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The Impact of Applying Lean Management on Achieving Organizational Innovation in Algerian University Institutions: A Field Study at Mohamed Lamine DebaghineUniversity of Setif 2

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Abstract:

This study aims to determine the impact of applying Lean Management in achieving organizational innovation at Mohamed Lamine DebaghineUniversity of Setif 2. A questionnaire was distributed to a random sample of university professors, as it was found that Mohamed DebaghineUniversity applies the requirements of lean management and adopts the dimensions of organizational innovation, as a result there is an impact of applying lean management in achieving organizational innovation. The study also urged to make comparisons between Mohamed Lamine DebaghineUniversity and other international and local universities in applying lean management and its impact on organizational innovation in order to gain some experiences and practices.

Keywords: Lean Management, Organizational Innovation, Mohamed Lamine Debaghine University of Setif 2.

Introduction:

In the era of rapid change and development, innovation and innovation have become key elements of successful higher education institutions, making them capable of meeting growing challenges. The university environment, which is considered as incubators of thought and talent, requires a special ability to adapt to new changes and trends. Hence, Lean Management concepts emerge as an advanced strategy aimed at enhancing the ability of universities to innovate and continuously improve.

Lean management refers to the ability of institutions to adapt quickly and effectively to changes in the surrounding environment. This concept is based on a set of principles that encourage flexibility, immediate interaction, and improved administrative processes.

The application of lean management in universities requires the adoption of advanced management methods that facilitate decision-making, enhance cooperation between departments, and develop the initiative of human resources. It promotes organizational innovation within universities, where the latter are active centres for the production of knowledge and the generation of new ideas.

Organizational innovation contributes to the development of new processes and methods that meet the needs of students and society. This is a key driver of growth and progress. Therefore, the investment of universities in applying the principles of lean management enables them to enhance their capabilities to develop innovative educational programs and supportive research activities that contribute to meeting the needs of the market.

Through the above, features of the problem under study are revealed, which can be formulated through the main question:

- What is the level of impact of applying Lean Management on achieving organizational innovation in the Algerian university institutions?

From this problem, the following sub-questions can be raised:

1. Does Mohamed Lamine Debaghine University of Setif 2 apply Lean Management requirements?

2. Does Mohamed Lamine Debaghine University of Setif 2 understand the dimensions of Organizational Innovation?
3. What is the level of impact of applying the requirements of Lean Management in achieving organizational innovation at Mohamed Lamine Debaghine University of Setif 2?

Hypotheses of the Study:

1. Mohamed Lamine DebaghineUniversity applies the requirements of Lean Management in the study area.
2. Mohamed Lamine DebaghineUniversity understands the dimensions of organizational innovation.
3. There is a statistically significant effect among the requirements of applying lean management in achieving organizational innovation at Mohamed Lamine Debaghine University of Setif 2.

Chapter One: Theoretical Literature on Lean Management and Organizational Innovation

First: The Concept of Lean Management:

1) Definition of Lean Management:

The interest of researchers and those seeking to discover new management concepts that keep pace with scientific developments has increased. Researchers are racing against time to find new terms. The term ***Lean Management*** is one of the new concepts, and it is a management practice that relies on eliminating losses that result from wasting efforts and resources associated with activities that do not addvalue.

It is based on a management philosophy that focuses on employee commitment and responsibility in participating in the improvement of management and production processes, as well as in solving related problems. Its goal is to enhance the performance of the process as much as possible by utilizing methods, techniques, and practices

[1]. Lean management includes an individual and collective organizational transformation plan to spread an educational system, a lean socio-technical system (belief system), and a change management system.[2]

Rezki has defined it as: "It is the system that organizes work, according to the founders of lean management theories, as they reported that it aims to get rid of waste that leads to reducing the efficiency and performance of business institutions".[3]

And in the same context, ***Ramly*** defined Lean Management as: "A set of actions that must be done correctly in a correct sequence and at the right time to create value for a particular work, in addition to focusing on the principle of respecting procedures and time at work to provide it as required and in a timely manner and obtaining the desired addition with the required quality."[4]

From the previous definitions, we conclude that Lean Management is a modern management philosophy based on rejecting the ideas underlying traditional management in institutions. It is a management system that aims to eliminate waste and loss by applying principles and the utilizing tools that help get rid of non-value-adding activities for employees.

2) Requirements for Applying Lean Management Approach:

The requirements for implementing Lean Management are reflected in the following elements:[5]

a) **Support from Top Management:** The success of a lean management approach depends on the support provided by senior management officials, and the capabilities it offers that contribute to the success of this administrative work. This is done by providing all financial and human resources, moving away from routine work and following the philosophy of lean management in the completion of administrative operations.
b) **Cooperation between Management and Employees:** The lean management method creates an atmosphere of familiarity and cooperation between employees, and this requires the provision of the necessary support from senior management by providing all the elements of the success of the lean management method, subjecting all administrative processes to the principle of participation, working within the group and making decisions collectively.
c) **Focus on Quality and Quantity in Training:**This might be done by following a training policy based on objective foundations in all its aspects, which must be characterized by the following:

- Aligning the institution's training programs with the content of the mechanisms used to eliminate waste.
- Relying on multi-skilled training by time management and enabling the executive employee to perform immediate preventive or post-maintenance operations without relying on others, and enabling the employee to discover quality defects.
- Relying on improvement training courses for employees without exception in order to explain the various forms of waste within the organization.
- **Changing the organizational culture:** To ensure the success of the lean management approach, efforts must be made to change the general culture in administrative work and promote this approach among all employees.[6]

From the above, we find that the lean management method means avoiding waste and practicing continuous improvement, thus shaking the opposite of traditional management, which no longer has the ability to continue and no longer exists in the world of information and technology.

3) **Structuring Principles of Lean Management:** Lean management is based on the following three principles:

   a) **An approach based on Field Intelligence and Teamwork:** To respond to operational problems, agents are most important in identifying solutions. Lean management sets the hierarchy to support those who produce and generate value and thus aims to:

      - Putting management in a position to manage operationally.
      - Develop field intelligence and teamwork.

   b) **Short-Cycle Detection-Based Sequential Approach**: Tangible results emerge quickly: tracking a series of achievements and "small steps", allowing first visible results to be achieved quickly without the need for large investments.
   c) **Continuous Improvement Approach:** Any process that is not subject to improvement loses 3% of operational efficiency annually. As such, lean management should be installed over time in established operating modes.

Lean management in its "soft" version that is based on the principles of group think, placing the management line, putting operators in a position, sharing good practices, and ultimately participating in building targeted systems, effectively meets the goals of improving performance.[7]

4) **The Roleof Lean Management in the Development of Institutions:** Lean management aims to achieve the following:[8]

- ✓ Lean management is a management method that aims to improve the performance of the institution, as this method allows the search for optimal operating conditions by getting employees, equipment and sites to work together in order to add value with minimal waste.
- ✓ The dual goal of lean management is the complete satisfaction of the company's customers (which translates into turnover) and the success of each employee (which translates into motivation and commitment).
- ✓ Waste-free management makes it possible to get rid of all the sources of waste that exist in the company. This applies to service operations within production companies as well as in service companies.

Thus, lean management relies on many practices that contribute to the resilience of the institution as follows:

- Fully meet the needs of internal or external customers, regardless of how these needs evolve, so it is essential to understand what these customers value for doing so, such as using technologies as customer voice and complaint analysis, and user field visits.

- Ensuring that managers and employees no longer have to perform certain tasks that do not bring added value to customers and that burden their activity and thus reduce the time available for value-added tasks.

- The ability to change the type of product or service we offer in just a few minutes, thus having a flexible production capacity, lean management provides different technologies to quickly reconfigure the workstation, for example the SMED-derived technology .

- Develop the company's ability to effectively redesign its products or services based on successes and failures observed in existing products or services.

- The ability of everyone, in their workplace, to know how to act in unexpected situations, so, on the one hand, you must be completely independent in solving problems at your own level, and on the other hand, be able to take initiatives yourself to respond immediately to unexpected events, without having to ask your boss every time, and to develop these capabilities in each employee, the basic basis of lean management is training in the scientific way to solve problems.

Lean Management is therefore an approach that seeks to avoid wasting effort, time and money through an integrated system of professional teamwork, aimed at maximizing production capacity.

Second: The Concept of Organizational Innovation

1- Definition of Organizational Innovation:

The concept of Organizational Innovation is one of the modern concepts in management. It has provided many definitions as follows:

Organizational innovation has been defined as "the generation, acceptance and application of new ideas, processes, products or services".[9]

Organizational innovation is also defined as: "The investment and adoption of individual and collective creations at the level of the institution and its development".[10]

From the above, it can be said that organizational innovation is the adoption of new ideas and behaviors that are applied at the company level, whether it is in the creation of new products or services or technology that is not familiar.

2- Dimensions of Organizational Innovation: They can be summarized as follows:[11]

a. Fluency: The ability of a person to produce a large amount of ideas above the general average within a specified period of time.
b. Authenticity: It is the characteristics most associated with innovation, and it means producing what is unfamiliar, in the sense of coming up with new ideas that were not known before.
c. Flexibility: It is the ability to follow different ways and think differently, and to look at the problem from several dimensions, which is the degree of ease that a person changes a certain position or point of view and not to be intolerant of ideas themselves, and it also means looking at things from several angles.
d. Sensitivity to Problems: The creative person can see a lot of problems in one situation. It means mistakes and shortcomings, and the sense of the problem requires the creator to be able to clearly see the dimensions of the problem, identify them accurately, and understand all the effects that result from them.
e. Ability to Analyze: The innovative person is distinguished by his ability to analyze the elements of things and his understanding of the relations between the elements and his ability to obtain, collect, classify, evaluate and retain information when needed, and he can also reorganize ideas and things according to studied foundations.
f. Balance of Quantity and Quality: There is a hypothesis that says that quantity generates quality, as if a person produces a larger number of ideas, he must produce these ideas in good quality and at a specific time, while there is another hypothesis that says that if a person spends his time giving a large number of ideas, good ideas among them will be few.
g. Risk-taking: It means taking the initiative in adopting modern ideas and methods and searching for solutions to them, and at the same time the individual is able to take the risk resulting from the actions he undertakes and has the willingness to face the responsibilities resulting from it.

3- Stages of Organizational Innovation in the Institution: The organizational innovation process goes through a set of stages, which can be mentioned in the following elements: [12]

a. Attention: The process of innovation begins with attention, or a sense of need, as there must be something that imposes itself.
b. Preparation: It is the collection of information on the topic of the problem that is the focus of the innovator's attention, and here the journey of thinking is planned.
c.Embracing: It is a stage of interaction between the researcher's personality and information, the subject of the research, and the stage of breeding possible solutions.

d. Emergence: The intrinsic idea suddenly emerges, in which he is able to rearrange his ideas to reach the typical solution.

e.Verification: It includes the process of insight into the apparent mind and using the research tools available in the idea that resulted during the sunrise stage, in order to verify its validity and determine the methods of application.

4- The relationship between Lean Management and Organizational Innovation in the Institution:

To enhance the position and effectiveness of universities, they must demonstrate their ability to quickly adapt to changing conditions and challenges. In the context of sustainable development, higher education institutions play a key role in shaping social responsibility, both among students and in the wider community. [13] As for the quality of management in Algerian universities, various elements of planning, organization, and control are already in place, but the universities are not ranked globally. This is either due to the formal application of these elements without spiritual and substantive practices, or because of the lack of political and administrative will to change and improve the level of Algerian universities. Reflecting on the main obstacles and limitations [14] that may hinder the development of a management system in universities[15] would lead to practical solutions, such as the implementation of lean management, which would impact the organizational creativity of university institutions in Algeria.

The administrative methods vary and the schools implemented by the institutions are numerous. Among these methods is lean management, which means soft management and avoiding waste, working on continuous improvement and eliminating the traditional methods used in the institutions, thus possessing the ability to perform administratively superior and characterized by responsiveness. Since lean management is an intellectual methodology that encourages innovation and the generation of new ideas, and the possibility of creating new ways of working and mechanisms that suit the nature and conditions of work. Therefore, lean management has become one of the elements of the continuity of institutions, especially university institutions. Many researchers have studied the relationship between lean management and administrative innovation and have found a correlation between them, such as studying the role of lean thinking practices of human resources management in achieving administrative innovation, for researchers Fairouz, Mokhtar and Zakia.[16]

Chapter Two: Field Study

First: Method and Tools Used in the Study

1) ***Study Approach:***The approachcan be considered as the method followed by the researcher to study a phenomenon, with the aim of identifying its causes and providing solutions to it. In order to achieve the desired objectives, the two researchers relied on the Descriptive Analytical Approach. This approach was based on combining the theoretical study with the field study, in which a questionnaire was distributed to faculty professors at Mohamed Lamine Debaghine University of Setif2.

2) ***Study Audience:***The study audience orcommunity consists of all professors of Mohamed Lamine University, who numbered about 878 professors, distributed on the Faculty of Humanities and Social [17] Sciences, the Faculty of Law and Political Science, the Faculty of Arts and Languages, and the Faculty of Sports.

3) ***Study Sample:*** The random sample was used, where the vocabulary was selected in a way that gives equal opportunities calculated by ***Herbert Arkin***'s equation,[18] which is among the most used formulas in graduate studies, which are as follows:

$$n = \frac{p(1-p)}{\frac{p(1-p)}{N} + \frac{\propto^2}{\sigma^2}}$$

Where **n** is the size of the sample, **N** is the size of the community estimated at **878**, **P** is a probability value ranging from zero (0) to one (1) and takes a value of 0.05 wherever it is found to fix the conditions, and because we do not know the estimate of **P** as most of the time it is not available, so we take the maximum value which is **p(1-p) = 0.25. α** is the percentage of allowed error, which we considered to be within the limits of **(0.05-+)**, **σ** is the standard score corresponding to the confidence coefficient with which the results are generalized **(95%)**, so the standard score is **1.96,** so if the confidence score is **95%**, it is σ^2 estimated to be **(3.8416).**

By calculating the sample size, the result was **267** individual professors at the university under study. The questionnaire was distributed to professors in all colleges, **150** questionnaires were retrieved, and about **117** professors did not respond to the questionnaire.

4) ***Study Tool:*** This study relied on the questionnaire tool, which was designed by the two researchers, and consists of the following:

First Section: Specific to Demographic Data (Gender, Age, Job Experience)
Second Section: It was allocated to the requirements of Lean Management and divided into four (04) dimensions as follows:

- ✓ Dimension of Top Management Support: contains four (04) statements.
- ✓ Dimension of Collaboration between Management and Employees: contains three (03) statements.
- ✓ Dimension of Focus on Training and Development: contains five (05) statements.
- ✓ Dimension of Change in University Culture: contains four (04) statements.

Third Section: It includes the dimensions of organizational innovation, which is divided into four dimensions (Originality, Fluency, Risk-Taking, and Sensitivity to Problems).

5) ***Limits of the Study:*** are as follows:
- Objective Limits: The objective limits of this study are to address lean management as an independent variable and organizational innovation as a dependent variable. This is done through a set of dimensions to measure these variables, which appear in the study variables and methods of measuring them.
- Time Limits: The period during which the data necessary for the study were collected, which was May and June 2024.
- Spatial Limits: represented in the faculties of Mohamed Lamine Debaghine University of Setif 2.
- Human Limits: It was represented in the professors of Mohamed Lamine Debaghine University of Setif 2.

6) **Statistical Methods used in the Study**:

The study relied on the analysis of questionnaire data by the ***SPSS.v.23*** program.

For the purpose of answering the sub-questions, researchers will use descriptive statistics (calculating frequencies and percentages of personal data, arithmetic mean and standard deviation of the statements of the second and third axis), and inferential statistics methods (***Cronbach's Alpha*** to find out the stability of the questionnaire, testing the normal distribution, internal consistency validity using ***Spearman***'s correlation coefficient, structural validity using ***Pearson***'s correlation coefficient, Test T test for one sample to test the first and second hypothesis, and multiple regression coefficient to test the third hypothesis).

First: Stability of the Questionnaire:

To measure the credibility of the questionnaire, the ***Alpha Cronbach*** equation was used to calculate the reliability coefficient of the questionnaire, where the stability test was conducted on all paragraphs of the questionnaire and on its component parts, and the results were as follows:

Table No. (01): The value of Cronbach's alpha stability coefficient

Description	*The Questionnaire as a whole*
Stability Coefficient Alpha Cronbach	**0.779**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

From the table, we note that the stability coefficients for the axes of the study are acceptable and greater than the statistically acceptable ratio of **0.60**, as the stability coefficient (total) for all paragraphs of the questionnaire was **0.779**, which is a large stability ratio that can be relied upon in the field study.

Second: Validity of the Internal Consistency of the Questionnaire Paragraphs:

1. **Internal Validity of the Second Section Paragraphs:** Table No. (02) shows ***Spearman***'s correlation coefficient between each paragraph of the second section (the Requirements for the Application of Lean Management) and the total degree of the axis, which shows that the correlation coefficients shown are

significant at the level of significance **0.05**, and thus the paragraphs of the section are considered true to what they were developed to measure.

Table No. (02): Internal validity of the paragraphs of the second section

No.	*Statement*	*Spearman's correlation coefficient*	*Sig*
	Top Management Support		
1	The university administration provides all the material, human, finance resources, and time to ensure the success of applying the approach.	**0.051**	**0.535**
2	The university administration follows a clear and specific methodology to organize the workplace of faculties	**0.303****	**0.000**
3	The university provides a comprehensive, sophisticated and effective information system	**0.333****	**0.000**
4	The university provides an electronic platform for the exchange of knowledge between the various parties in the university (professor, administration, student)	**0.389****	**0.000**
	Cooperation between Management and Employees		
5	Support and assistance is provided to employees by their immediate superiors	**0.179***	**0.029**
6	Professors receive adequate support from colleagues	**0.297****	**0.000**
7	The administration consults you to discuss the problems of students that occur within the university to reach solutions to them.	**0.591****	**0.000**
	Focus on Quality and Quantity in Training		
8	The university provides opportunities for all professors to obtain a training	**0.582****	**0.000**
9	The university provides professors and employees with training programs that affect disciplines that register a shortage	**0.643****	**0.000**
10	The university improves management skills by preparing training courses for department heads and staff.	**0.582****	**0.000**
11	The university evaluates the performance of head of departments in administrative work	**0.497****	**0.000**
12	The university seeks to improve activities and processes by adopting new programs and methodologies	**0.504****	**0.000**
	Change in University Culture		
13	The university spreads a culture of eliminating waste and loss from activities and continuous improvement	**0.481****	**0.000**
14	The university has the ability to use computing and make continuous improvements and updates to software	**0.317****	**0.000**
15	The university works to raise awareness among professors and employees about the importance of general and specialized culture	**0.383****	**0.000**
16	Teachers have multiple cultures that enable them to change when needed	**0.393****	**0.000**

** The correlation is statistically significant at a significance level of 0.01

* The correlation is statistically significant at a significance level of 0.05

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

2. **Internal Validity of the Third Section paragraphs:** Table No. (03) shows **Spearman's** correlation coefficient between each paragraph of the third section (Organizational Innovation) and the total degree of the axis, which shows that the correlation coefficients shown are significant at the level of significance of **0.05**, and thus the paragraphs of the section are considered true to what they were developed to measure.

Table No. (03): Internal validity of the paragraphs of the third section

No.	*Statement*	*Spearman's correlation coefficient*	*Sig*
	Originality		
17	The university encourages the production of new ideas	**00.564****	**0.000**
18	University professors are skilled in discussion and dialogue and have the ability to be innovative	**0.718****	**0.000**
19	University offers opportunities to present new innovative projects	**0.669****	**0.000**
20	University offers solutions whose results last for a long time	**0.440****	**0.000**

	Fluency		
21	University administration appreciates the innovative employee, professor and student	**0.621****	**0.000**
22	University administration gives opportunities for students to give new ideas	**0.682****	**0.000**
23	University proposes quick solutions to face problems	**0.586****	**0.000**
	Risk-taking		
24	University management accepts failure as the experience that precedes success	**0.585****	**0.000**
25	Heads of department have the ability to defend their ideas	**0.542****	**0.000**
26	University administration bears responsibility for its work and is willing to bear the results	**0.526****	**0.000**
	Sensitivity to Problems		
27	University management develops ways to avoid problems at work	**0.485****	**0.000**
28	University administration plans to face work problems that can occur	**0.596****	**0.000**
29	University administration can predict problems before they occur	**0.529****	**0.000**

** The correlation is statistically significant at a significance level of 0.01

* The correlation is statistically significant at a significance level of 0.05

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

Third: Validity of the Structural Consistency of the Questionnaire:

The validity of the structural consistency shows the extent to which each of the axes of the study tool (the second section: Requirements for the Application of Lean Management", and the third section: Organizational Innovation) are related to the total degree of the questionnaire paragraphs combined. This is by calculating the ***Pearson*** correlation coefficient, as shown in the following table:

Table No. (04): The Structural Consistency of the Second and Third Sections and the Total Score of the Questionnaire

Section	*Correlation coefficient*	*Moral significance*
Requirements of Lean Management	**0.0675****	**0.000**
Organizational Innovation	**0.832****	**0.000**

** The correlation is statistically significant at a significance level of 0.01

* The correlation is statistically significant at a significance level of 0.05

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

Through the above table, it is clear that ***Pearson***'s correlation coefficients are statistically significant, and from it all axes are considered honest and consistent for what they are set to measure.

Fourth: Normal Distribution Test

The ***Kolmogorov-Smirnov*** test is used to find out whether the data follow normal distribution or not, and it is necessary in the case of hypothesis testing because most parametric tests require that the data distribution be normal.

Table No. (05): Testing Normal Distribution of all the Axes of the Study

Item	*z-value*	*Level of significance Sig*
All Axes	**0,064**	**0.200**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

From the above table, it is clear that the results of the "***Kolmogorov-Smirnov***" test, where the level of moral significance was estimated at **0.200**, which is greater than **0.05**, which explains that the data follow the normal distribution, so the parametric tests must be used.

Fifth: Description and Diagnosis of the Study

1. Demographic Data Presentation and Analysis:

The next table shows the characteristics of the sample members as follows:

Table No. (06) Distribution of Sample Members

Variables		*Frequencies*	*Percentage %*
Gender	Men	51	34

	Women	99	66
	Total	**150**	**100%**
Age	Less than 30 years old	10	6.7
	31 to 40 years old	73	48.7
	41 to 50 years old	67	44.7
	Total	**150**	**100%**
University Level	Master's	37	24.7
	PhD (LMD)	48	32
	Doctorate of Science	65	43.3
	Total	**150**	**100%**
Experience Years	Less than 5 years	9	6
	From 5 to 10 years	46	30.7
	More than 10 years	95	63.3
	Total	**150**	**100%**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

- ✓ The majority of the respondents are of the female gender (women), that is, **66%**, followed by the male gender in second place, estimated at **34%**. This is due to the preference of females to work in the education and higher education sectors.
- ✓ We note from the table that the majority of the respondents are between the ages of 31 to 40 years old and this is about **48.7%,** followed by the category of 41 to 50 years old estimated at **44.7%,** followed by the third category (less than 30 years old) at **6.7%.**
- ✓ We note from the table that the majority of the respondents from the PhD Level Doctorate of Science were estimated at **43.3%,** followed by the PhD LMD Level estimated at **32%**, followed by a weak percentage estimated at **24.7%** of the respondents with a Master's level.
- ✓ It is noted from the above table that the respondents have significant job experience, as it was estimated that **63.3%** of the respondents had more than 10 years of experience, and **30.7%** estimated their experience from 5 to 10 years, while **6%** estimated their experience to be less than 10 years, which indicates that the respondents have experience in the teaching job at the university.

2. Presentation and Analysis of the Second Section Data:

This part of the questionnaire aims to present and analyze the results of the data of the second section related to the "Requirements for the Application of Lean Management at the University under study", and this is through the calculation of the arithmetic mean and standard deviation, so the results were as shown in the following table:

Table No. (07): Approval Degrees of the Application Requirements of Lean Management

Hypothetical Average = 3

Description	*Arithmetic Mean*	*Standard Deviation*	*Moral Significance*	*Relative Importance*	*Decision*
Arithmetic mean and standard deviation of Top Management Support	**4.1100**	**0.82050**	**0.000**	**2**	**High**
Arithmetic mean and standard deviation of the cooperation between management and employees	**4.4644**	**0.47596**	**0.000**	**1**	**High**
Arithmetic mean and standard deviation of Focus training, both qualitatively and quantitatively	**4.0907**	**0.71414**	**0.000**	**3**	**High**
Arithmetic mean and standard deviation of Change in the Culture of the University	**3.9467**	**0.73991**	**0.000**	**4**	**High**
General arithmetic mean and general standard deviation of the section of Requirements for the Application of Lean Management	**4.1296**	**0.43059**	**0.000**		**High**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

Table No. (07) includes the analysis of the second section of "Requirements for the Application of Lean Management", and the number of questions included in this axis was 16 questions, where the general mean

arithmetic average of this axis reached **4.1296,** which is a high acceptance score, and the general standard deviation reached **0.43059**, which is weak, which indicates that the answers of the respondents are homogeneous for the second section, and this is due to:

The arithmetic mean of the dimension of cooperation between the administration and the professors, which came in the first rank, was about **4.4644**, which is with a high acceptance score, with a standard deviation of **0.47596**, which is weak, which indicates the lack of dispersion of the respondents' answers, followed by the second rank after the support of top management with an arithmetic mean of **4.1100,** and a standard deviation of **0.82050**, and in the third rank, the focus on training with an arithmetic mean of **4.0907**, which is with a high acceptance score, and a standard deviation of **0.71414**, which is weak, and in the fourth rank, the dimension was the change in culture with an arithmetic mean of **3.9467**, which is high, and a standard deviation of **0.73991**, which is weak. In general, we conclude that Mohamed Lamine DebaghineUniversity implements the requirements of Lean Management, and this explains that the university in question is working to clearly define its objectives and works to direct efforts and focus on desired results, as well as adopting an organizational culture that encourages cooperation and open communication with professors and specialists from outside the university, and works to provide training for faculty members and administrators, and works to provide courses to enhance skills associated with lean management such as flexible planning, critical thinking, as well as possessing software that facilitates the work of the professor and management, and the university in question has mechanisms for evaluating Perform professors periodically and analyze results to make decisions about improving processes and policies.

3. Presentation and Analysis of the Third Section Data:

This part of the questionnaire aims to present and analyze the results of the third section data related to Organizational Innovation, by calculating the arithmetic mean and standard deviation as shown in the following table:

Table No. (08): Approval Degrees of Organizational Innovation

Hypothetical Average = 3

Description	*Arithmetic Mean*	*Standard Deviation*	*Moral Significance*	*Relative Importance*	*Decision*
Arithmetic mean and standard deviation of Authenticity	**3.9267**	**1.00274**	**0.000**	**2**	**High**
Arithmetic mean and standard deviation of Fluency	**3.8133**	**0.92644**	**0.000**	**4**	**High**
Arithmetic mean and standard deviation of Risk-taking	**3.8289**	**1.05178**	**0.000**	**3**	**High**
Arithmetic mean and standard deviation of Sensitivity to Problems	**4.0667**	**0.76266**	**0.000**	**1**	**High**
Arithmetic mean and standard deviation of Organizational Innovation	**3.9103**	**0.70532**	**0.000**		**High**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

Table No. (08) includes the analysis of the third section of "**Organizational Innovation**", which included the number of 13 questions, where the general arithmetic mean of this axis reached **3.9103,** which is a high acceptance score, and the general standard deviation reached **0.70532,** which is weak, which indicates that the answers of the respondents are homogeneous for the second section, and this is due to:

The arithmetic mean of the sensitivity of the problems, which came in first place with about **4.0667** and a high acceptance tower, with a standard deviation of **0.76266,** which is weak, which indicates that the respondents' answers were not dispersed, followed by the second place after originality with an arithmetic mean of **3.9267**, which is high, and a standard deviation of **1.00274,** and in third place, the risk-taking with an arithmetic mean of **3.8289**, which is a high acceptance degree, and a standard deviation of **1.05178.** In fourth place, the fluency was with an arithmetic mean of **3.8133,** which is high, and a standard deviation of **0.92644**, which is weak. On the whole, we conclude that the professors of Mohamed Lamine Tanning University understand the importance of Organizational Innovation. This can be explained that the latter contributes to the creation of a supportive and encouraging educational environment for the professor and workers to feel that they have solutions to problems, and that they are creative and able to provide plans for problems without their occurrence, as well as the teachers' sense of motivation to express their ideas and experiences, which leads to the strengthening of initiative and innovation among students.

From the above, we conclude that the university administration understands the importance of organizational innovation as an essential and vital element to enhance the quality of education and research and increase interaction within the academic community, which contributes to achieving the strategic objectives of the university and staying at the forefront of educational institutions.

Sixth: Testing the Study Hypotheses:

1- Testing the First and Second hypothesis:

In this case, the Student's T-test for a single sample will be used to compare the overall average of the responses, i.e., the total mean, with the hypothetical mean (3) at a significance level of **5%.** It is referred to as the One Sample T-test according to **SPSS.v23.** The decision rule for testing this hypothesis is: **"The hypothesis is accepted if the calculated T-value is greater than the tabulated T-value and is statistically significant if the significance level (sig) is less than 5%".** From the Student's T-distribution table, the tabulated T-value was extracted at a **0.95** probability level, which was estimated at 1.9760 with 149 degrees of freedom. The following table shows the results of this test:

Table No. (09): Testing the first and second hypotheses

Hypothetical Average = 3								
Hypothesis	Calculated T-value	Tabled T-value	Overall mean of responses	Freedom Degrees	Level of significance Sig	Difference between means	Confidence level (95%)	
							Minimum Value	Maximum Value
First	**32.129**	**1.9760**	**4.1296**	**149**	**0.000**	**1.12958**	**1.0601**	**1.1991**
Second	**15.806**	**1.9760**	**3.9103**	**149**	**0.000**	**0.91026**	**7965**	**1.0241**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

It is clear from the above table that the level of Moral Significance sig was estimated at **0.000**, which is less than the level of moral significance **0.05 (5%)**. The calculated value of (T), which was estimated at **32.1293,** is greater than the tabular value of (T), which was estimated at **1.9760**. According to the decision rule adopted in testing this hypothesis, it can be said that: "Mohamed Lamine Debaghine University in the study applies the requirements of Lean Management, in the sense of accepting the first hypothesis. The table also shows that the difference between the two means of calculating the answers of the respondents in the institutions under study is completely less than the hypothetical average estimated at 3.

The level of moral significance Sig was estimated at **0.000**, which is less than the level of moral significance **0.05 (5%)**. The calculated value of (T), which was estimated at **15.806**, is greater than the tabular value of (T), which was estimated at **1.9760**. According to the decision rule adopted in testing this hypothesis, it can be said that: "The University of Mohamed Lamine Debaghineunder study understands the dimensions of Organizational Innovation", meaning the acceptance of the second hypothesis. The table also shows that the difference between the two means of calculating the answers of the respondents in the institutions under study is completely less than the hypothetical average estimated at 3.

2- **Testing the Fourth Hypothesis:**

Hypotheses were tested using the Multiple Regression Analysis to determine the impact of the independent variable Lean Management with its four requirements (supporting top management, cooperation between management and employees, focus on training, change in the university culture), and the dependent variable Organizational innovation, and Table No. (10) :

Table No. (10): The Multiple Regression Analysis of the Study Variables

Dependent variable	*Independent Variables*	R^2	*F Value*	*15SigF*	*B*	*T value*	*SigT*
Organizational Innovation	Top Management Support	**0.085**	**3.350**	**0.012[b]**	**0.073**	**3.953**	**0.000**
	Cooperation between Management and Employees				**0.137**	**1.031**	**0.002**

	Focus on Training	**0.144**	**0.984**	**0.034**
	Change in University Culture	**0.282**	**1.507**	**0.001**

Source: Made by the two researchers based on the outputs of the SPSS.v.23 Program.

The results of the multiple regression model showed that the regression model is significant through the F value of **3.350** in significance **0.012,** which is smaller than the significance level **0.05**, and the results explain that the independent variables explain **8.5%** of the variation in organizational innovation , given R^2 the coefficient of determination. The value of B, which shows the relationship between Organizational Innovation and support of top management at a value of **0.073**, which is statistically significant, as this can be deduced from the value of T and the associated moral significance, which is estimated at **0.000**, which is less than **0.05**, which confirms that there is a statistically significant effect between supporting top management and achieving organizational innovation. The value of B for the cooperation between the administration and professors came with a value of **0.137**, which is statistically significant, as this can be deduced from the value of T and its associated significance, which is estimated at **0.002**, which is less than the significance level of **0.05**. This confirms that there is a statistically significant effect between cooperation between the administration and workers and achieving organizational innovation. The value of B for the focus on training came with a value of **0.144**, which is statistically significant, as this can be deduced from the value of T and its associated significance, which was estimated at **0.034**, which is less than **0.05**, which means that there is a statistically significant effect between training and achieving organizational innovation. The value of B for the change in the culture of the university was **0.282**, which is statistically significant, as this can be deduced from the value of T and its associated significance, which was estimated at **0.001**, which is less than **0.05**, and means that there is a statistically significant effect between the change in the university culture and the achievement of organizational innovation at the university under study. From the above, we conclude that there is a statistically significant effect at the level of significance (**$\alpha \leq 0.05$**) between Lean Management and achieving Organizational Innovation at Mohamed Lamine Debaghine University of Setif 2, and therefore the third hypothesis is correct. The multiple regression equation can be written as follows:

Organizational Innovation = (2.470) + 0.073* Top Management Support **+ 0.137*** Cooperation between Management and Employees **+ 0.144 *** Focus on Training **+ 0.282*** Change in the Culture of the University.

Conclusion:

Lean Management is a methodology that helps university institutions improve their performance and enhance their outputs. Organizational Innovation is the corner stone of the success of these institutions, which contributes to enhancing the culture of innovation and improving their operations, and adopting new ideas among professors and students. This lies through the requirements of lean management that works to achieve organizational innovation, which works to improve interaction between teams and cooperation, which leads to the creation of a more dynamic and enabling work environment.

Results of the Study:

The study reached a set of results, which are presented as following:

1. The study concluded that the university in question has requirements for the application of Lean Management, which is represented in (supporting senior management, cooperation between management and employees, focus on training, and change in the culture of the university).
2. The study finds that Mohamed Lamine Debaghine University understands the dimensions of Organizational Innovation (originality, fluency, risk-taking, and sensitivity to problems).
3. The study concluded that there is a positive impact between the application of lean management and the achievement of organizational innovation at Mohamed Lamine Debaghine University of Setif 2.

Recommendations:

Through the findings of the study, the two researchers recommend the following:

a. The need to make the most of the requirements of applying Lean Management by Algerian universities, which contributes to achieving organizational innovation within their departments and between professors and students.

b. The need to encourage open cooperation that contributes to enhancing the culture of communication between academic and administrative teams to facilitate the exchange of ideas and views between them.

c. Encouraging the use of new ideas presented by heads of department, professors and the team of business incubators located in universities.
d. Intensifying training courses for professors and administrators to acquire new trends and developments in research and projects, in cooperation with external institutions to benefit from external expertise in the field of lean management.
e. Stimulate organizational innovation by creating spaces or platforms dedicated to innovation, to enable the student and staff to collaborate and choose new ideas.

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