Human change, training and innovativeness

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Abstract

Change has become an inevitable element which characterises organizations differently. Literature argues the interest of a specific management of the organizational change as far as its success is going to condition its survival. Proportionally, innovation is promoted to a competitive advantage par excellence and becomes a condition of survival. In this piece of research, we will try to demystify the innovativeness, and more exactly a dimension of it which is the openness towards new ideas and practices, taking into account that willingness is crucial to innovation.

The aim of this communication is to suggest a method for the setting - up of the organizational change by having appeal to training. According to this, the successful change will guarantee a better openness towards new ideas and practices.

Keywords: organizational change, training, openness towards new ideas and practices.

Introduction

Through this research, we are going to try to identify a particular aspect that is as important as innovation which is innovativeness and more precisely the openness towards new ideas and practices which constitutes one of the dimensions of this notion that relates to the degree of innovation acceptance and perception.

This study integrates both the dynamic and social aspect of innovation. We are also going to study the impact of the organizational change, which constitutes a datum of the current context, on innovation, while trying to emphasize in what ways it can serve the inclination to innovate a company or simply the innovativeness of an organisation.

To be able to establish this link between the organizational change and the openness towards new ideas and practices, we will have recourse to training as it is the most wide-spread practice related to organizational learning.

Once the theoretical model is defined, we are going to adopt a quantitative procedure by using a questionnaire in order to test the resulting hypotheses. All in all, 232 Tunisian SOFTWARE ENGINEERING COMPANIES were questioned. Data collected were treated in two distinctive and additional steps. The first one was the exploratory factor analysis made through SPSS 16.0 to be able to distinguish the constituents and the internal coherence of the concepts under study. The second one was the confirmatory factor analysis through LISREL 8.51 according to the method of the structural equations with a mediating variable which is the training and a moderating variable that is the information exchange. Change represents an independent variable and the openness towards new ideas and practices variable as dependant.

I.   The organizational change

In theory, the organizational change derives from sociology as well as the strategic approach and the theories of organizations. Several concepts and theories of the organizational change are taken by others disciplines such as human development and biological evolution with theoretical approaches and multiple concepts (Van de Ven and Poole, 1995).

All These terms development: transformation, learning, innovation and decline explain change but in various ways. They can be considered as synonyms or even related elements to the organizational change. But as a concept, the term change is neutral: it can have a positive aspect (increase) or a negative aspect (decline).

For Van de Ven and Poole (1995), the term change implies a difference noticed at the level of shape, quality or state of an organization. It can involve a task, a group work, a strategy, a product or the organization as a whole.

Hildén (2004), also, defined the organizational change as being a difference at the level of the structure, process, information system, culture, share capital or even skills.

These first two definitions present change according to its result and its aim. Nevertheless, this concept can be defined as a process allowing the organization to cross from an initial state to a future state for a better competitiveness or flexibility. Yet, we need to say that an organization that changes is an organization which looks for new ways of combining resources and skills. Thus, change can be chosen, in other words, planned or imposed, that is emergent. Hence, in case of a planned change (that is chosen), there will be proportionately a set of steps which will guide us to put it into implementation by putting at our disposal methods, means and actions to be taken (Levy, 1986; Armenakis and Bedeian, 1999).

Aside from these two approaches, which are the result and process, the organizational change can be approached as content, scale or tempo (Weick and Quinn, 1999).

For us, in this piece of research, only content of change will be considered. Indeed, we are going to treat it according to three dimensions retained from works of Autissier and Moutot (2003) and Mintzberg and Westley (1992) which are the organizational, technological and human dimension.

We have to clarify that the human dimension is the one that is adopted in our theoretical model. It is manifested through a change in behaviour, skills or culture.

II.   The openness towards new ideas and practices

With innovation, the organization diversifies and adapts itself to the technological changes and to the market changes (Nonaka and Ymanouchi, 1989). An innovative organization must have a deep rooted culture which stimulates the commitment in an innovative behaviour. This culture of innovation is what we shall call, according to Hurley and Hult (1998), innovativeness.

In other words, to be able to innovate means necessarily to want that. This will depends on several elements that we will show later in detail after defining what the innovativeness is.

For Hurley and Hult (1998), innovativeness determines whether the members of an organization are capable to adopt innovation or are going to resist against it. Innovativeness

represents, also, an organizational culture which encourages the employees to be innovative and indicates the level of susceptibility of the organization towards developing a new product or a process (Zaltman et al., 1973).

Several authors emphasize the importance of a culture favourable to innovation for a suitable behaviour for innovation (Hurley and Hult, 1998; Chandler et al., 2000; Claver et al., 1998; Woodman et al., 1993; Mengue and Auh, 2006).

Woodside (2004) supports this concept of innovativeness and adds that as a culture of innovation, the latter will contribute to the development of a social capital which has a behaviour oriented towards innovation and thus facilitates its generativeness and implementation. It will, also, allow the managers to direct and control the resources so as to draw their attentions to the need of new ideas and actions (Hult et al, 2003; Van de Ven, 1986).

Aside from this cultural aspect, Zaltman, Duncan and Holbek (1973) made appeal to the process of innovation to be able to distinguish innovativeness from innovation. In fact, according to these authors, it is necessary to define a first step vital in every process of innovation that is the initiation for innovation or even the openness towards innovation and that is simply the innovativeness. Thus, it includes the capacity of the members of the organization to adopt the innovation or to resist against it.

Another more recent conception presents innovativeness in terms of proactive behaviour towards innovation. By adopting this orientation, Mengue and Auh (2006) suggest a wider scope for manoeuvring through the exploration of new opportunities rather than exploiting the existing powers.

Drucker (1954) was the first one to indicate the importance of innovativeness and its absence from the field of research. However, this notion covers works related to the diffusion of innovation (Rogers, 1995). According to this author, the organization must be innovative to survive in a volatile environment (Johnson et al., 1997). Innovativeness was conceived, according to certain researchers, as the degree in which an individual, in a similar social system as others, is able to adopt something new (Hurt et al., 1977; Rogers, 1971).

This definition focuses on the individual rather than the organization. This shortcoming was overcome by the studies conducted by Hurley and Hult (1998) who defined innovativeness from a collective perspective that reflects openness towards new ideas in a cultural orientation.

Analysing innovativeness requires taking into consideration three meanings related to it: openness towards new ideas and practices, a practical capacity to implant and innovate, and the organization's degree of inclination towards innovation and novelty (Schwabsky et al., 2004).

III.   Model of the successful organizational change: changing while innovating

Figure 1 represents the model we are dealing with in this piece of research. As you can see, our starting point will be the emergence of an organizational change where its realisation and implementation require developing training which is the practice of learning that is most familiar within our Tunisian companies (This report is the result of an exploratory research which we have already conducted on our sample).

Figure1. The theoretical model of the research
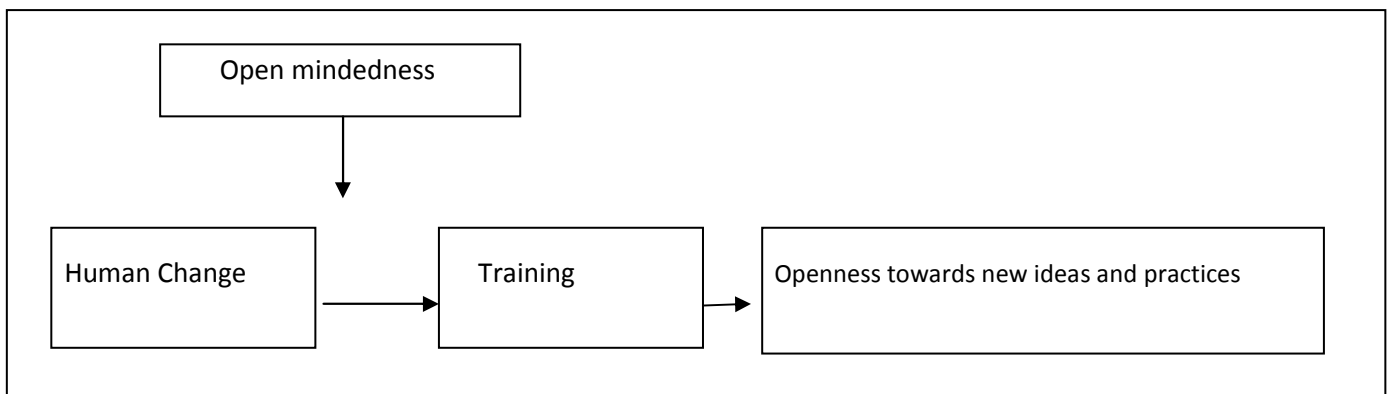
III.1 - The concomitant of change and training

The term concomitant refers, essentially, to the supporting activities whose role is to maintain a rigorous implementation of the organizational change and facilitate its steps and guarantee its success.

At this level of analysis, our objective is to reveal the link which may occur between the organizational learning, especially training as a practice of learning, and the organizational change. In other words, in what ways can the first concept, by means of the knowledge we gain, serve the second one, defined as being a dynamic process which implies the passage from one state to another and can relate to one of the components of the organization.

So if we assume that organizational culture, organizational structure and actors promote significantly the development of knowledge [...] (Ichijo et al. 1998; Gibbert et al. 2002; Rowley, 2002 and Massey et al. 2001), we can assume that organizational change involves organizational learning.

In the same framework, Garvin (1993) firmly emphasizes this principle of concomitant of learning and change. He adds that when there is no change, there will be equally no learning. And in this case we will end up in a lack of exploitation of the organizational resources.

Every individual has the ability to learn and it is through this that he adapts himself to change and evolution in his environment (Lioa et al., 2008). Learning can, effectively, take place only when we detect and correct our errors (Argyris and Shon, 1978).

Detecting errors and correcting them leads, logically, to change, because it is a kind of transition from an unsatisfactory step to a better one thanks to established rectifications. Morgan and Ramirez (1983) support this idea by assuming that the organizational learning takes place when there is a will to resolve a collective problem that has arisen.

III.2 - The appropriation of change: information exchange

In this piece of research, information exchange refers to an internal sharing of knowledge and above all a sharing of vision. Here, organisational learning represents a social process which relies on establishing communication and transition to be made. To illustrate this case, we're seeking to identify links between learning and sharing vision.

Sharing vision refers to an organization focusing on learning (Sinkula, 1997). Verona (1999) emphasizes the importance of sharing this vision because without sharing, learning by individual members does not make sense. In other words, without a shared vision, it is difficult to know what the members should learn, even when they are motivated towards learning.

This explains why many creative ideas within organizations failed to turn into action (Hult, 1999). In most cases, considerable ideas did not turn out into action due to the absence of a shared orientation. A favourable climate to learning requires an organizational alignment for the implementation of new knowledge and the creation of an organizational power or even of a «core competence ».

In learning theory, vision sharing is similar to internal communication which reconciles all divisions and amplifies the stream of information to insure coordination of actions between the various departments and forms, leading ,as consequence, to a common sense of innovation (Brown et al., 1995).

An intra-organizational sharing of knowledge refers to a set of collective beliefs or even routines connected to the behaviour favourable to the distribution of learning within all the organization with its various units (Zaltman and Duncan, 1973; Moorman and Minner, 1998).

Organizational learning is the outcome of the collection of individual learning. Given that employees may leave the organization and that nothing can be fully guaranteed, the intra-organizational sharing of knowledge is necessary to avoid the loss of information (Lukas et al., 1996).

This dimension may be necessary, since having a shared vision and ensuring a commitment to learning without the accumulation of knowledge. Learning that can take place would be limited (Moorman and Minner, 1998) as it is not just a collection of information from different sources, but also a systematic review of information structuring.

IV.   Research Methodology

Testing hypotheses from our theoretical model was established using basically a quantitative methodology and this is through a questionnaire that was distributed to 232 service and computer engineering companies in Tunisia. Most of the items used here are extracted from the literature review, except some extracted from the guide of interview which we made.

Analysis of the collected data was carried out in several correlative steps: The first step consists in an exploratory factorial analysis with the aim of verifying the composition of our research axes. The second one is a confirmatory factorial analysis to test the adjustment of the model of measure used. Next to these two steps, we managed to proceed to checking the hypotheses according the method of structural equations.

Indeed, the composition of our model and the presence of the latent variables may be moderating or mediating variable explains our choice of this particular method of analysis.

The approach adopted for checking the meditative effect, represented by training, was that recommended by Baron and Kelly (1986), whereas the moderate effect was studied according to the approach of Ping (1995, 1997) which was considered the best and the easiest for the study of moderating variables.

V.   Results

While presenting results, we will not review all the steps, but we will focus on testing hypotheses of mediation in four steps according to the approach advocated by Barron and Kelly (1986). Subsequently, the hypothesis of moderation will be listed in detail in six steps (Ping, 1995, 1997).

However, a table summarizing the various dimensions as well as their degree of reliability will be presented to make sure of the internal coherence of the measures used.

V.1 - Exploratory and confirmatory factorial Analysis

All the results obtained will be given in detail. So, for every variable we shall present the internal coherence and the composition of the corresponding items.

V.1.1 - Human Dimension of change

Following the iterations, 3 items have been retained out of the 4 which were initially selected:

Table 1: The EFA for human dimension of change

Item	Quality of presentation	Factorial contribution
RT	0.49	0.58
VS	0.77	0.70
VP	0.79	0.75
NC	0.71	0.69

1. It seems that the removal of the item RT can slightly improve the reliability of the scale (α=0.874). Indeed, this item is not as correlated as the other ones.

Cronbach's Alpha	Standardized Alpha
0.853	0.851

V.1.2 - Training

Out of the 5 items used to measure training, only three items were retained. The rest of items were omitted in the analysis because they represented a factorial contribution and a quality of representation lower than 0.5.

Only training at the field of work, training through experience sharing and training through transmission of a hidden knowledge were significant.

Item	Quality of presentation	Factorial contribution
TFW	0.65	0.74
TES	0.63	0.67
TTK	0.60	0.71

Two items were omitted because they have a quality of representation below 0.5: they are FRP (0.48) and TC (0.33).

Cronbach's Alpha	Standardized Alpha
0.637	0.643

V.1.3 – Openness towards new ideas

Item	Quality of presentation	Factorial contribution
TINV	0.57	0.65
LEAD	0.65	0.68
TOPO	0.50	0.63
CINLL	0.68	0.67
LEADS	0.71	0.74
PAGI	0.68	0.73
LPC	0.63	0.66

Cronbach's Alpha	Standardized Alpha
0.673	0.695

Having satisfied the requirement arising from measurement issues, the structural model was subsequently checked. Results are shown below.

V.2 – Checking the mediation hypotheses: Training mediatises the impact of the organizational change, in its human dimension, and the openness towards new ideas and practices

Step 1: Checking the link between human dimension of change and the openness towards new ideas and practices

The first step of approach recommended by Baron and Kenny (1986) suggests that it is necessary to show that the link between the independent variable and the dependent variable is significant to make sure of the existence of an effect to mediatise. The human dimension of change is the independent variable of our model and the orientation towards innovation as the dependent variable. Hence, our first concern is to test the relationship between these two levels that are involved in the mediation of the theoretical hypotheses mentioned above.

Regressions' results show that, for the sample studied, human dimension of change determines significantly the openness towards news ideas and practices. This last one will depend, widely, on the degree of susceptibility and integration of innovation.

Figure 2. Representation of the link between human dimension and the openness towards new ideas and the practices
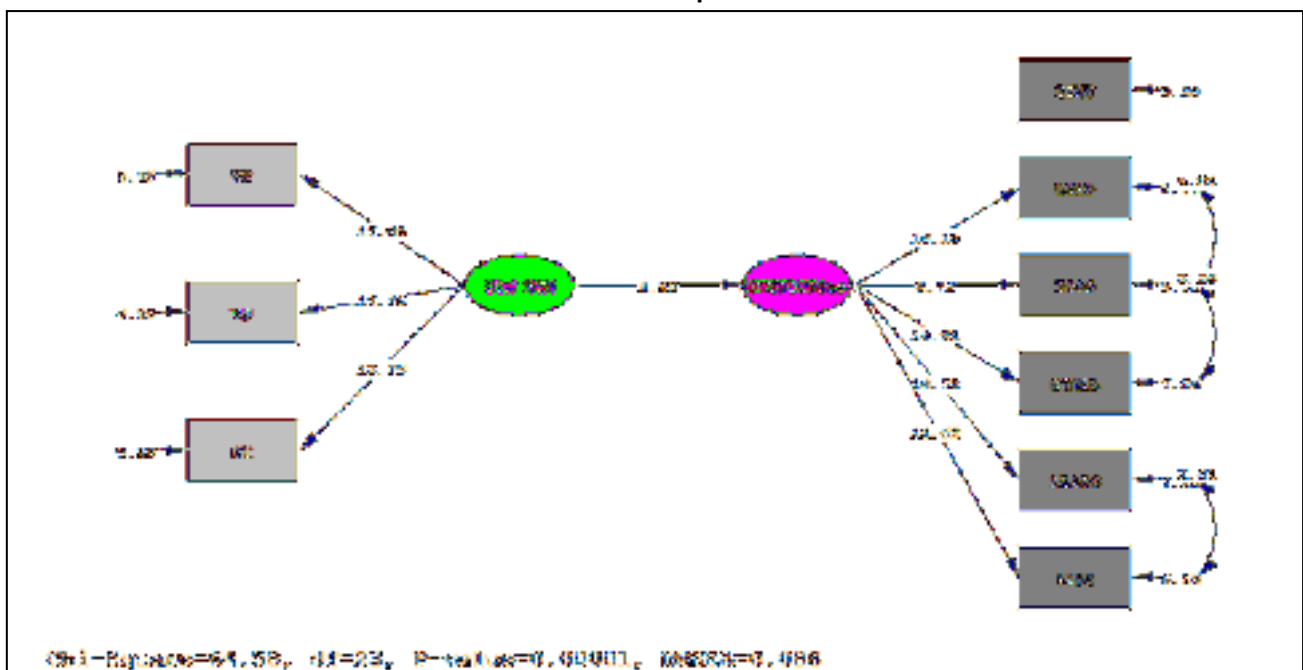
Results of this first step show that human dimension of change influences positively and significantly the openness towards new ides and practices (gamma = 0.21 with T of Student = 2.74 > 1.96).

χ^2	df	RMSEA	GFI	RMR	CFI
63.95	26	0.079	0.94	0.054	0.96

So, the link to mediatise exists. It is now possible to see if it can be mediatised and if this it is YES, how is that (perfect or partial Mediation)?

Step 2: Testing the link between human dimension of change and training

During this second step, we are going to test the link between human dimension and training. Similarly like the first step, the link tested is positive and significant (gamma = 0.22 and T of student = 2.64). In this case, as in the previous one, although the effects are significant, Lambda statistics suggests a rather weak effect.

**Figure 3. Representation of the link between human dimension and training**
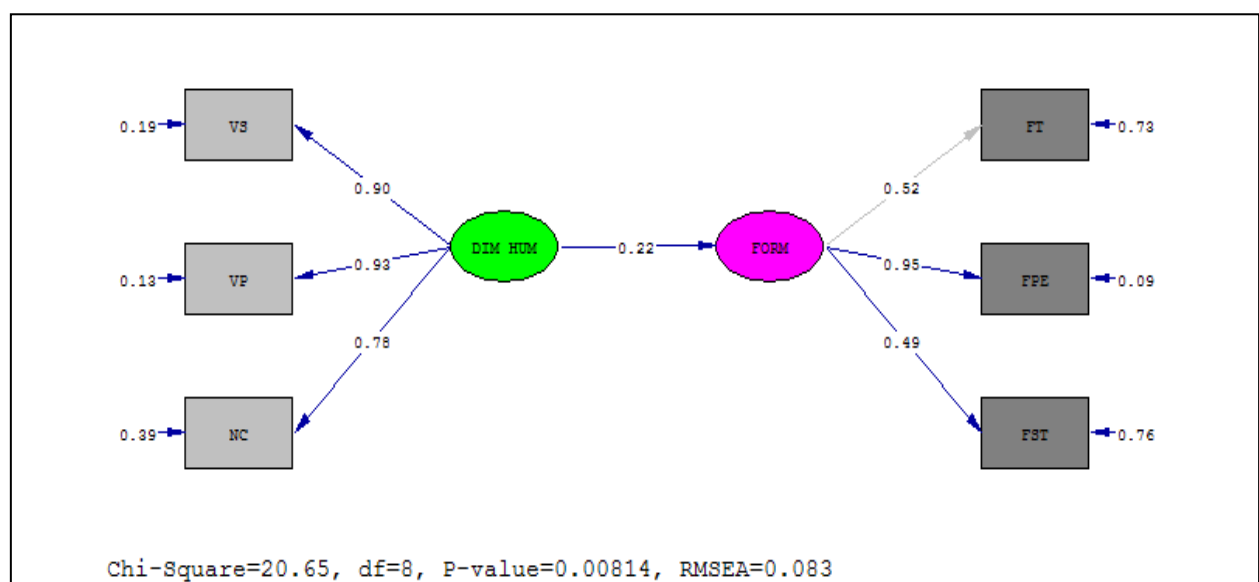
The most raised factorial contribution for training is represented by training through experience sharing (λ = 1.76) followed by training at the field of work (λ= 1.24). Whereas, training through training courses is not as important as the other ones.

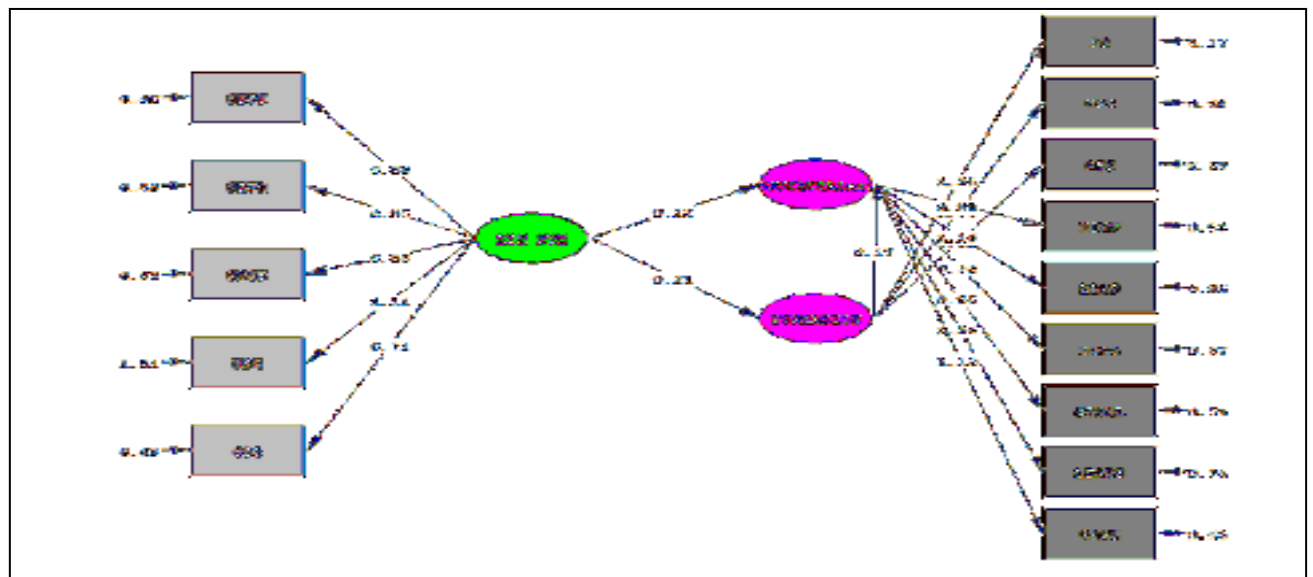The following table demonstrates that all the indications of adjustment are satisfactory.

$\chi 2$	df	RMSEA	GFI	RMR	CFI
0.083	18	0.083	0.97	0.049	0.98

Since these two steps have been verified, we can now move to checking the mediating link.

Step 3: testing the link between training and the openness towards new ideas and practices
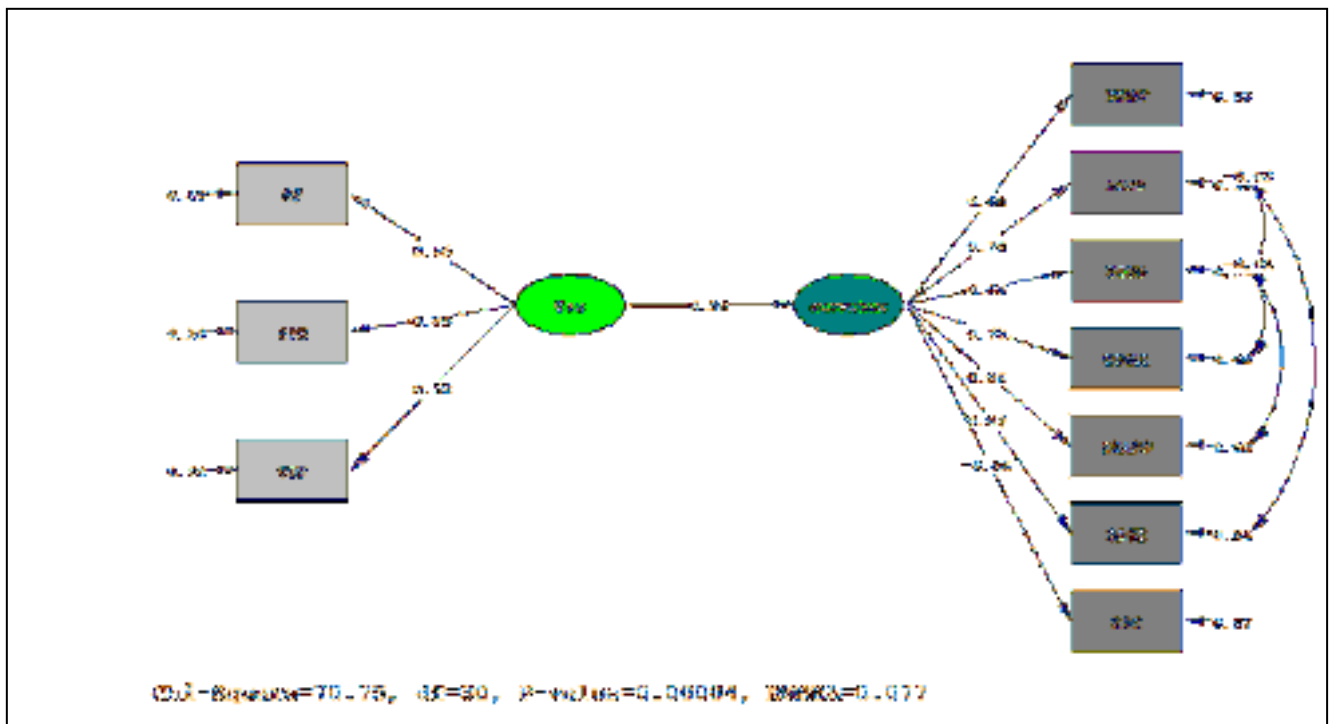
Step 4: the mediating effect

To conclude, we can say that this hypothesis concerning the mediating role of training between human dimension for the organizational change and the openness towards new ideas and practices has been accepted since, while having training, the link between these two variables decreases.

V.3 – Checking the moderation hypotheses: the open-mindedness moderates the effect of human change in training

The approach followed at this level is the one suggested by Ping (1995; 1997) that assumes the passage through six complementary steps in order to be able to test the validity of the moderation link.

Step 1: normality data test by the indicators of skewness and Kurtosis

| *Variable*	*Items*	*Skewness*	*Kurtosis*
Openness towards new ides and practices	TINV	-0.44	-0.74
	LEAD	-0.59	-0.50
	TOPO	-0.50	-0.56
	CINLL	-0.66	-0.62
	LEADS	-0.57	-0.68
	PAGI	-0.20	-1.21
	LPC	0.56	-0.93
Training	FT	-0.49	-0.96
	FPE	-0.62	-0.37
	FST	-0.07	-1.10
Open-mindedness	TSH	0.04	-0.79
	CONFM	-0.41	-0.82
	MALM	0.17	-0.49
	TMPM	0.02	-0.70

Step 2: The reliability and validity examination of the latent variables

This step was already accomplished during the exploratory factorial analysis and as a consequence we were able to prove an internal coherence of the latent variables. The validity of these variables was established during the confirmatory factorial analysis during which we calculated the discriminatory and convergent validity as well as the Rhô.

Step 3: the confirmatory factorial analysis

The third step approach advocated by Ping (1995) consists in implementing a confirmatory factorial analysis in order to highlight the loading and the corresponding errors and thus calculate the value of the multiplying term.

Figure 4. Representation of results of the CFA after introducing the moderating variable.
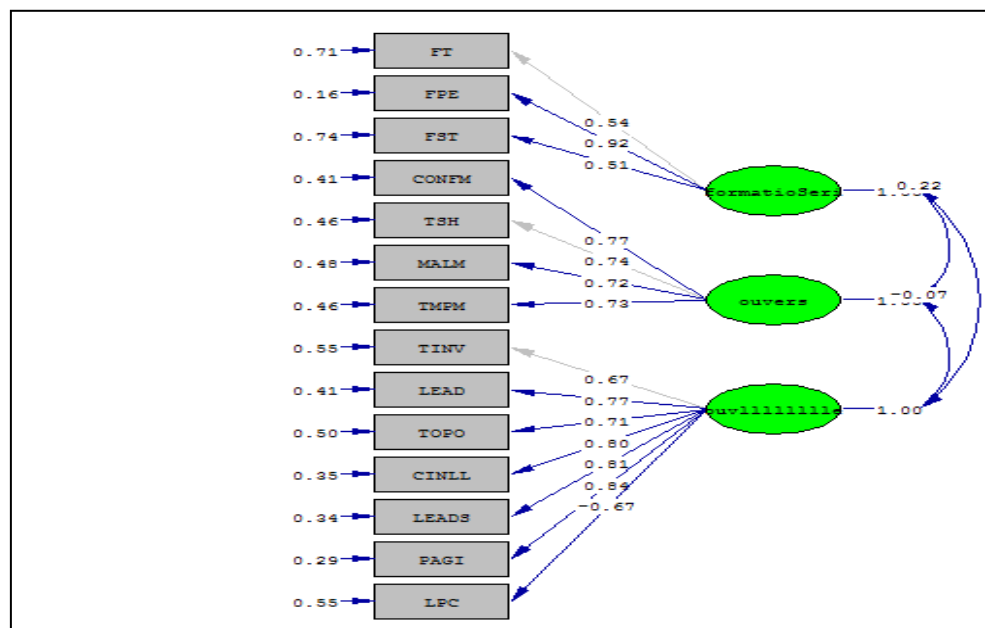
Step 4: calculation of multiplying term

Calculating the term of interaction (Xp*Z). The indicator of the interaction effect, representing the moderating factor, is the product of the sum of the explanatory variable and moderating variable's indicators (Σxi * zj).The factorial contribution λ_{xz} and the error $\theta\varepsilon_{xz}$ of the interaction effect are calculated by the following equations:

$$\lambda_{xz =} \sum \lambda_{xi} \times \sum \lambda_{zj}$$

$$\theta\varepsilon_{xz =} \left(\sum \lambda_{xi}\right)^2 \times VAR\ (x) \times \left(\sum\theta\varepsilon_{zj}\right) + \left(\sum \lambda_{zj}\right)^2 \times VAR\ (z) \times \left(\sum\theta\varepsilon_{xi}\right) + \left(\sum \lambda_{xi}\right) \times \left(\sum \lambda_{zj}\right)$$

For our study $\theta\varepsilon_{xz} = 0.842$

Step 5: the test of the structural model

The introduction of the multiplying effect does not damage the adjustment of the model used at the starting point. This allows us to accept this hypothesis. Thus, we can conclude that the

link between the human dimension of change and training can be established only when the open-mindedness exists.

Conclusion

At this point, we can say that the hypotheses handled in this piece of research were validated. This allows us to conclude that for a better openness to new ideas and practices, we have to locate our needs in training and a corresponding training plan. Once this training is accomplished, we would have the possibility of integrating new ideas and practices. Besides, we can say that a successful human change is the outcome of training. As consequence, this will increase the degree of acceptance of new ideas and practices detected.

Finally, open-mindedness proved to be an important condition leading to the implementation of training that will serve the interests arising from the existing change.

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