) are becoming part of the life of many companies that seek to increase efficiency, effectiveness, productivity and job commitment of employees and therefore respond to current social and business market demands and keep being competitive (Ito & Iijima, 2017). In terms of definition, organizational changes are unanticipated and inevitable events, involving ongoing and open-ended processes that imply designing to implement modifications and improvements in the structure, management and practices as a response to pressures exerted by circumstances that act beyond boundaries of the company (Ajmal & Lodhi, 2015; Král & Králová, 2016).

As widely accepted, organizational changes to working conditions create a climate of uncertainty and disagreement. These new conditions generally take employees from their comfort zone to the unknown leading, in most of the time, to stress, anxiety over social relationships, frustration, job insecurity, irrational thinking, emotional behaviors, perceptions of unfair treatment resulting in resistance (Thakur & Srivastava, 2018; King et al., 2020). In this context, it has been proven that an important part of the change management relies on to what extent change is positively perceived by employees who are recipients of the change (Daniels et al., 2017; Neves et al., 2018). Similarly, in relation to alignment studies, researchers (Tan & Jeyaraj, 2014; Kang, 2015) have argued that achieving higher performance is question of aligning the macro "hard Ss": strategy, structure and systems of the company with the micro "soft Ss": skills, staff, and shared values. However, studies of (Rothwell et al., 2015; Levkov, 2018) have asserted that in spite of the vital role of employees in the safe implementation of the change, social and cultural dimensions, which cover in several respects emotional, cognitive and behavioral aspects, are still receiving less attention compared to the strategic and structural alignment.

Indeed, responses of employees to the change implementation are driven by the evaluation of the change based on psychological tendencies which are framed by cognitive, emotional and behavioral dimensions. As regards the emotional dimension, (Bond et al., 2008) have described the interpretation of the change as emotionally-driven and have a significant impact on perceptions, assumptions and decisions of employees to keep up with or adapt their behaviors.

For instance, prior studies (Klarner et al., 2011; Helpap & Bekmeier-Feuerhahn, 2016) have spoken on two types of feelings towards the change: (i) positive feelings seen in confidence

about changes, enhanced mutual trust and willingness to participate and support the change and (ii) negative feelings expressed by fear, distress and job insecurity leading to resistance.

As for the cognitive dimension, while summarizing a critique of existing views of the change resistance, Boohene & Williams (2012) have explained that the cognitive dimension encompasses opinions and beliefs about the change depending on positive and/or negative evaluation. In other words, it expresses how employees think and view the change, for instance, the value, advantages and disadvantages of the change implementation (Erwin & Garman, 2010).

Finally, the behavioral aspects cover reactions of employees towards the change and their intention to what to do in response to implemented changes. For instance, cynicism, change resistance, willingness to change and commit (Voet et al., 2016). These behaviors are function of personal factors and/or impact of the current social environment (Scherer et al., 2015).

Another equally important question about the change management is definition of factors that could potentially impact these human aspects (i.e., emotional, cognitive and behavioral). In this regard, authors (Stouten et al., 2018; Bögel et al., 2019) have investigated factors contributing to the change resistance and found decisions being taken separately from employees, lack of trust in the top management and lack of motivation and information exchange are common problems encountered when implementing changes. These factors are related to management practices which are antecedents that correlate as driver components of the employees' alignment during an organizational change.

Indeed, there is growing evidence about multiple benefits of adopting participatory approaches to design and implement the change. Such approaches, involving good change communication, motivation and integration of employees, allow engaging employees in the change process and enhance their perceptions, thoughts and opinions about the change and gain their contribution to quickly align and support changes (Jalagat, 2016; von Thiele Schwarz et al., 2017; Rogiest et al., 2018).

On the same vein, authors (Maheshwari & Vohra, 2018; Kumar et al., 2018; Mariscal et al., 2019) have acknowledged that, during an organizational change, supportive organizational policies, enhanced social relationships and trainings develop employees' skills and abilities, promote fairness and equality and initiate them to get clarity on how to meet organizational goals and overcome assimilation barriers.

Similarly, commitment and change readiness, in large measure, depend according to (Kim et al., 2018) on stable and productive cooperative relationships. These are essentially based on emotional support built through mutual trust between top management and employees. For instance, a two year research work of (Day & Lubitsh, 2012) on the NHS complex reforms, revealed that mutual trust plays a pivotal role in dealing with fear and anxiety and provides conditions that encourage people to collaborate and participate in the change process. Under the same rationale, studies of (Bstieler et al., 2017; Mattson Molnar et al., 2019; Newnam & Goode, 2019) found that trust relationship between management and employees during an organizational change enhance the understanding and knowledge of each other which may be further seen in less fear and anxiety about the change, improved alignment and better performance, openness in communication, less conflicts and acceptance of change decisions.

3. Methods

3.1. Bayesian Network and Cross-Validation Approach

3.1.1. Bayesian Network

BNs are probabilistic graphical models (Koller & Friedman, 2009) that allow the conceptualization of the studied system and development of causal knowledge through conditional dependencies via a DAG (Ticehurst et al., 2007). First, this DAG is learned considering the score-based algorithm defined in (Buntine, 1992) obtaining graphical and intuitive representation of the statistical dependency between the variables included in the model. It also simplifies the learning of the JPD based on the factorization associated to the conditional dependencies reflected in the DAG. Parameters defined by this factorization are finally obtained by maximum likelihood as the ones better explaining the observed data.

For many years the BN approach is used in a wide range of research fields (e.g. health, gene-expression, meteorology, etc…) and it has recently been expanded and extensively applied to many other study areas such as project management (Yet et al., 2016), safety culture (García-Herrero et al., 2013), organizational change management (Bakshan et al., 2017)(Mirdamadi et al., 2018), working conditions (García-Herrero et al., 2012; Barrero et al., 2018) and job stress (García-Herrero et al., 2017).

This approach involves uncertainty and probabilistic reasoning that relies on the Bayes theorem given (equation 1) that describes how the probability of an event A changes given information gained from measured variable(s) B and the factorization of the JPD (equation 2) defined by the DAG based on the dataset.

$$P(A/B) = \frac{P(A) \times P(B/A)}{P(B)} \quad (1)$$

$$P(x_1, x_2, \ldots, x_n) = \prod_{i=1}^{n} P(x_i \,|\pi_i) \quad (2)$$

Where π_i are parents of x_i, variables included in the model, P(A|B) is the probability "*a posteriori*", P(A) is the probability "*a priori*" and P(B|A) is the verisimilitude. Note that events A and B could affect one or several variables in the model and when A represents a variable, the probability *"a priori"* corresponds to the marginal probability of this variable in the JPD. Finally, the probability "a posteriori", P(A|B), is given by the conditional probability of the event A given that the occurrence of the event B is known.

In this study, BN is used, on the one hand, to obtain a graphical representation of direct and conditional statistical dependencies between factors influencing the alignment, and on the other hand, to predict the impact of potential actions on the alignment improvement as given by the conditional probabilities of the alignment to prior knowledge of the different factors. Although many software packages have been developed to efficiently learn BN, including the programming languages Python or R, in this study all calculations have been done using the Bayes Net (Murphy, 2001) Toolbox for Matlab[1].

Taking advantage of properties of the BN, a sensitivity analysis has been conducted to estimate changes in the probabilities of being satisfied about working conditions for each variable of the three influential dimensions: emotional, cognitive and behavioral.

3.1.2. Cross-Validation Approach

In order to check the practical value of the obtained BN, K-fold cross validation approach is used. It is considered more reliable than other cross validation approaches (e.g. leave-one-out) with large data set (Marcot, 2012).

In this study, a 10-fold has been developed to perform 10% of the entire sample as a validation set and 90% as the training set for each partition to get the prediction for each fold which is therefore repeated for each subset. The prediction of the entire sample is obtained by joining the 10 subsets and evaluated in terms of the AUC (Area Under the Receiver-Operating Characteristic -ROC- Curve). The AUC values range from 0 to 1, where less than 0.5 implies

[1] MATLAB para inteligencia artificial. from https://es.mathworks.com/

that the model more often yields wrong predictions, 0.5 implies that the model is totally random while 1 denotes no error.

3.2.Data Acquisition

Data used in this study come from the Sixth Eurofound's European Working Conditions Survey (EWCS)[2]. The Eurofound surveys aim at measuring working conditions across European countries and analyzing the existing relationships between different work aspects and the well-being of the employees. The Sixth EWCS is based on a questionnaire of 106 questions designed to include wide range of workplace issues including, but not limited to, physical work environment, work intensity, working time, social environment, work-related health and safety risks and well-being, cognitive, emotional and psychosocial factors, skills, trainings and participation, job security, work satisfaction. This questionnaire is administered face to face to a random sample of almost 44.000 employees in 35 European countries.

For the purpose of this study, the target population includes employees whose companies had experienced organizational changes and have been directly affected by changes, thus the sample size of this study is 9018 employees. Also only 18 questions have been used to collect the relevant data as explained in the following section.

3.3. Study Variables and Measures

This study assesses the alignment during an organizational change considering the emotional (D_1), cognitive (D_2) and behavioral (D_3) dimensions. The alignment increases proportionally with the satisfaction of employees about new working conditions and decreases with the resistance to change due to non-satisfaction (Martinson & De Leon, 2018; Roskams & Haynes, 2019).

To this end, we have defined question 20 (Q_{20}) of the Sixth EWCS: *"During the last three years has there been a restructuring or reorganization at the workplace that has substantially affected your work?"* as Filter Variable (V_f) to consider only responses from employees who have experienced an organizational change at their companies. The restructuring or reorganization, in this case, cover a wide range of activities such as relocation, outsourcing, merging with or acquiring another organization, redundancies, business expansion or

[2] European Foundation for the Improvement of Living and Working Conditions, European Working Conditions Survey 2015, 3rd Edition, Colchester, Essex: UK Data Archive, February 2017. SN: 8098, http://dx.doi.org/10.5255/UKDA-SN-8098-3

reorganization in the sense of organizational change. The scale considered to measure this variable includes three possible states: (1) yes, (2) no and (3) do not know.

Also, we have defined question 88 (Q_{88}) about Job Satisfaction of the Sixth EWCS: *"On the whole, are you very satisfied, satisfied, not very satisfied or not at all satisfied with working conditions in your main paid job?"* as Objective Variable (V_{ob}). The scale to measure this variable was changed to consider only three possible response categories: (1) satisfied, (2) not satisfied and (3) do not know.

The organizational change has extensive amount of concepts, constructs and dimensions. Considering the fact that there are a lot of personal and management factors that could affect the organizational change conduct, in this study, the three dimensions (emotional, cognitive and behavioral) have been gauged with a set of variables (see appendix 1) conceptualized based on the literature review presented in the previous section and Sixth EWCS. First, the emotional dimension (D_1) includes six variables whose frequencies are given in Table 1. The first variable is (V_{11}) Management Trust and corresponds to Q_{70b}, (V_{12}) Employees Trust corresponds to Q_{70f}, and these two variables have been grouped under Cluster (C_1) called Mutual Trust. Variable (V_{13}) is Job Security and corresponds to Q_{89g}, (V_{14}) Anxiety corresponds to Q_{78h}, (V_{15}) Stress corresponds to Q_{61m} and (V_{16}) Enthusiasm corresponds to Q_{90b}.

Table.1. Frequencies of Different Variables of the Emotional Dimension

Emotional Dimension												
States	**V_{11}**		**V_{12}**		**V_{13}**		**V_{14}**		**V_{15}**		**V_{16}**	
	N°	**%**	**N°**	**%**	**N°**	**%**	**N°**	**%**	**N°**	**%**	**N°**	**%**
1-SA or TA	6489	71.96	4864	53.94	5700	63.21						
2-NAND	981	10.88	1486	16.48	1116	12.38						
3-TD or SD	707	07.84	1836	20.36	1536	17.03						
4-DK or Rf or NA	135	01.50	126	01.40	666	07.39						
1-Y							1972	21.87				
2-N							7020	77.84				
3-DK or Rf							26	0.29				
1-Aor MT									3135	34.76	6426	71.26
2-ST									3668	40.67	1777	19.71
3-R or N									2195	24.34	792	8.78
4-DK or Rf or NA									20	0.22	23	0.26

SA: Strongly Agree, **TA**: Tend to Agree, **NAND**: Neither Agree nor Disagree, **TD:** Tend to Disagree, **SD:** Strongly Disagree, **DK:** Don't Know, **Rf:** Refusal, **NA:** Not Applicable, **Y:** Yes, **N:** No, **A:** Always, **MT:** Most of the Time, **ST:** Sometimes, **R:** Rarely and **N:** Never.

The cognitive dimension (D_2) covers six variables whose frequencies are given in Table 2. The first variable of this dimension is (V_{21}) Motivation and corresponds to Q_{89e}, Cluster (C_2) called Communication includes (V_{22}) Information corresponds to Q_{21a} and (V_{23}) Integration corresponds to Q_{21b}, Cluster (C_3) called Opinions and includes two variables (V_{24}) Negative Opinions corresponds to Q_{90e} and (V_{25}) Positive Opinions corresponds to Q_{90f} and finally (V_{26}) Beliefs corresponds to Q_{89b}.

Table.2. Frequencies of Different Variables of the Cognitive Dimension

Cognitive Dimension												
States	**V_{21}**		**V_{22}**		**V_{23}**		**V_{24}**		**V_{25}**		**V_{26}**	
	N°	**%**	**N°**	**%**	**N°**	**%**	**N°**	**%**	**N°**	**%**	**N°**	**%**
1-SA or TA	5191	57.56					3530	39.14				
2-NAND	1814	20.12					1880	20.85				
3-TD or SD	1777	19.71					3285	36.43				
4-DKor Rf or NA	236	2.62					323	3.58				
1-Y			6816	75.58	3256	36.11						
2-N			2132	23.64	5674	62.92						
3-DK or Rf			70	0.78	88	0.98						
1-Aor MT									775	8.59	8504	94.30
2-ST									1392	15.44	428	4.75
3-R or N									6807	75.48	58	0.64
4-DK or Rf or NA									44	0.49	28	0.31

SA: Strongly Agree, **TA**: Tend to Agree, **NAND**: Neither Agree nor Disagree, **TD:** Tend to Disagree, **SD:** Strongly Disagree, **DK:** Don't Know, **Rf:** Refusal, **NA:** Not Applicable, **Y:** Yes, **N:** No, **A:** Always, **MT:** Most of the Time, **ST:** Sometimes, **R:** Rarely and **N:** Never.

Finally, the behavioral dimension (D_3) entails four variables whose frequencies are given in Table 3. The first variable of this dimension is (V_{31}) Trainings and corresponds to question Q_{65a}, (V_{32}) Treatment corresponds to Q_{61l}, (V_{33}) Social Aspects corresponds to Q_{89d} and (V_{33}) Support corresponds to Q_{61b}.

Table.3. Frequencies of Different Variables of the Behavioral Dimension

Behavioral Dimension								
States	**V_{31}**		**V_{32}**		**V_{33}**		**V_{34}**	
	N° Cases	**%**	**N° Cases**	**%**	**N° Cases**	**%**	**N° Cases**	**%**
1-SA or TA					8157	90.45		
2-NAND					442	4.90		
3-TD or SD					187	2.07		
4-DKor Rf or NA					232	2.57		
1-Y	4152	46.04						
2-N	4146	45.97						
3-DK or Rf	14	0.16						

1-Aor MT 2-ST 3-R or N 4-DK or Rf or NA		6677 1008 574 53	74.04 11.18 6.37 0.59		5023 1738 1380 171	55.70 19.27 15.30 1.90

SA: Strongly Agree, **TA**: Tend to Agree, **NAND**: Neither Agree nor Disagree, **TD:** Tend to Disagree, **SD:** Strongly Disagree, **DK:** Don't Know, **Rf:** Refusal, **NA:** Not Applicable, **Y:** Yes, **N:** No, **A:** Always, **MT:** Most of the Time, **ST:** Sometimes, **R:** Rarely and **N:** Never.

4. Results

4.1.Bayesian Network Graph and Validation of the Model

First, the performance validation of the obtained model as given by the cross-validation process is 0.845 in average reflecting the robustness and high performance of the model and approaches proposed.

Second, the obtained BN graph using the variables considered in this study to assess the alignment during an organization change is given in Figure 1.

The Objective Variable (V_{ob}) takes a central position in the graph having six direct relations with different variables from the three dimensions (emotional, cognitive and behavioral), namely V_{13}, V_{14}, V_{15}, V_{16}, V_{21} and V_{32}. The obtained acyclic directed graph presents also the existing relationships between variables of the one dimension, on the one hand, and between variables of the three dimensions, on the other hand. For instance, variables anxiety (V_{14}) and stress (V_{15}) of the emotional dimension are interrelated and are related to the cognitive dimension through motivation (V_{21}). Similarly, Cluster (C_1) mutual trust of the emotional dimension is related to variable motivation (V_{21}) of the cognitive dimension through variable treatment (V_{32}) of the behavioral dimension.

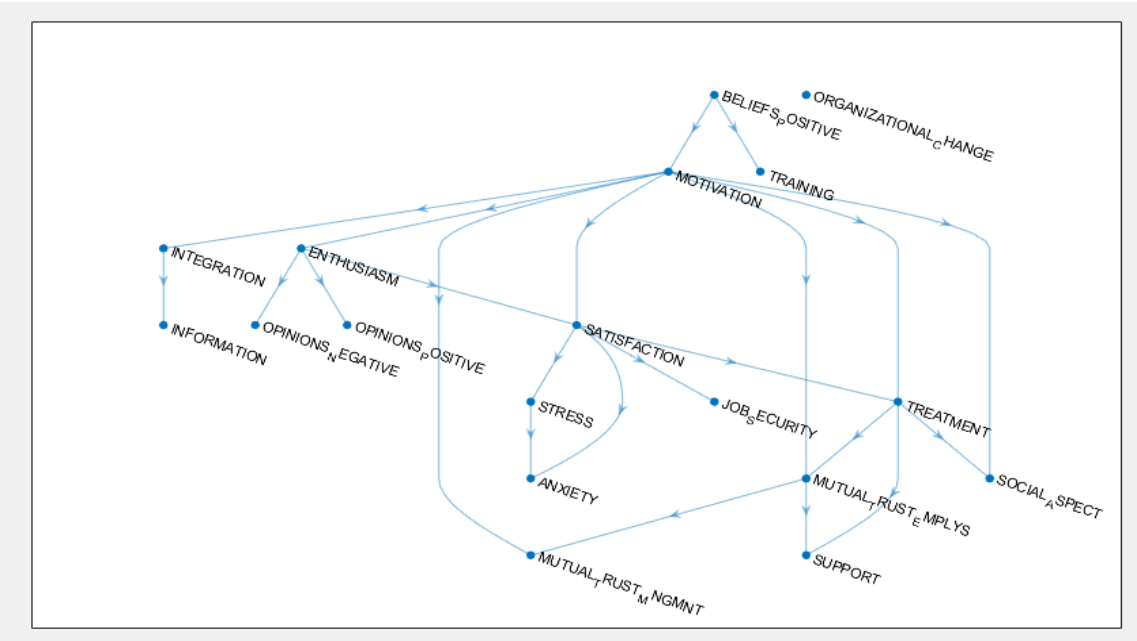

Figure.1. The Obtained BN of Factors affecting the Alignment during an Organizational Change

4.2.Sensitivity Analysis

In order to evaluate the impact of each influential dimension (emotional, cognitive and behavioral) a sensitivity analysis is performed where probabilities of the target variable

	Emotional Dimension						**Cognitive Dimension**						**Behavioral Dimension**			
States	**V_{11}**	**V_{12}**	**V_{13}**	**V_{14}**	**V_{15}**	**V_{16}**	**V_{21}**	**V_{22}**	**V_{23}**	**V_{24}**	**V_{25}**	**V_{26}**	**V_{31}**	**V_{32}**	**V_{33}**	**V_{34}**
1-SA or TA	83.55*	87.2*	85*				92.15*					87.17*			81.62*	
2-NAND	73.01*	77.63*	79.04				78.4					82.34*			65.86*	
3-TD or SD	60.76*	64.17*	63.74*				49.42*					71.62*			50.96*	
1-Y				84.72*				80.88	85.26*				81.35			
2-N				63.92*				77.94*	77.58*				78.97			
1-Aor MT					66.75*	88.63*				73.61*	80.81			87.42*		84.78*
2-ST					85.42*	69.38*				72.83*	70.26*			60.02*		77.65*
3-R or N					90.47*	39.26*				82.48*	63.32*			33.80*		66.57*

(being satisfied about working conditions) are obtained evidencing in the BN each dimension and comparing the resulting conditioned, or "a posteriori", and the initial, or " a priori", probabilities.

Note that the prior probability of being satisfied about working conditions is 80.56%. This initial probability gives a perspective on the current situation of the satisfaction of employees regarding implemented changes. The detailed results of the sensitivity analysis are given in Table 4.

Table.4. Sensitivity Analysis of the Global Model

- SA: Strongly Agree, **TA**: Tend to Agree, **NAND**: Neither Agree nor Disagree, **TD:** Tend to Disagree, **SD:** Strongly Disagree, **DK:** Don't Know, **Rf:** Refusal, **NA:** Not Applicable, **Y:** Yes, **N:** No, **A:** Always, **MT:** Most of the Time, **ST:** Sometimes, **R:** Rarely and **N:** Never.

- Values highlighted with an asterisk,*, are statistical significant at 95% level of confidence.

Probabilities of Table 4 show that almost all variables of the emotional dimension have an important influence on the satisfaction about working conditions after the implementation of the organizational change. However, the most influential variable is Enthusiasm (V_{16}). Indeed, the probability of being satisfied about new working conditions when employees are always or most of the time enthusiastic about their job is 88.63% with a difference of 49.37% compared to the probability of being satisfied when they are rarely or never enthusiastic about their job.

With regard to the cognitive dimension, the most influential variable is Motivation (V_{21}) having a probability of 92.15% of being satisfied about new working conditions when companies motivate employees to give best job performance. Indeed, this probability has a difference of 42.73% compared to the probability of being satisfied when companies do not motivate employees to give the best of their job performance.

The behavioral dimension entails in its turn an important influential variable, Treatment (V_{32}). The probability of being satisfied about new working conditions when employees are always or most of the time treated fairly at their workplace is 87.42% with a difference of 53.62% compared to the probability of being satisfied when they are rarely or never treated fairly.

According to these results, improve the job satisfaction of employees and, therefore, their alignment to the implemented change; companies should concentrate on treating employees more fairly, this is in the first place, directing their efforts towards boosting enthusiasm feelings and finally, keep motivating them to give the best performance.

Sensitivity analyses have been conducted for joint variables to assess the impact of, first, two variables together and then of the three influential variables all together on the satisfaction of employees about the implemented organizational change.

- *Sensitivity Analysis of the Job Satisfaction vs. Enthusiasm and Motivation:*

Results of the sensitivity analysis of the impact of joining variables Enthusiasm and Motivation on the job satisfaction of employees are given in Table 5. According to these results, when employees always or most of the time feel enthusiastic about their job and they strongly agree or tend to agree that the organization motivates them to give best performance, the probability of being satisfied about work conditions after the implementation of the change is 94.35%. Joining these variables has increased the probability of the job satisfaction with 13.79% compared to the initial probability (80.56%).

Also this probability has increased with 5.72% when it is compared to the probability of being satisfied when employees feel enthusiastic about their job and with 2.2% when they believe that the companies motivate them to give best performance. Accordingly, it clearly reveals that, in this combination, the influence of the motivation is more important. The job satisfaction probability is small, i.e., 26.19%, when employees rarely or never feel enthusiastic about their job and the management does not motivate them.

Table.5. Sensitivity Analysis of Job Satisfaction Vs. Enthusiasm and Motivation

Influential Variables of the Job Satisfaction		Job Satisfaction
Enthusiasm	**Motivation**	**Satisfied**
Always or Most of the Time	Strongly Agree or Tend to Agree	94.35%*
	Neither Agree nor Disagree	85.63%*
	Tend to Disagree or Strongly Disagree	63.68%*
Sometimes	Strongly Agree or Tend to Agree	83.97%*
	Neither Agree nor Disagree	72.98%*
	Tend to Disagree or Strongly Disagree	48.13%*
Rarely or Never	Strongly Agree or Tend to Agree	65.97%*
	Neither Agree nor Disagree	51.57%*
	Tend to Disagree or Strongly Disagree	26.19%*

- Values highlighted with an asterisk,*, are statistical significant at 95% level of confidence.

- *Sensitivity Analysis of the Job Satisfaction vs. Enthusiasm and Treatment:*

Results of the sensitivity analysis of the impact of variables, Enthusiasm and Treatment on the job satisfaction of employees are given in Table 6. According to these results, when employees always or most of the time feel enthusiastic about their job and they are always or most of the time treated fairly at their workplace, the probability of being satisfied about working conditions after the implementation of the change is 92.71%. Joining these variables has increased the probability of the job satisfaction with 12.15% compared to the initial probability (80.56%).

Also this probability has increased with 4.08% when it is compared to the probability of being satisfied when employees always or most of the time feel enthusiastic about their job and with 5.29% when they are always of most of the time that the management treats them fairly. Accordingly, it clearly reveals that, in this combination, the enthusiasm of employees about their job is more important to the job satisfaction. Results of Table 6 shows also that the job satisfaction probability is small, i.e., 10.96%, when employees rarely or never feel enthusiastic about their job and the management does not treat them fairly.

Table.6. Sensitivity Analysis of Job Satisfaction vs. Enthusiasm and Treatment

Influential Variables of the Job Satisfaction		Job Satisfaction
Enthusiasm	**Treatment**	**Satisfied**
Always Or Most of the Time	Always or Most of the Time	92.71%*
	Sometimes	73.51%*
	Rarely or Never	49.44%*
Sometimes	Always or Most of the Time	78.95%
	Sometimes	50.95%*
	Rarely or Never	27.40%*
Rarely or Never	Always or Most of the Time	53.35%*

	Sometimes	24.90%*
	Rarely or Never	10.96%*

- Values highlighted with an asterisk,*, are statistical significant at 95% level of confidence.

- *Sensitivity Analysis of the Job Satisfaction vs. Motivation and Treatment:*

Results of the sensitivity analysis of the impact of variables Motivation and Treatment on the job satisfaction of employees are given in Table 7. According to these results, when employees are strongly agree or tend to agree that their organizations motivate them to give the best job performance and are always or most of the time treated fairly, the probability of being satisfied about work conditions after the implementation of the change is 93.97%. Joining these variables has increased the probability of the job satisfaction with 13.41% compared to the initial probability (80.56%).

Also this probability has increased with 1.82% when it is compared to the probability of being satisfied when employees strongly or tend to agree that the company motivates them to give the best job performance and with 6.55% when they always of most of the time feel that the management treats them fairly. Accordingly, it clearly reveals that, in this combination, the influential variable is the motivation. Results of Table 7 show also that the job satisfaction probability is small, i.e., 22.47%, when employees are rarely or never treated fairly and the organization does not motivate them.

Table.7. Sensitivity Analysis of Job Satisfaction vs. Motivation and Treatment

Influential Variables of the Job Satisfaction		**Job Satisfaction**
Motivation	**Treatment**	**Satisfied**
Strongly Agree or Tend to Agree	Always or Most of the Time	93.97%*
	Sometimes	77.64%
	Rarely or Never	62.73%*
Neither Agree nor Disagree	Always or Most of the Time	83.20%*
	Sometimes	67.44%*
	Rarely or Never	45.98%*
Tend to Disagree or Strongly Disagree	Always or Most of the Time	63.93%*
	Sometimes	39.79%*
	Rarely or Never	22.47%*

- Values highlighted with an asterisk,*, are statistical significant at 95% level of confidence.

- *Sensitivity Analysis of the Job Satisfaction vs. Enthusiasm, Motivation and Treatment:*

Results of the sensitivity analysis of the impact of three influential variables, Enthusiasm, Motivation and Treatment together on the job satisfaction of employees are given in Table 8. According to these results, the satisfaction of employees about new work conditions

significantly increases compared to the initial probability, i.e., 95.67%, when employees always or most of the time feel enthusiastic and fairly treated by their management and they strongly agree or tend to agree with the fact they are motivated to give best performance.

Also this satisfaction probability has increased with 1.32% with the consideration of fairly treatment in the combination enthusiasm-motivation. Regarding the enthusiasm of employees, the satisfaction probability has increased with 1.7% when it has been considered in the combination treatment-motivation. However this probability has met an increasing of 2.96% with the consideration of the motivation in the combination enthusiasm-treatment.

Results of Table 8 show also that the job satisfaction probability is small, i.e., 9.50% when employees are rarely or never treated fairly, do not feel enthusiastic about their job and the organization does not motivate them to give best job performance.

Table.8. Sensitivity Analysis of Job Satisfaction vs. Enthusiasm, Motivation and Treatment

Influential Variables of the Job Satisfaction			**Job Satisfaction**
Enthusiasm	**Motivation**	**Treatment**	**Satisfied**
Always or Most of the Time	Strongly Agree or Tend to Agree	Always or Most of the Time	95.67%*
		Sometimes	83.17%
		Rarely or Never	70.55%
	Neither Agree nor Disagree	Always or Most of the Time	89.06%*
		Sometimes	77.32%
		Rarely or Never	58.06%*
	Tend to Disagree or Strongly Disagree	Always or Most of the Time	75.91%*
		Sometimes	54.41%*
		Rarely or Never	34.35%*
Sometimes	Strongly Agree or Tend to Agree	Always or Most of the Time	87.45%*
		Sometimes	60.64%*
		Rarely or Never	42.75%*
	Neither Agree nor Disagree	Always or Most of the Time	78.63%
		Sometimes	60.58%*
		Rarely or Never	39.05%*
	Tend to Disagree or Strongly Disagree	Always or Most of the Time	62.90%*
		Sometimes	38.46%*
		Rarely or Never	21.50%*
Rarely or Never	Strongly Agree or Tend to Agree	Always or Most of the Time	71.97%
		Sometimes	36.54%*
		Rarely or Never	21.82%*
	Neither Agree nor Disagree	Always or Most of the Time	59.27%*
		Sometimes	37.91%*
		Rarely or Never	19.72%*
	Tend to Disagree	Always or Most of the Time	39.21%*

	or Strongly Disagree	Sometimes	19.33%*
		Rarely or Never	09.50%*

- Values highlighted with an asterisk,*, are statistical significant at 95% level of confidence.

Likewise, it can be observed that all of the three variables directly influencing the job satisfaction. Moreover, results show that Motivation (V_{21}) is the one with the highest improvement rate of the job satisfaction, an increase of 2.96%, followed by the Enthusiasm (V_{16}) with an improvement rate of 1.7% and finally treatment (V_{32}) with an improvement rate of 1.32%.

Also as expected, by joining the three influencing variables, i.e., enthusiasm, motivation and treatment, together the job satisfaction of employees about new working conditions increases to the highest value.

5. Discussion

There is no doubt that improving working conditions presents one pillar of better quality of working life. From an intervention perspective, these improvements have been seen as a fundamental component of an engaged, effective, efficient and lasting productive workplace. Likewise, many safety and organizational psychology studies (Kinzl et al., 2005; Fida et al., 2019; Hafee et al., 2019) have considered that the job satisfaction presents a central variable and important predictor of working life quality and alignment.

Considering the fact that companies are entities driven by individuals who are characterized by their own opinions, emotions, behaviors and attitudes (Koivupalo et al., 2015; Ioannidis et al., 2019) and unraveling the role of human factors in the change conduct and the fact that their satisfaction is a determinant ingredient, the study of the satisfaction of employees and, by extend, their alignment during the organizational change is essential.

The literature review showed that the alignment of employees during organizational change projects could be gained based on two main perspectives: (i) the organizational learning and (ii) the organizational citizenship behavior.

The first perspective has interests in increasing the organizational learning and improving the social support. Two main components frame this perspective, namely, (a) the cognitive component which aims at spreading positive thoughts about the change among employees and enrich their knowledge leading them to recognize positive future outcomes of the organizational change and (b) the emotional component, which focuses on the psychological empowerment of change-related feelings.

This first perspective is achieved by means of good change communication process, deployment of participatory strategy, motivation and increased social support.

The second perspective, i.e., the organizational citizenship behavior, reflects the contextual performance of the operating-level employees and their behaviors/performance during the organizational change conduct. This perspective devotes special attention to the optimal contribution of employees to the change beyond their defined work roles. Such behaviors include the interpersonal helping, cooperation, engagement and individual initiatives. This is mainly achieved by means of trainings, support and fairness.

This study conceptualized the assessment of the alignment of employees during organizational change to working conditions through the measurement of job satisfaction. It used the BN as a perspective for a proactive management of the organizational change and early anticipation of resistance and contrary behaviors.

In the context of the organizational change and improvements to working conditions, authors (Lofquist et al., 2011; Spagnoli et al., 2017; Mathisen et al., 2017) have interested in investigating the relationship between the job satisfaction and outcomes of the change implementation and confirmed that this latter is often accompanied by increased workload, workplace bullying, physical and psychological stress, anxiety and burnout.

In this study, the obtained BN showed that the three dimensions emotional, behavioral and cognitive have direct influence on the satisfaction of employees and therefore on their alignment during the organizational change. This result comes in line with findings of many studies (Smollan & Sayers, 2009; Bouckenooghe, 2010; Chung et al., 2012; Thakur & Srivastava, 2018) that have confirmed that parallel to launching any organizational change, employees struggle to keep up emotionally and cognitively and start making decisions regarding the change based on self-assessment of new conditions. Yet, about possible outcomes of the change, personal opportunities and make assumptions generally driven by cognitive, emotional states that result in behavioral situations. Moreover, the BN model showed that the three dimensions are interrelated and influence each other. This finding is consistent with the established literature review of Kark Smollan (2006) that has importantly driven on debates in literature about this tripartite, and discussed the exclusion of one aspect in the study of the organization change and focusing on the others. The model of Kark Smollan (2006) came up with the relationship between these three aspects, i.e. emotional, behavioral and cognitive, putting forward that any change triggers cognitive responses, which

are based on perceptions regarding the outcomes, that impact, but also are being impacted by, the emotional responses and result in behaviors.

The sensitivity analysis results showed that boosting the alignment, expressed by increased job satisfaction about working conditions after the introduction of organizational changes, depends in large part on factors affecting human factors, for instance treatment and motivation of employees by top management. The crucial role of the management in the smooth conduct of the change has been emphasized by many research studies, for instance (Zin & Ismail, 2012; Al-Haddad & Kotnour, 2015; Sorensen et al., 2019) that have suggested that the management has to adopt more holistic mechanisms and integrated approaches to conduct a systematic and constructive changes where employees are viewed as active actors in the change process not just passive recipients allowing an effective adjustment of their behaviors, beliefs and attitudes to supply positive energy to the change process and minimize potential destructive barriers and divergent outcomes.

Also, as suggested in the organizational justice studies (Arnéguy et al., 2018; Cui & Jiao, 2019), when employees see themselves as being treated fairly, they develop attitudes and behaviors required for successful change, in contrast, when organizational decisions and managerial actions are deemed unfair, employees tend to resist, noncooperation, develop contrary behaviors, sabotage.

Models and approaches used in the change management studies entail many limitations and fail to consider these three dimensions all together and their interrelations, this is on the one hand, and do not consider predictions on possible outcomes of the interventions on the dimensions on the overall alignment. Considering the flexibility and capacities of the BN to this regard, it is a promising tool for modeling the human factors influencing the alignment during the conduct of the organizational changes.

6. Conclusions

Promotion programs and improvement initiatives to H&S management systems are complex and present a multilevel challenge for companies and when inappropriate, they contribute to major accidents.

The primary purpose of this study was to explore human and management factors leading to the misalignment and resistance to change during an organizational change to working conditions. The secondary purpose was to discover the relationship between these factors and how they affect and/or contribute separately and/or together to the alignment.

It was concluded that factors influencing the most the alignment during the organizational change are enthusiasm (V_{16}) of the emotional dimension (D_1), motivation (V_{12}) of the cognitive dimension (D_2) and treatment (V_{32}) of the behavioral dimension (D_3).

Two remarks reveal important regarding these findings: (i) the three dimensions have a direct effect on the job satisfaction (ii) Regarding the cognitive and behavioral dimension, the most influential variables are related to the management practice (iii) all variables of the three dimensions are interrelated, for instance, the enthusiasm is directly related to the motivation and mutual trust is related to motivation and treatment. Consequently, the best strategy for a smooth conduct and enhanced alignment during an organizational change is simultaneous enhancement of fairness at the workplace and continuous motivation of employees to boost their enthusiasm feelings about their job.

The use of BN allowed understanding the alignment of employees during the organizational change. It showed the existing dependencies between the factors and gave insights on the effect of changes in probabilities to define the best strategies to improve the alignment which is not usually furnished by the conventional statistical methods used in most of change management studies.

In terms of limitations, in the present study, the choice of factors has been limited to those discussed in the Sixth EWCS, as a result future research can consider other factors and interest in addressing top management and organizational culture mediating role in shaping employees beliefs and behaviors and therefore their alignment during the organizational change.

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Appendix 1. Details of the Dimensions and Variables Considered in the Study

Dimension	Variables used to measure the dimension		Questionnaire items	Texts of the items	Measurement Scale
D_1: Emotional	C_1: Mutual Trust	V_{11}: Management Trust	Q_{70b}	- "The management trusts the employees to do their work well"	1- Strongly Agree or Tend to Agree, 2-Neither Agree nor Disagree, 3-Tend to Disagree or Strongly Disagree, 4- Not Applicable or DK or Refusal
		V_{12}: Employees Trust	Q_{70f}	- " In general, employees trust management"	1- Strongly Agree or Tend to Agree, 2-Neither Agree nor Disagree, 3-Tend to Disagree or Strongly Disagree, 4- Not Applicable or DK or Refusal
	V_{13}: Job Security		Q_{89g}	-" I might lose my job in the next 6 months"	1- Strongly Disagree or Tend to Disagree, 2-Neither Agree nor Disagree, 3-Tend to Agree or Strongly agree, 4- Not Applicable or DK or Refusal
	V_{14}: Anxiety		Q_{78h}	-"Over the last 12 months, did you have any of the following health problems: –	1- No 2- Yes 3- DK or Refusal

				Anxiety?"	
	V_{15}: Stress		Q_{61m}	-" You experience stress in your work"	1- Rarely or Never 2- Sometimes 3- Always or Most of the Time 4- DK or Refusal
	V_{16}: Enthusiasm		Q_{90b}	-" I am enthusiastic about my job"	1- Always or Most of the Time 2- Sometimes 3- Rarely or Never 4- DK or Refusal
D_2: Cognitive	V_{21}: Motivation		Q_{89e}	-"The organization I work for motivates me to give my best job performance"	1- Strongly Agree or Tend to Agree, 2-Neither Agree nor Disagree, 3-Tend to Disagree or Strongly Disagree, 4- Not Applicable or DK, Refusal
	C_2: Communication	V_{22}: Information	Q_{21a}	-"Before this restructuring or reorganization took place, were you informed of the forthcoming changes?"	1- Yes, 2- No, 3- DK or Refusal
		V_{23}: Integration	Q_{21b}	-"Before this restructuring or reorganization took place, were you asked to give your opinion?"	1- Yes 2- No 3- DK or Refusal
	V_{24}: Beliefs		Q_{89b}	-"My job offers good	1- Strongly Agree or Tend

				prospects for career advancement"	to Agree, 2-Neither Agree nor Disagree, 3-Tend to Disagree or Strongly Disagree, 4- Not Applicable or DK or Refusal
	C_2: Opinions	V_{25}: Negative Opinions	Q_{90e}	-"I doubt the importance of my work"	1- Rarely or Never 2- Sometimes 3- Always or Most of the Time 4- DK or Refusal or Not Applicable
		V_{26}: Positive Opinions	Q_{90f}	-"In my opinion, I am good at my job"	1- Always or Most of the Time 2- Sometimes 3- Rarely or Never 4- DK or Refusal or Not Applicable
D_3: Behavioral	V_{31}: Trainings		Q_{65a}	-"Over the past 12 months, have you undergone a training paid for or provided by your employer to improve your skills?"	1- Yes 2- No 3- DK or Refusal
	V_{32}: Treatment		Q_{611}	-"You are treated fairly at your workplace?"	1- Always or Most of the Time 2- Sometimes 3- Rarely or Never 4- DK or Refusal or Not Applicable
	V_{33}: Social Aspects		Q_{89d}	-"I generally get on	1- Strongly Agree or Tend

			well with my work colleagues”	to Agree, 2-Neither Agree nor Disagree, 3-Tend to Disagree or Strongly Disagree, 4- Not Applicable or DK or Refusal
	V_{34}: Support	Q_{61b}	-“Your manager helps and supports you”	1- Always or Most of the Time 2- Sometimes 3- Rarely or Never 4- DK or Refusal or Not Applicable