

Administrative Leadership Styles and Their Role in the Technological Change in University Libraries: A Field Study at the University Library of Algiers 1 - Ben Youcef Ben Khedda

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Abstract: The study aims to identify the role of administrative leadership styles (autocratic, democratic, bureaucratic, laissez-faire, transactional, and transformational) in technological change in Algerian university libraries. This was conducted at the University Library of Algiers 1 - Ben Youcef Ben Khedda. The study relied on the use of a questionnaire as the primary tool for data collection, which was analyzed using the SPSS statistical package. The study sample consisted of 22 librarians. The study found that the most commonly used leadership style was the democratic style, which encourages employees to think innovatively and actively participate in the implementation of new technologies. Additionally, the transformational leadership style creates an ideal psychological environment to support technological change in university libraries.

Keywords: Administrative leadership, leadership style, technological change, university libraries, University of Algiers 1

المخلص: تهدف الدراسة إلى التعرف على دور أنماط القيادة الإدارية (الاستبدادية والديمقراطية والبيروقراطية وعدم التدخل والمعاملات والتحولية) في التغير التكنولوجي في المكتبات الجامعية الجزائرية. تم إجراء ذلك في المكتبة الجامعية بالجزائر العاصمة 1 - بن يوسف بن خدة. اعتمدت الدراسة على استخدام الاستبيان كأداة أساسية لجمع البيانات ، والتي تم تحليلها باستخدام

تألفت عينة الدراسة من 22 من أمناء المكتبات. وجدت الدراسة أن SPSS. الحزمة الإحصائية أسلوب القيادة الأكثر استخداما هو الأسلوب الديمقراطي ، والذي يشجع الموظفين على التفكير بشكل مبتكر والمشاركة بنشاط في تنفيذ التقنيات الجديدة. بالإضافة إلى ذلك ، يخلق أسلوب القيادة التحويلية بيئة نفسية مثالية لدعم التغيير التكنولوجي في مكتبات الجامعات. الكلمات المفتاحية: القيادة الإدارية، أسلوب القيادة، التغيير التكنولوجي، المكتبات الجامعية، جامعة الجزائر 1

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1. Introduction

In light of rapid technological advancements, university libraries face significant challenges related to adopting new technologies to meet the needs of users and achieve the highest levels of efficiency in service delivery. Technological change in libraries has become a necessity to improve access to information and enhance the efficiency of operations and services. However, the implementation of technological change in university libraries requires more than just providing technological resources; it needs effective administrative leadership to guide and motivate staff and facilitate the change process in alignment with the library's goals.

There are various administrative leadership styles, each having a different impact on the change process. Leadership plays a pivotal role in the success or failure of technological change in university libraries, especially in the context of Algerian university libraries, which face unique challenges in terms of resources and resistance to change.

1.1. Problem Statement:

Algerian university libraries face significant challenges in adapting to rapid technological change to improve service quality. The success of this change is linked to the effectiveness of administrative leadership in addressing the demands of change. According to Kotter's study (1996), the research focuses on the role of administrative leadership in overcoming the challenges faced by Algerian university libraries. Despite the growing recognition of the

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importance of technology in improving the performance of university libraries, there is a clear gap in studies that examine the impact of different leadership styles in facilitating this change. Therefore, the main question of this research is:

What is the relationship between leadership styles and technological change in the University Library of Algiers 1?

1.1.1. Study Questions:

- Is there a statistically significant relationship between the autocratic leadership style and the process of technological change in the university library?
- Is there a statistically significant relationship between the democratic leadership style and technological change in the university library?
- Is there a statistically significant relationship between the laissez-faire leadership style and technological change in the university library?
- Is there a statistically significant relationship between the bureaucratic leadership style and the process of technological change in the university library?
- Is there a statistically significant relationship between the transactional leadership style and technological change in the university library?
- Is there a statistically significant relationship between the transformational leadership style and technological change in the university library?

1.2. Hypotheses:

Before starting the study of this topic, we used the following hypotheses, which can be considered as temporary answers to the above questions.

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- There is a statistically significant relationship between the autocratic leadership style and the process of technological change in the university library.
- There is a statistically significant relationship between the democratic leadership style and technological change in the university library.
- There is a statistically significant relationship between the laissez-faire leadership style and technological change in the university library.
- There is a statistically significant relationship between the bureaucratic leadership style and the process of technological change in the university library.
- There is a statistically significant relationship between the transactional leadership style and technological change in the university library.
- There is a statistically significant relationship between the transformational leadership style and technological change in the university library.

The introduction of the article should contain an appropriate introduction to the topic, followed by a statement of the research problem, setting appropriate hypotheses, as well as determining the research objectives and methodology.

1.3. Study Objectives:

This study aims to achieve the following objectives:

- To identify the nature of leadership styles used in the university library.
- To identify the leadership styles that contribute to the process of technological change in university libraries.
- To understand the extent to which leadership styles impact the process of technological change in the university library.

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1.4. Study Model:

We have designed a study model based on the study variables, through which we build a representation of the relationship between administrative leadership styles as an independent variable and the technological change process as a dependent variable.

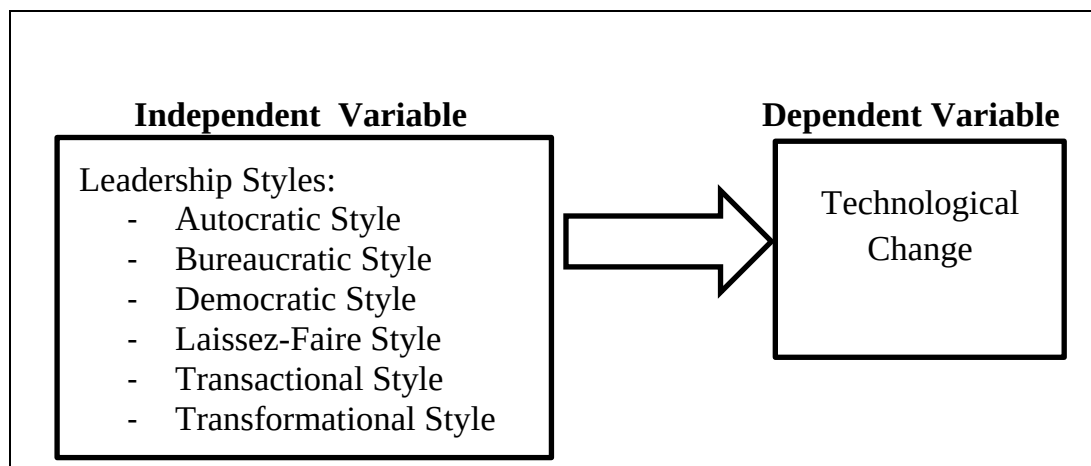


Figure 1: Study Model

2. Theoretical Framework of the Study:

2. 1. University Libraries

A university library is defined as a library or a group of libraries established, funded, and managed by universities to provide information and various library services to the academic community, including students, faculty, and administrative staff, as well as the local community. There may be one central library in the university, or there could be a central library along with several branch libraries or college libraries, and there could also be a library network.

2.2 Administrative Leadership:

2.2.1 Definition of Administrative Leadership:

Leadership is a process aimed at influencing the activities of individuals and groups, guiding human behavior within an organization to achieve management objectives. Since administrative leadership is closely related to

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change programs, and the success of the change process depends on the efficiency of leadership methods, a successful administrative leader is one who possesses a good understanding of individual behaviors and how to best deal with them. (Mu'taz, 2014)

Leadership is the ability to influence others and guide their behavior to achieve common goals.

2.2.2 Leadership Styles:

Leadership styles vary and differ according to the organization, institution, personalities, tools, roles, and situations. Each leadership style has its characteristics that distinguish it from others. Various studies have attempted to differentiate between them, though they may vary in some aspects and agree in others, leading to overlaps. A leader may adopt more than one style, though they may tend toward one leadership behavior that defines them. This will be clarified below:

2.2.2.1. Autocratic Style:

In this style, all authority is concentrated in the hands of the leader. Subordinates are required to be fully obedient, and any violation of orders is considered a challenge to the leader, with little tolerance for mistakes made by them. The leader focuses mainly on achieving set goals and issuing instructions. (Abdul Rahman Al-Sayar, p. 46)

2.2.2.2. Bureaucratic Style:

This leadership style focuses on adherence to laws, regulations, and formal procedures, ensuring their implementation. It relies on rational legal authority, with the leader holding formal authority derived from their position in the organizational structure. (Weber, 1947)

2.2.2.3. Democratic Style:

This leadership style focuses on subordinates. The leader consults with subordinates and involves them in solving problems and making decisions. It depends on human relationships, which helps create a competitive environment and motivates employees to exert more effort for better results.

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2.2.2.4. Laissez-Faire Style:

This leadership style is characterized by granting complete freedom to subordinates in planning and execution. The leader's role is limited to providing information or answering inquiries. (Shawish, 1993)

2.2.2.5. Transactional Style:

Transactional leadership directs employees' efforts positively through tasks, rewards, and incentive systems. This style has the ability to satisfy employees as a means of improving productivity.

2.2.2.6. Transformational Style:

One of the leadership styles arising from scientific progress and technological development is the transformational leadership style, which is distinguished by its high capacity to lead an organization in facing modern challenges and developments. It influences subordinates' behaviors and enhances their creative abilities by providing opportunities and encouraging them to confront the problems and difficulties faced by their organizations. (Mohamed, 2010)

Transformational leadership aims to create change, not maintain the status quo.

2.3 Technological Change:

Technological change is the process of development and change in the technologies, tools, equipment, and software used in various fields such as industry, commerce, communications, medicine, entertainment, and more. Technological change involves improving efficiency, productivity, accelerating processes, enhancing product and service quality, increasing profitability, and saving time and effort. It always requires updating knowledge, skills, and experience needed to benefit from new technologies and apply them effectively. It also demands proper management of technological change to define goals, plan processes, train employees,

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manage risks, and control costs. The fields of technological change are determined by the competitive pressures faced by organizations or the requirements of innovation, directing organizations toward technological change related to devices, computers, and various equipment and methods used to produce goods or services.

3. Field Aspect of the Study:

3.1 Study Areas:

- **Spatial Domain:** The study was conducted at the university library of Algiers 1, Ben Youcef Ben Khedda.
- **Human Domain:** The study involved the library staff members.
- **Time Domain:** The field study lasted for three months, from the beginning of June 2024 until the end of September 2024, during which the survey forms were distributed and collected.

3.2 Research Methodology and Tool:

3.2.1 Study Methodology:

The most important step in scientific research is determining the methodology. For this study, the descriptive analytical method was used, as it is suitable for identifying leadership styles and their impact on the technological change process in university libraries.

3.2.2 Study Tool:

The researcher used a questionnaire as the primary research tool, which was distributed electronically. The questionnaire consisted of three main sections:

- The first section covered personal data and included five questions.
- The second section addressed administrative leadership styles and contained 21 items.
- The third section focused on technological change and included 18 items.

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3.2.3 Study Sample:

The study population consisted of library staff at the University of Algiers 1, who hold positions in library management. The total number of participants was estimated to be 25 staff members in the position of assistant librarian or higher. A total of 22 electronic forms were retrieved. The following table shows the distribution of the sample members according to personal variables.

Table 1: Statistical Description of the Personal Characteristics of the Study Sample

Study:

Variable	Categories	Frequency	Percentage (%)	Total
Gender	Male	6	27.27	22
Age	Female	16	73.73	
	30-35 years	4	18.18	
	36-40 years	1	4.54	
	41-45 years	9	40.90	
	46-50 years	4	18.18	
	Over 50 years	4	18.18	
Degree	Higher Technical Diploma in Documentation and Archiving	3	13.63	
	Applied Studies Certificate (DEUA)	2	9.09	
	Bachelor's in Library Science	9	40.90	

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Variable	Categories	Frequency	Percentage (%)	Total
	Master's in Library Science	7	31.81	
	PhD	1	4.54	
Rank	Assistant Librarian	5	22.72	
	Library Attaché M1	4	18.18	
	Library Attaché M2	8	36.36	
	Library Conservator	4	18.18	
	Head of Conservators	1	4.54	
Years of Experience	6-10 years	4	18.18	
	11-15 years	6	27.27	
	16-20 years	3	13.63	
	21-25 years	4	18.18	
	26-30 years	3	13.63	
	Over 30 years	2	9.09	

Source: Prepared by the researcher based on the responses from the study sample and SPSS outputs.

From Table 1, it is evident that the sample of the study is predominantly female, with 73.73%. Also, 40.90% of the participants are between the ages of 41 and 45. Regarding educational qualifications, the highest degree achieved was the Ph.D., but it was represented by only one participant, while the most common qualifications were the Bachelor's degree in Library Science (40.90%) followed by the Master's degree (31.81%). This indicates that the majority of the librarians at the University of Algiers 1 are highly educated, which positively impacts the quality of work and tasks performed. As for job ranks, more than half of the sample holds senior ranks, with the highest percentage in the rank of Library Attaché level 2 (36.36%) and

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Conservators (18.18%). Regarding years of experience in the library, more than 80% have more than 10 years of work experience. This means that the library has a workforce with considerable experience and skills, which contributes to the successful implementation of technological change through their accumulated expertise.

3.3. Analysis of the Sample's Responses on the Study's Dimensions:

3.3.1. Validity and Reliability of the Questionnaire:

Validity and reliability are among the most important characteristics that determine the quality of the measurement tool. To test the validity of the tool, the questionnaire was presented to specialized professors, and some items were revised and added, resulting in the final version. To measure the reliability of the questionnaire, Cronbach's Alpha coefficient was used. The results were as follows:

Table 2: Cronbach's Alpha Reliability Coefficient

Dimension	Number of Items	Reliability Coefficient
Administrative Leadership	21	0.768
Technological Change	18	0.958
Overall Reliability	39	0.924

From Table 2, we observe that the reliability coefficient for both dimensions is high, indicating stable dimensions. The overall reliability of the questionnaire is 0.924, which is very high (close to 1), reflecting a high level of stability for the questionnaire.

Table 3: Ranking of Administrative Leadership Styles

No .	Leadership Style	Mean	Standard Deviation	Degree	Relative Importance Index (RII)	Level	Rank
01	Autocratic Style	2.69	0.72	Neutral	0.538	Medium	6
02	Democratic Style	3.74	0.66	Agree	0.748	High-Medium	3
03	Laissez-Faire Style	2.87	0.72	Neutral	0.574	Medium	5
04	Bureaucratic Style	3.32	0.67	Neutral	0.664	High-Medium	4
05	Transactional Style	4.01	0.58	Agree	0.802	High	2
06	Transformational Style	4.30	0.64	Strongly Agree	0.86	High	1

Source: Prepared by the researcher based on the responses from the study sample and SPSS outputs

Based on the analysis of Table 3, which ranks the administrative leadership styles, the **transformational style** is ranked first with the highest level of importance (RII = 0.86) and a mean of 4.3, indicating "Strongly Agree" on the Likert scale. It is followed by the **transactional style** with a high level of importance (RII = 0.802) and a mean of 4.01, indicating "Agree." The **democratic style** is ranked third, with a high-medium level of importance (RII = 0.748) and a mean of 3.74, indicating "Agree." The **bureaucratic style** is ranked fourth, with a high-medium level of importance (RII = 0.664) and a mean of 3.32, indicating "Neutral." The **laissez-faire style** is ranked fifth,

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with a medium level of importance ($RII = 0.574$) and a mean of 2.87, indicating "Neutral." Finally, the **autocratic style** is ranked sixth, with a medium level of importance ($RII = 0.538$) and a mean of 2.69, indicating "Neutral."

The results show that the sample members prefer leadership styles centered around interaction and collaboration, such as the transformational and transactional styles, while they consider authority- and control-centered styles, such as the autocratic style, less important.

The results of the leadership styles in libraries can be interpreted from a psychological perspective. The preference for the transformational style in first place reflects the psychological need for professional development and recognition in an intellectual work environment, as well as fulfilling the drive for creativity and innovation among library staff. The transactional style in second place indicates the importance of meeting needs for job security and material and moral appreciation. The democratic style in third place aligns with the educational and cultural level of the staff and their need for participation in decision-making. The bureaucratic style ranked in the middle reflects a moderate need for organization while avoiding stifling creativity. Finally, the laissez-faire and autocratic styles reflect a psychological rejection of chaos and authoritarianism in a knowledge environment that requires a balance between flexibility and organization. These results highlight the psychological and professional maturity of library staff, emphasizing the importance of adopting leadership styles that consider psychological and motivational aspects and respect the professional identity of staff in an evolving knowledge environment.

3.3.2. Hypothesis Testing:

Alternative Hypothesis (H1):

1. There is a statistically significant correlation between the autocratic style and the technological change process.
2. There is a statistically significant correlation between the democratic style and the technological change process.
3. There is a statistically significant correlation between the laissez-faire style and the technological change process.
4. There is a statistically significant correlation between the bureaucratic style and the technological change process.
5. There is a statistically significant correlation between the transactional style and the technological change process.
6. There is a statistically significant correlation between the transformational style and the technological change process.

Table 4: Pearson Correlation Test Results

Hypothesis	Pearson Correlation	Sig.	Statistical Significance
Hypothesis 1	0.139	0.536	Not Significant
Hypothesis 2	0.436	0.042	Significant
Hypothesis 3	0.002	0.995	Not Significant
Hypothesis 4	0.098	0.663	Not Significant
Hypothesis 5	0.332	0.131	Not Significant
Hypothesis 6	0.610	0.003	Significant

Hypothesis 1: From Table 4, we observe that the Pearson correlation value is 0.139, which is not statistically significant ($\text{sig} = 0.536 > 0.05$). Therefore, we accept the null hypothesis (H_0), meaning there is no statistically significant correlation between the autocratic style and the technological change process. The results show no significant correlation between the autocratic style and technological change ($r = 0.139, p > 0.05$). This can be

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explained by the fact that the autocratic style creates a negative psychological environment that hinders technological change in libraries. The authoritative approach generates fear and anxiety among employees, weakens their confidence in dealing with new technologies, and leads to psychological resistance to change due to top-down decisions that disregard employees' feelings and abilities. This reduces their internal motivation to learn and develop in the technological field.

From a practical perspective in library settings, it can be observed that the autocratic style contradicts the nature of digital transformation, which requires flexibility and creativity in dealing with technology. When a leader imposes technological changes without involving employees, this leads to a superficial adoption of technologies without deep understanding or real conviction, negatively affecting the quality of digital library services and the effectiveness of using modern technology in library work.

Hypothesis 2: From Table 4, we observe that the Pearson correlation value is 0.436, which is statistically significant ($\text{sig} = 0.042 < 0.05$). Therefore, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), meaning there is a statistically significant correlation between the democratic style and the technological change process. The Pearson correlation value indicates a moderate positive relationship.

The results reveal a statistically significant moderate positive correlation between the democratic style and technological change ($r = 0.436, p < 0.05$). This can be explained by the fact that the democratic style creates a psychological environment that supports technological change in libraries. Participation in decision-making enhances feelings of psychological safety and strengthens employees' self-confidence, while meeting their psychological need for appreciation and involvement. This positive psychological environment reduces anxiety associated with technological change and increases employees' acceptance of new technologies, facilitating the digital transformation process in libraries.

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The democratic style also encourages employees to think innovatively and actively participate in implementing new technologies. When employees feel their opinions matter and they are consulted in technological decision-making, their interest in training and professional development increases, leading to better adoption of new technologies and increased effectiveness in using them in library work.

Hypothesis 3: From Table 4, we observe that the Pearson correlation value is 0.002, which is not statistically significant ($\text{sig} = 0.995 > 0.05$). Therefore, we accept the null hypothesis (H_0), meaning there is no statistically significant correlation between the laissez-faire style and the technological change process. The results show no significant correlation between the laissez-faire style and technological change ($r = 0.002$, $p > 0.05$).

This can be explained psychologically by the fact that the laissez-faire style creates a state of psychological instability that hinders technological change in libraries. The lack of guidance and direction increases anxiety and stress among employees, weakens their job security, and leads to scattered efforts and a lack of focus on the digital transformation process. This psychological chaos makes it difficult to achieve the objectives of technological change in an organized and effective manner.

It can also be observed that the laissez-faire style contradicts the nature of digital transformation, which requires flexibility and organized direction. Without clear guidance, efforts may become fragmented and lack a clear strategy for adopting new technologies. This lack of direction can lead to superficial adoption of technologies without deep understanding or real conviction, negatively affecting the quality of digital library services and the effectiveness of using modern technology in library work.

Hypothesis 4: From Table 4, we observe that the Pearson correlation value is 0.098, which is not statistically significant ($\text{sig} = 0.663 > 0.05$). Therefore, we accept the null hypothesis (H_0), meaning there is no statistically significant correlation between the bureaucratic style and the technological change process. The results show no significant correlation between the bureaucratic style and technological change ($r = 0.098$, $p > 0.05$).

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This can be explained psychologically by the fact that the bureaucratic style creates a state of psychological frustration that hinders technological change in libraries. Strict adherence to procedures and rules suppresses creativity and innovation among employees, creating psychological pressure that weakens their motivation for development and change. Rigidity and routine kill initiative and limit employees' ability to adapt to technological innovations. Moreover, the bureaucratic style contradicts the nature of digital transformation, which requires flexibility and quick decision-making. When there is strict adherence to procedures and rules, this may slow down the technological change process and hinder adaptation to rapid technological developments. This rigidity can lead to superficial adoption of technologies without deep understanding or real conviction, negatively affecting the quality of digital library services and the effectiveness of using modern technology in library work.

Hypothesis 5: From Table 4, we observe that the Pearson correlation value is 0.332, which is not statistically significant ($\text{sig} = 0.131 > 0.05$). Therefore, we accept the null hypothesis (H_0), meaning there is no statistically significant correlation between the transactional style and the technological change process.

The results show no significant correlation between the transactional style and technological change ($r = 0.332$, $p > 0.05$). Psychologically, the transactional style, despite its positive aspects, is not sufficient on its own to support technological change in libraries. Focusing on rewards and punishments creates external motivation that may not be sustainable and can cause psychological stress among employees. Moreover, this style does not fulfill the deep psychological needs for self-development and creativity, limiting its effectiveness in supporting digital transformation.

Hypothesis 6:

We observe from Table () that the Pearson correlation coefficient is 0.610, which is statistically significant ($\text{sig} = 0.003 < 0.05$). Therefore, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), meaning that

there is a statistically significant correlation between transformational leadership style and the technological change process. The Pearson correlation coefficient indicates a moderate positive relationship.

The results reveal a statistically significant moderate positive correlation between transformational leadership style and technological change ($r = 0.610$, $p < 0.05$). Psychologically, this can be interpreted as the transformational leadership style creating an ideal psychological environment for supporting technological change in libraries. This style enhances internal motivation for development and builds self-confidence and self-efficacy among employees. It also satisfies higher psychological needs such as self-actualization and creativity, creating a supportive psychological climate for innovation and technological development, making it the most effective leadership style for leading digital transformation in libraries. In the field, it can be observed that transformational leadership encourages employees to think innovatively and actively participate in implementing new technologies. When employees feel that their opinions are valued and they are consulted in technological decision-making, their interest in training and professional development increases, leading to better adoption of new technologies and greater effectiveness in using them in library work.

3.3.3 Results of Studies:

- **Autocratic Leadership** creates a negative psychological environment that hinders technological change in libraries.
- **Laissez-faire Leadership** creates a state of psychological instability that hinders technological change in libraries. The lack of guidance and supervision increases anxiety and stress among employees.
- **Democratic Leadership** creates a psychological environment that supports technological change in libraries.
- **Transactional Leadership** primarily targets external motivation, which can lead to superficial adoption of new technologies without effective internal conviction.
- **Transactional Leadership**, despite its advantages, is not sufficient on its own to support technological change in libraries.

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- **Transformational Leadership** creates an ideal psychological environment to support technological change in libraries.
- **Democratic and Transformational Leadership styles** are the most commonly practiced in university libraries.

Conclusion:

Leadership styles vary in their impact on technological transformation and effective management in institutions. It is recommended to choose the leadership style that aligns with the nature of the work and the culture of the institution, taking into account the importance of flexibility and adaptation to rapid changes, especially in work environments that rely on technology and innovation.

The technological change process in Algerian university libraries requires effective leadership capable of adapting to various challenges. Effective leadership involves achieving a balance between stability and flexibility. The importance of selecting the appropriate leadership style according to the needs of the library is also highlighted.

In light of the above, it appears that the success of technological change in university libraries in general, and the University of Algiers 1 library in particular, depends on the type of leadership style followed, namely the democratic and transformational styles. These leadership styles provide a supportive environment for change by involving librarians in decision-making, which enables creative thinking. However, they require continuous monitoring to achieve the overall objectives of the university library.

Suggestions of the Study:

- **Suggestions for appropriate leadership styles:** It is advisable to focus on leadership styles that motivate and engage employees to achieve successful technological change.
- Encourage **democratic leadership** by promoting the involvement of librarians in decision-making and the development of technological change strategies.

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- **Transformational leadership** is recommended to support innovation and engage employees effectively.

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