Post-crisis behavior and organizational learning process case of Tunisian textile sector

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Abstract
In this article we aim to determine the factors and explanatory variables in post-crisis behavior which potentially influence the selection choice of the organizational learning process used by textile companies in Tunisia.

To do so, we will first expose the organizational learning process in a crisis management context. Then we will highlight the results of our quantitative study on textile companies in Tunisia. Finally, we will issue operational recommendations and strategies for better anticipation and crises management in the Tunisian textile sector.

Keywords: Organizational Crisis, post-crisis behavior, organizational learning process.

Introduction
The international economic environment was characterized by deep, rapid and complex changes that have affected the patterns of production, distribution and organization of all businesses. In this general climate of profound transition, certain developments further reinforce the uncertainty. In addition to this economic and political uncertainty there are equally many different contingency factors such as new competitors, creating new free trade areas, gradual deregulation in key sectors of the economy, social changes generated by the emergence of 'intangible economy, technological change and increased demand. In such conditions, companies are constantly faced with uncertainty and unusual circumstances and therefore are more and more familiar with varying levels of organizational crises.

This concept of a crisis is problematic because it immediately introduces us to a world of contradictions where there are an infinite number of problems. A crisis usually determines the evolution of a process in which all decisions are blocked, empty or nonexistent. It manifests ambiguity and uncertainty. A crisis is proving to be a notion that explains the incapacity of understanding the evolution of any given situation.

Many leaders seem to fall into this ambiguity, incapacity and ignorance and show that crises are negative events, frightening, devastating and not easy to predict, which reveals the incapacity of companies to learn or capitalizing during crises. In this respect organizational learning does not take into account difficult and extraordinary events, at the moment when the crises that no longer limits the contemporary business environment.

For some managers, crises are dealt with when they occur only to immediately return to the status quo quickly neglecting the horrible memories and damage caused by the crisis. Hence the concept of organizational learning is generally avoided.

Interest and Research Objective:
This research is of major interest in the science of organizational learning management crisis as it is still difficult to tackle. It is from this limit and lack of investigation into the Tunisian context that our problematic has emerged. Therefore, our goal is to determine the importance of the post-crisis behavioral factors in choosing the most suitable organizational learning process for textile companies in Tunisia.

Our objective is twofold: The first objective is to identify the factors and post-crisis behavioral explanatory variables that may influence which organizational learning process textile companies in Tunisia choose to operate under. The second objective is to determine the organizational learning process as adopted following a crisis in the textile sector in Tunisia.

To answer our problematic and achieve the previously set goals, we must first respond to the following research questions:

- Which of the post-crisis behavioral variables, namely experience and competence, have an impact on the choice determination of the organizational learning process?
- What is the importance of the experience in choosing the organizational learning process?
- How is the establishment of a competence in basic crisis knowledge so important in choosing the organizational learning process?
What is the organizational learning processes implemented in a post-crisis situation in Tunisian textile companies?

The explanation and the outcome in research objectives require a reconciliation of work on post crisis behavior and on the organizational learning process. Furthermore, this study is based on a quantitative approach aims to test our conceptual model through statistical tests (multiple regressions, bi-varied analysis). Data was collected through questionnaires.

This research has a double motive. Conceptual relevance that positions our research compared to other studies. The major theoretical interest is first in the conceptualization of the organizational learning process in a crisis management context. Secondly it will propose a theoretical model that will analyze, through a set of independent post-crisis behavioral variables by relying on the definition of Christophe Roux. Dufort. Our research will only focus on the most recent aspects. To our knowledge, previous studies have focused essentially on qualitative studies of crises learning.

There is a managerial interest in the identification of such explanatory variables in post-crisis behavior and how to determine the organizational learning process best suited for Tunisian textile companies. This result is relevant as it encourages organizations of this sector to psychologically and socially prepare for organizational crisis and to use it as an opportunity for change and learning.

Conceptual part

To address the problem we will first clarify the general concept of learning and then we will focus specifically on the concept of post crisis organizational learning.

Learning definition

The concept of learning has been defined by various authors in different ways. According C.Argyris SCHON and Donald (2002), the concept of learning refers to either a product, that is to say something that has been learned or the process for obtaining this product. In one sense, we talk about what we have learned in reference to the accumulation of information in the form of knowledge or skills. In a second sense, we talk about how we learn by referring to the act of learning that can be done well or poorly. The distinction between product / process that theorists and practitioners give general learning and organizational learning in particular is of paramount importance for the rest of our study.

Organizational learning definition

According B.MOINGEON (1988) ‘organizational learning’ is undoubtedly a multidisciplinary concept. Its definition varies according to the authors as well: creation and modification of routines, acquisition of knowledge and individual skills useful to the organization, improving the ability to achieve effective action, detection and error correction, collective ability to interpret and give meaning “.

According C.Argyris SCHON and Donald (2002), “The generic pattern of organizational learning includes: contents of information or a product of learning. A learning process consists of acquiring, processing and storing information, and a learner who benefits from the learning process. ”

Post-crisis organizational learning definition

Faced with this multiplicity of definitions, we retained the definition of Christophe Roux. Dufort (1996) which states: ‘Learning crisis is a retroactive phenomenon that normally ensures the passage of the restart phase of activity to crisis preparedness. It provides organizations with a dynamic crisis management approach by allowing them to capitalize on the experience and the skills necessary to avoid repeating them again’.

This definition remains the most suitable for our research as it supports the theoretical basis of our research object on learning crises. From this definition we will later study the importance of experience and expertise on organizational learning and see their implications on the choice of the organizational learning process in a post crisis situation. Thus, on the basis of pre-developed theoretical concepts we have determined two explanatory variables of post crises behavior represented by:

- Positioning and developing the repository by experience.
- Giving value through competence.

Regarding the experience variable, it breaks down into several dimensions: life experience, the experience of others and direct experience or what is called experimentation or simulation.

The lived experience:

Cyert and March (1963) point out that “organizational learning event is an adjustment and adaptation of the company to its environment on the basis of past experience.”
Experience of others (imitation):
DiMaggio and Powell (1983) note that "learning from the experiences of others has two advantages. Firstly, it allows the observation of negative experiences and the opportunity to learn from them without being directly affected which helps identify good experiences and experiments."

Direct experience or experimentation (simulations):
According Wildavsky (1988); "The experiment is considered a dose of disorder or unexpected experience introduced in the organization that explores uncertain and unpredictable elements."

With regards to the competence variable:
According to Le Boterf "competence is a construction, it is the result of a relevant combination of several resources that are mainly:

Theoretical knowledge: it is a structured set of knowledge, mainly acquired in initial or continuing training.

Expertise: concerns mastery of methods and tools to ensure the success of a defined activity.

Interpersonal skills: According BOTERF THE GUY (1998) "the characteristics of the personality or way of being related to education, which will shape the course of history and experiences of each individual."

The observation and the conceptual design of these two variables allowed us to identify three levels of organizational learning. These learning levels correspond to degrees of change, commitment and respectively challenge the organizational learning processes in single loop, the organizational learning process in a double loop, and the organizational Learning Process triple loop.

The interaction between these two areas will allow us to determine the relative importance of the factors and explanatory variables of post-crisis behavior in choosing the organizational learning process.

Hypotheses
We conducted an exploratory qualitative survey that allowed us to clarify the assumptions of our research. Therefore, we make the assumptions of our research model, based on pre-developed theoretical concepts and an exploratory qualitative study. They are as follows:

H1: Experience positively influences the organizational learning process.
H1a: Experience positively influences the organizational learning process simple loop.
H1b: Experience positively influences the organizational learning process in a double loop.
H1c: Experience positively influences the organizational learning processes in a triple loop.

H2: Competency positively influences the organizational learning process.
H2a: Competency positively influences the organizational learning process in a simple loop.
H2b: Competency positively influences the organizational learning process in a double loop.
H2c: Competency positively influences the organizational learning process in a triple loop.

These assumptions have allowed us to develop our research model (see Figure 1), which attempts to understand the organizational learning process based on the factors and explanatory variables of post-crisis behavior.
experience of the organization skills crisis management matters on crises

Organizing

Figure 1: Research Model:

- The lived experience
  - Experience of others (imitation)
  - Direct experience or experimentation (simulations)

- Theoretical knowledge
  - Expertise
  - Interpersonal skills

Levels of organizational learning:
- simple loop.
- double loop
- triple loop

The factors explaining post-crisis behavior and the organizational learning process:

More explicitly, the single loop results in the organization progressively adapting to its environment based on past experiences where we talk about incremental change.

The double loop is an average change that results in challenging strategic goals and the framework of organizational actions.

Finally, the triple loop leads to a questioning of identity and purpose of existence as an organization and the cognitive structures of the leaders, where we talk about radical change.
Method and Measures:

Our research is mainly based on the exploitation of the results of a quantitative survey. This survey was administered by questionnaire, face to face. The sample was 60 companies belonging to the Tunisian textile sector, particularly in the regions traditionally very involved in the textile industry namely Ariana, Bizerte, Ben Arous, Mahdia, Monastir, Nabeul, Sousse, Sfax and Tunis.

To test the hypotheses of our research, we used the SPSS statistical data analysis software allowing us to identify relevant results that will be presented later.

Before moving on to testing hypotheses, we verified the psychometric quality of the measurement scales of our concepts, particularly in terms of validity and reliabilities. To do this, we adopted the steps of the Churchill Paradigm that can be summarized into three main stages:

1st step: Definition of the conceptual domain, which results in theoretical reflection on the subject and the precise definition.

2nd step: on the exploratory phase. The latter is essentially defined by the generation of a set of items from the literature and exploratory qualitative study conducted by semi-directive interviews.

3rd: The validation step which results in verifying the reliability of items within a same factor by calculating the internal consistency Cronbach’s alpha. This coefficient is considered satisfactory for an alpha value or equal to 0.7, and acceptable from a value between 0.6 and 0.7. Then, to test the convergent construct validity we relied on the analysis of Pearson’s bi varied correlation coefficients. In addition, we performed principal components analysis (PCA) to verify the consistency and multi-dimensionality. Indeed, we recall that the PCA reduces a large number of variables into a few factors while minimizing the possible loss of information.

Achieving a PCA must meet certain conditions.

The first condition is to ensure the factorization of data through the validation of certain rules namely:

1. Is the data factorable?

To answer this question, initially, it should be noted:

- The matrix of correlations (Correlation Matrix). If multiple variables are correlated (>0.5), it is factorable. Otherwise, factoring has no meaning and is therefore not recommended.

Secondly, we must examine the index of KMO (Kaiser-Meyer-Olkin) (sample adequacy) to strive towards 1. If this is not the case, factoring is not recommended. To judge the KMO index, you can use the following scale:

- 0.50 and less is miserable
- between 0.60 and 0.70 is mediocre
- between 0.70 and 0.80 is average
- between 0.80 and 0.90 is good
- more than 0.9 is wonderful.

This KMO index is used to determine the level or quality of correlation between variables within a same factor.

- Verification Test chi two or Bartlett’s sphericity test. If the significance (Sig.) tends towards 0.000, this test is very significant, if it is less than 0.05, the test is significant, and finally between 0.05 and 0.10 is acceptable but above 0.10 is to be discarded.

2nd determining condition of uni / multi-dimensionality factors: How many factors are retained?

Following the validation of the first condition related to data factorization, we determined the number of factors, taking into consideration the application of three rules:

- The first is Kaiser’s rule where we retain only factors with values superior to 1.
- 2nd rule: selecting the number of axis according to the minimum information recovery that is desired. For example, we want the model to recover at least 80% of the information.
- 3rd method: the ‘Scree test’ or elbow test. We observe the graph of values and we retain only those that are found on the left of the inflection point.

We subsequently examined the commonalities given in the table of SPSS. The objective of the latter is to study the quality of representation of the axes.
The factorization of the experience variable:
The analysis values according to Kaiser's standards and the Scree test allowed us to retain three dimensions garnering a 69.65% variance. Therefore, the concept of a three-dimensional experience is with:

Axis 1 is: Experience of others, solutions and minimizing damage.
Axis 2 is: lived experiences: Evaluation of the crisis and use of directories.
Axis 3 is: lived experience: transcription and transfer of lessons to employees.

Internal consistency coefficients (Cronbach's alpha) for the dimension 'experience of others', solutions and minimizing damage; lived experience / evaluation of crisis and using directories and experience / Transcript and employee knowledge transfer are respectively equal to 0.7552, 0.8296 and 0.6373, and show a good consistency between the items of each dimension. For our study, we will keep the three factors of experience concept.

The factorization of the competence variable:
The analysis of values according to Kaiser's standards and the Scree test enabled us to retain three dimensions gathering a 62.703% variance. Therefore, the concept of competence is three-dimensional with:

Axis 1 is: Staff training and exchange of knowledge.
Axis 2 is: registry of knowledge / Crisis cells.
Axis 3 is: Team collaboration.

Internal consistency coefficients (Cronbach's alpha) for the dimension of staff training and exchange of knowledge, knowledge register / crisis cells and team collaboration are respectively equal in 0.782, 0.765 and 0.837 and show a good consistency between items in each dimension. For our study, we will keep the three factors of the competence concept.

The factorization of the organizational learning process variable:
The analysis of values according to Kaiser's standards and the Scree test enabled us to retain three dimensions garnering a 73.44% variance. Therefore the concept of organizational learning is three-dimensional:

Axis 1: double loop learning, questioning and changing objectives
Axis 2: learning, simply maintaining the system loop and error correction
Axis 3: triple loop learning, questioning of identity

The internal consistency coefficients (Cronbach's alpha) for double loop learning dimensions / questioning and changing objectives, learning or simply maintaining the system loop and error correction are equal to 0.822 and 0.76 and testify to good consistency between the items of each dimension. For our study, we will keep the three factors of the organizational learning process concept.

Hypotheses testing
After the purification of our measurement scales, we proceeded to test the hypotheses of our research model through multiple regressions by using SPSS statistical software. However, we recall that the regression test must obey the conditions we have obviously verified. These conditions are the following:

1st condition: Check the normalcy of variables:
The independent variables follow a normal distribution of z-average <1 "~ 0 and standard deviation(suivi la loi normale centrée réduite de moyenne <1 ~ et écart type =0.). In order to verify the normalcy of our variables, we performed the test <K. Z ' (Kolmogorov-Smirnov), which was non-significant with a probability greater than 0.05. This therefore shows that our variables do follow the normal rules.

The second condition relating to the absence of multi co-linearity of variables:
We verified the lack of correlation between errors (DW = 2), and the absence of multi co-linearity dependent variables 0.3 <VIF <3.3, which therefore allows the feasibility of multiple regressions.

Results
The results of multiple regressions when testing our hypotheses revealed three major overall results. There are as follows:

1st result
The single loop organizational learning process is explained primarily by lived experiences and the competence criteria for theoretical knowledge and know-how. The experience of others, simulations and skills standards of knowledge do not explain the first dimension of a single loop.
2nd result
The organizational learning process in a double loop is explained primarily by lived experiences, the experience of others and the skills criteria for theoretical knowledge, know-how and interpersonal skills, the simulations also do not explain the second dimension double loop.

3rd result
The organizational learning processes triple loop showed non-significant results and therefore it was not adopted by the Textile sector enterprises in Tunisia.

Result 1 of hypothesis test

```
Others experience of crises
Availability of visibly known solutions and minimizing damage

Lived Experience
Evaluation of Crisis and using existing directories

Lived Experiences
Transcription and transfer of knowledge to employees

Theoretical knowledge and know how
Creating a directory of knowledge and setting up crises cells

Theoretical Knowledge
Training members and exchanging knowledge

Interpersonal Skills
Collaboration and team work
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R² = 0.473
Result 2 of the hypothesis test

**Others experience of crises**
Availability of visibly known solutions and minimizing damage

**Lived Experiences**
Evaluation of crisis and use of directories

**Lived Experiences**
Transcription and transfer of knowledge to employees

**Theoretical knowledge and know how**
Creating a directory of knowledge and setting up crises cells

**Theoretical Knowledge**
Training members and exchanging knowledge

**Interpersonal Skills**
Collaboration and team work

Double Loop
Questioning and modifying goals

$R^2 = 0.524$
Now we will outline in more detail the results presented above. In this sense multiple regression tests revealed:

1. The existence of a significant and positive impact of three factors explaining the single loop dimension / maintenance system and error correction. These differing importance factors correspond respectively:
   - The criteria of competence in theoretical knowledge and ‘know-how’ that essentially result in the development of a register of knowledge and skills as well as the establishment and the effective conduct of a crisis unit for managing and anticipating crises to come. Indeed the review of standardized beta coefficient that tells us about the contribution of this factor in the explanation of the first dimension single loop of about 0.976.
   - Experience with real-life crises that represent the evaluation of failures and successes by using existing solutions directories: the standardized beta coefficient is of the order of 0.636.
   - Experience with real-life crises that affect the transcription and knowledge transfer to employees: the recorded standardized beta is around 0.44.

   This first result can be explained by several factors but fundamentally, by the gradual adaptation of an organization to its environment on the basis of its lived experiences, and skills requirements for theoretical knowledge and ‘know how’.

2. The existence of a significant and positive impact of four factors explaining the double loop dimension / questioning and changing objectives. These differing importance factors correspond respectively:
   - The criteria of competence in theoretical knowledge and ‘know-how’ which consist essentially has to develop a register of knowledge and skills as well as to the establishment and the effective conduct of a crisis unit for managing and anticipating crises. The standardized Beta is on the order of 0.354.
Lived experiences of crises that result in the evaluation of failures and successes using existing solutions directories: The standardized beta coefficient is approximately 0.351.

The experiences of others who express themselves through the arrangement of known and visible solutions and the possibility of minimizing crisis damage: The standardized Beta is about 0.330.

The skills criterion for interpersonal skills is based on cooperation and teamwork. The standardized beta is around 0.284.

This second result is explained by the change of strategic objectives and the organizational framework of action on the basis of lived experiences of others and their criteria of theoretical knowledge, ‘know how’ and interpersonal skills.

3- The lack of significant impact of the explanatory variables on the triple loop dimension / questioning of the identity of the rationale to exist as an organization and therefore it is not adopted by Tunisian textile sector.

The third result is explained by the lack of commitment, awareness and creative courage on the part of the textile companies in the discovery of new values, thoughts matrices, management methods etc.

We can therefore confirm that the assumptions H1 and H2, respectively, assume that the experience and competence significantly influence the organizational learning process and has been validated in part by our model on only two dimensions of organizational learning process that is:

The process of single-loop learning / retention system and error correction and the learning process in a double loop challenging goals.

The proposed model was validated on two dimensions of organizational learning processes in single and double loop. The application would therefore vary depending on the situations: the importance of the factors and explanatory variables of post-crisis behavior and types of organizational learning process.

<table>
<thead>
<tr>
<th>Organizational Learning Process Post Crises behavior</th>
<th>Learning Process in a single loop /system maintenance and error correction</th>
<th>Learning Process in a double loop /questioning and modifying goals</th>
<th>Learning Process in a triple loop /questioning identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Experience</td>
<td></td>
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<tr>
<td>Experience of others</td>
<td>No significant impact (-)</td>
<td>Significant impact and positive standardized Beta =0.330 (+)</td>
<td>No significant impact (-)</td>
</tr>
<tr>
<td>Availability of known and visible solutions and minimizing damage</td>
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<tr>
<td>Experience of lived crises</td>
<td>Significant impact and positive standardized Beta=0.636 (+)</td>
<td>Significant impact and positive standardized Beta =0.351 (+)</td>
<td>No significant impact (-)</td>
</tr>
<tr>
<td>Evaluation and use of directories</td>
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<tr>
<td>Experience of lived crises</td>
<td>Significant impact and positive standardized Beta=0.440 (+)</td>
<td>No significant impact (-)</td>
<td>No significant impact (-)</td>
</tr>
<tr>
<td>Transcription and transfer of knowledge to employees</td>
<td></td>
<td></td>
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<tr>
<td>B) Competence</td>
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</tbody>
</table>
| Theoretical knowledge and ‘know how’:
Create a directory of knowledge and set up crises cells | Significant impact and positive standardized Beta =0.976 (+)            | Significant impact and positive standardized Beta =0.354 (+)    | No significant impact (-)                           |
| Interpersonal Skills:                                 | No significant impact (-)                                                | Significant impact and positive standardized Beta =0.284 (+)    | No significant impact (-)                           |
| Collaboration and team work                          |                                           |                                                                |                                                      |
The table below summarizes the results discussed above knowing the colored boxes with a gray filling indicates significant results, and those in white do not reveal the significance of the results.

**Conclusion**

From the results of our research model, this research has allowed us to determine a conceptual model highlighting a typology of the organizational learning process in the post-crisis situation, taking account two major explanatory variables of learning namely: experience and competence.

Furthermore, operationally our analysis has identified two essential axes explaining the choice of organizational learning process and justifying the importance of the explanatory variables of post-crisis behavior. These axes are as follows:

First Axis: The organizational learning process in a simple loop maintains the system and error correction

Second Axis: The organizational learning process in a double loop / questioning and changing objectives.

However, we note that the application or use of these two axes vary according to circumstances and magnitude of the crisis. This study allowed us, although we cannot offer systematic solutions, to make recommendations as to possible actions that can be undertaken in post-crisis situation. This could become more relevant and persuasive to the extent that one might find a repository in other countries in the textile sector under similar circumstances. This is a further line of research to be completed both academically and operationally.

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