



Research Article

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Analysing Educational Management: A Comprehensive Statistical Examination of School Practices

Khaoula Khennou^{*}

Bouzekri Touri¹

Hind Baba¹

Aziz Kasmi¹

¹Laboratory of Sciences and Technologies of
Information and Education (LASTIE),
Faculty of Sciences Ben M'Sick,
Hassan II University,
Casablanca, Morocco
^{*}Corresponding Author

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Abstract

The managerial aspects of education are the backbone on which an entire educational system rests. They are the glue that holds many aspects of education together. Our article aims for objectivity and above all adds value to the acquisition of knowledge in the field of educational institution management through a quantitative methodology, based on a non-experimental correlational study. A sample of 96 principals from qualifying secondary schools (high school) in the Casablanca-Settat region of Morocco were surveyed, and were asked to complete a questionnaire. The results were processed using IBM SPSS Statistics 29 software. The results showed that the managerial aspect of school climate correlated significantly with the aspect of pedagogical innovation (23.3%), as well as with the aspect of adaptation to change (23.1%). In addition, there was a significant correlation between pedagogical innovation and ongoing training (30%), as well as with adaptation to change (36%). Continuing education, for its part, was 21% significant in relation to adaptation to change. These results make a valuable contribution to our understanding of school management, and underline the need to pay particular attention to these aspects in order to promote educational excellence.

Keywords: Educational innovation; adapting to change; school climate; continuing education; schools

1. Introduction

Education, the beacon illuminating the path to knowledge, is much more than a teaching process. It is an experience, a journey through which learners evolve, discover and forge their destiny. At the heart of this adventure lies educational management, a discipline that transcends mere administrative machinery to become the driving force behind the transformation of educational institutions.

School-based educational management highlights the importance of applying management and leadership principles in the context of education. It emphasizes the crucial role of educational leaders in creating an environment conducive to student learning and development, and in the effective management of educational resources and processes.

In the age of information and connectivity, educational management is becoming a breeding ground for innovation, a laboratory where ideas are transformed into tangible action. From leadership models to participative approaches, from budgetary challenges to the imperatives of inclusion, every aspect of educational management contributes to building an ecosystem where every learner can flourish.

2. Literature Review

School management is a key pillar of the education sector, driving the operation and achievement of educational objectives (Chua & Mosh, 2015).

At the heart of this issue are school principals, school administrators and teachers, whose role is to create an environment conducive to learning, manage resources and promote educational fulfillment (Dumay, 2009; Plante & Toussaint, n.d.).

Although educational management and leadership may seem distinct, they are closely linked and complementary. Effective educational management is essential for building a solid foundation, managing resources and keeping educational institutions running smoothly. However, leadership goes beyond mere management and aims to inspire and motivate the educational community to achieve ambitious goals (Pelletier, 2013).

Educational management refers to the application of management and leadership principles in the context of education. Several theories and models are used in educational management to guide the decisions and actions of educational leaders.

- Contingency theory: This suggests that there is no single management model that fits all situations. Educational managers must adapt their approaches to suit the circumstances, environment and specific objectives of their institution (Barabel & Meier, 2022).
- Transformational leadership theory: This approach focuses on the leader as an inspirational and visionary role model. Educational leaders who adopt this theory seek to motivate and inspire the members of their organization to go beyond their personal interests to achieve common goals (Renaud, 2003).
- Transactional leadership theory: Unlike transformational leadership, transactional leadership is based on an exchange between the leader and the members of the organization. Incentives, rewards and sanctions are used to motivate individuals to achieve specific goals (Renaud, 2003).
- Situational leadership theory: According to this theory, the optimal leadership style depends on the maturity or competence of the organization's members. Leaders must adapt their style to the needs and skills of their employees (Spillane, Halverson, & Diamond, 2008).

Participative leadership theory: This emphasizes the importance of involving the organization's members in the decision-making process. Educational leaders who adopt this approach seek to involve teachers, students and other stakeholders in education-related decisions (Spillane, Halverson, & Diamond, 2008).

- Change management theory: Given the dynamic nature of the education sector, change management is often crucial. This theory proposes strategies to facilitate the change process, whether at the level of programs, policies or pedagogical practices (Deniger, 2012).
- Systems theory: This considers the school as an interconnected system, where actions in one area can have repercussions on the whole organization. Educational leaders use this perspective to make decisions that take the whole educational system into account (Germain, 2018).

These theories are not mutually exclusive, and many educational managers incorporate

elements of several of them into their management approach. The effectiveness of a particular theory may also depend on the specific context of the educational establishment and the challenges it faces (Pons, 2015).

School heads, as educational leaders, occupy the front line of school management. Their task is to implement educational policies, supervise teachers, communicate with students and parents, and manage day-to-day challenges (Helen, 2012; Hopes, 1988).

Schools are managed and run as a result of a number of aspects, which are in principle based on management and leadership in the field of school education (Perrenoud & Tulowitzki, 2021). Educational management aspects are the foundation of any education system. They cover a wide range of areas, from curriculum planning to the management of human and financial resources in educational institutions. In other words, they shape the way education is delivered and organized (Zerrouqi, 2015).

These aspects also play a crucial role in adapting education to changes in society. They foster the adoption of new pedagogical methods and the response to contemporary educational challenges (Mollard, 1995). This includes the promotion of pedagogical innovation, the introduction of continuous training programs for the professional improvement of staff, and a flexible and efficient approach to school management (Tardif, 1993).

As such, educational management aspects are necessary to ensure an efficient structure of education to meet the needs of students, educational staff and society as a whole (Sylvie, 2019).

By understanding the importance of these aspects, we will have the opportunity not only to improve the quality of education, but also to prepare future generations to thrive in an ever-changing world.

3. Materials and Methods

In order to produce a reliable and scientifically sound study, the following databases were used: Google Scholar, Emerald Insight, Cairn.info PubMed, ScienceDirect and the ResearchGate platform for the academic community. The keywords used in the Boolean searches were: Educational management, educational leadership, schools, school management. The website of the Ministry of National Education, Preschool and Sports was also consulted for information on statistics and school management in Morocco.

3.1 Sample characteristics

Our survey was carried out in the Casablanca-Settat region of Morocco. We chose to work on a representative sample based on a judgment sample highlighting the choice of units in terms of knowledge and the educational field. The sample consisted of 96 school directors.

The choice of sample was based primarily on open data from the Ministry of National Education, Preschool and Sports, representing the number of secondary schools in the Casablanca-Settat region (List of public educational establishments- Morocco's open data). **Table 1**

We contacted as many of the 157 principals as possible, reaching 113 school principals and receiving 96 responses to the questionnaires distributed, due to the unavailability of some school heads.

The sample size selected for this study is appropriate in relation to the total number of high schools in the Casablanca-Settat region, which has 157 qualifying high schools according to data from the Ministry of National Education, Preschool and Sports. This selection ensures the reliability and relevance of the results obtained.

Table 1 : List of public secondary schools in the Casablanca-Settat region.

	Province names	Number of high schools
RegionCasablanca- Settat	Casablanca-Anfa	13
	Al Fida Mers Sultan	10
	Ain Sbaa- Hay mohammadi	8
	Hay Hassani	12
	Ben Msik	9
	Moulay Rchid- Sidi Othmane	10
	Sidi Bernoussi	20
	Mediouna	9
	Mohammadia	13
	Nouaceur	10
	Settat	17
	Benslimane	5
	Berrechid	12
	Sidi Bennour	9
	Total	157

3.2 Measuring instrument

- Ethical considerations

All managers who completed the questionnaire understood that their contribution to this study was voluntary and that they could withdraw at any time. What's more, they were aware that their answers would be provided anonymously, and that they would only be used for academic scientific research..

- Tool validation

In our study, we used a questionnaire designed to collect quantitative data, based on a questionnaire validated by the Organisation for Economic Co-operation and Development (OECD). International Survey (TALIS) 2018 (OECD, 2018), a questionnaire designed for Heads of Establishments. Our questionnaire addresses 9 dimensions, 8 of which bring together educational managerial aspects covering 54questions

3.3 Data analysis process

We opted for a questionnaire, through which quantitative data were collected and analyzed using the Persian statistical test, with the help of SPSS 28 IBM software. IC. CHICAGO and Microsoft Office Excel 365. Content analysis was adopted in order to code questionnaire responses into a meaningful set of categories.

After coding the collected data, we proceeded to enter them into an Excel document, and finally import them into SPSS version 29.

As we have ordinal categorical data and a non-normal distribution, the Persian statistical test was chosen in order to lead to more robust and reliable results in such situations.

Significant correlations were taken into consideration to study the statistical relationship between the variables educational managerial aspects-Correlation is highly significant at the 0.01 level (two-tailed).-Correlation is significant at the 0.05 level (two-tailed).-When the value of the "Sig. (two-tailed)" is less than 0.05 (for *) or 0.01 (for **), this means that the correlation is statistically significant.-A positive correlation indicates that two criteria are related. A positive correlation indicates that two criteria are moving in the same direction. The closer the correlation coefficient is to 1, the stronger the relationship.

4. Results

4.1 Descriptive analysis

Our study focuses on the correlation between educational managerial aspects, which refer to the

management principles and practices applied in the educational context by school principals. They are essential to ensure the smooth and efficient running of these educational establishments.

We opted for 8 crucial managerial aspects: continuous training, school climate, pedagogical innovation, adaptation to change, effective communication, equity and inclusion, human resources management and stress management.

- The choice of these variables was based on :
- Theoretical relevance: The criteria used correspond to key aspects of educational management. They are relevant from a theoretical point of view.
- Research objectives: We chose the criteria according to what we were seeking to understand and analyze, and they are aligned with the objectives of our study.
- Practical significance: The selected criteria are likely to have a significant practical influence on educational management and leadership. Through this research we will be able to provide valuable information for educational managers.

4.2 Exploratory factor analysis

Correlation analysis between educational managerial aspects is a crucial step in understanding the complex dynamics involved in education. Table 2 shows a Pearson correlation matrix that examines the links between various aspects of school management, ranging from continuing education to stress management, school climate, pedagogical innovation, adaptation to change, effective communication, equity and inclusion, and human resources management. Pearson correlation coefficients measure the strength of these relationships.

Table 2 : Correlation matrix between educational management aspect

		Continuing Education	School climate	Pedagogical innovation	Adapting to change	Effective communication	Equity and inclusion	HR Management	Stress management
Continuing Education	Pearson Correlation	1	,093	,308**	,213*	,184	,077	,072	,040
	Sig. (bilateral)		,366	,002	,037	,072	,454	,484	,702
	N	96	96	96	96	96	96	96	96
School climate	Pearson Correlation	,093	1	,233*	,231*	,150	,083	,013	,086
	Sig. (bilateral)	,366		,023	,023	,145	,424	,903	,403
	N	96	96	96	96	96	96	96	96
Pedagogical innovation	Pearson Correlation	,308**	,233*	1	,369**	,093	,007	,024	,053
	Sig. (bilateral)	,002	,023		,000	,370	,943	,817	,608
	N	96	96	96	96	96	96	96	96
Adapting to change	Pearson Correlation	,213*	,231*	,369**	1	,082	,158	,049	,007
	Sig. (bilateral)	,037	,023	,000		,427	,125	,637	,943
	N	96	96	96	96	96	96	96	96
Effective communication	Pearson Correlation	,184	,150	,093	,082	1	,108	,058	,136
	Sig. (bilateral)	,072	,145	,370	,427		,295	,575	,187
	N	96	96	96	96	96	96	96	96
Equity and inclusion	Pearson Correlation	,077	,083	,007	,158	,108	1	,113	,122
	Sig. (bilateral)	,454	,424	,943	,125	,295		,275	,237
	N	96	96	96	96	96	96	96	96
HR Management	Pearson Correlation	,072	,013	,024	,049	,058	,113	1	,103
	Sig. (bilateral)	,484	,903	,817	,637	,575	,275		,316
	N	96	96	96	96	96	96	96	96
Stress management	Pearson Correlation	,040	,086	,053	,007	,136	,122	,103	1
	Sig. (bilateral)	,702	,403	,608	,943	,187	,237	,316	
	N	96	96	96	96	96	96	96	96

** . The correlation is highly significant at the 0.01 level(bilateral).

* . The correlation is significant at the 0.05 level(bilateral).

According to Table 2 above, we can see a correlation between all the managerial aspects mentioned, except that when it comes to significance, the picture changes.

The school climate variable correlates significantly with each of the pedagogical innovation and

adaptation to change variables with almost the same percentage, one 23.3% ($r=0.233$), and the other 23.1% ($r=0.231$) as $p=0.023 < 0.05$. This moderate and statistically significant positive correlation suggests a positive linear relationship between the criteria, indicating that they are moving in the same direction. Quite simply, a favorable school climate is associated with more pedagogical innovation and a greater ability to adapt to change.

The correlation between pedagogical innovation and adaptation to change is 36.9% ($r=0.369$; $P < 0.05$), suggesting a strong and highly significant positive correlation. This shows that schools that adopt innovative pedagogical practices are better able to adapt to change.

The pedagogical innovation variable also showed a strong significant correlation with continuing education of 30.8% ($r=0.308$; $p < 0.05$), meaning that more intensive continuing education is associated with a higher level of pedagogical innovation.

The variable adaptation to change is significantly correlated with continuing education by 21.3% ($r=0.213$; $p < 0.05$). However, the value of 0.213 is not very high, which suggests that the relationship between these two variables is not extremely strong, but it is still significant. This is a positive correlation, which explains the positive impact that one criterion can have on the other. This means that continuous training has a significant influence on the ability to adapt to change, although other factors may also play a role.

Overall, the results suggest that the pedagogical innovation criterion is the most strongly correlated managerial aspect, with significant positive correlations. The other aspects show weak correlations with each other.

Table 2 shows statistical relationships with significant positive correlations between in-service training, pedagogical innovation, school climate, adaptation to change, and effective communication. However, other variables such as equity and inclusion, human resources management and stress management are not significant in this specific context.

5. Discussion

First of all, it should be recalled that our study aims to investigate the significances between educational managerial aspects. It aims to identify which aspects are used and which are missing in the management of Moroccan secondary schools in the Casablanca-Settat region.

Our results showed that there was a statistically significant correlation between the aspect of school climate and each of the aspects of pedagogical innovation and adaptation to change, meaning that these variables evolve in relation to each other (Capron, 2016). In other words, an improvement in school climate is generally associated with an increase in pedagogical innovation and the ability to adapt to change within the school (Vrand, 2012).

A positive school atmosphere encourages pedagogical innovation and the ability to adapt to changes within the school. This positive correlation suggests that schools that emphasize a favorable school climate are more likely to see the emergence of innovative pedagogical practices and to adapt better to changes in the educational field. This can lead to better teaching quality and a more positive educational experience for students (Brunet, 2001).

The results show that the correlation between pedagogical innovation and adaptation to change is a strong positive 36.0%, meaning that the two variables evolve significantly together. Adopting innovative pedagogical practices implies adapting to the changes that can be generated in the school. This relationship has both short- and long-term dimensions, including the adoption of new teaching methods and the use of new technologies, which will enable schools to remain flexible and responsive to constant changes in the educational field (Françoise, 1997).

A study by Cros & Broussal (2020) has shown that the link between pedagogical innovation and adaptation to change becomes apparent in the very fabric of educational transformation. Innovation requires an openness to adaptation, as each new approach, each technology introduced, demands flexibility in methods and a readiness to change. In turn, adaptation to change fosters an environment conducive to innovation, where new ideas are welcomed and integrated without

reluctance.

Furthermore, the significant correlation of 30.8% between pedagogical innovation and continuing education suggests that schools that place greater emphasis on continuing education for educational staff tend to implement more innovative pedagogical practices. This is because ongoing training enables educational staff to acquire new skills and stay up-to-date (Aubergny, 1986).

A scientific study by Ait Dahmane (2021) confirms that there is a relationship between pedagogical innovation and continuing education that is of crucial importance in the contemporary educational landscape. This close relationship helps to energize educational practices, strengthen educators' skills and create an educational ecosystem capable of meeting evolving challenges.

As for the last significant correlation of 21.3% obtained between the two variables adaptation to change and continuing training, this indicates that the relationship between these two variables cannot be explained by chance. There is a genuine association between the two factors. However, adaptation to change may depend on a variety of factors, including organizational culture, leadership, internal communication, etc. Continuous training is only one of several elements contributing to adaptation to change (Rousseau & Thibodeau, 2012).

The study by Auer (1995) showed that well-trained employees who are able to adapt to change can be more productive. Continuous training optimizes skills and work processes, contributing to greater organizational efficiency. What's more, bringing together adaptation to change and continuous training fosters the creation of an organizational culture that values lifelong learning. Employees are encouraged to see change as a learning opportunity rather than an obstacle.

Although the correlation between adaptation to change and in-service training is not extremely strong, it does suggest that in-service training can play a role in improving a school's ability to adapt to changes in the education sector (McLaughlin & Marsh, 1978) ; (Dalin, 1973).

Promoting a positive school climate, fostering pedagogical innovation and providing ongoing support for training are the essential foundations for strengthening school management. Together, these elements create a dynamic educational ecosystem conducive to learning, professional growth and collective success.

A positive school climate, centered on respect, commitment and well-being, provides the fertile ground for learners to flourish and build constructive relationships. It creates an environment where everyone feels valued and ready to contribute fully to school life.

Promoting pedagogical innovation fuels the creativity of teachers and learners, preparing schools to meet current and future educational challenges. By integrating the latest technological advances, individualizing teaching approaches and encouraging critical thinking, innovation stimulates dynamic, adaptive learning.

Finally, ongoing support for training is the key to keeping educators informed, competent and ready to evolve. It ensures that education professionals remain at the forefront of best practices, pedagogical developments and emerging skills, thereby enhancing the quality of teaching.

Together, these three pillars form a powerful synergy, creating a resilient, forward-looking school. They build not only a solid foundation for learning, but also an institutional culture that fosters innovation, collaboration and continuous development. By investing in a positive school climate, promoting innovation and supporting lifelong learning, schools position themselves not only as centers of learning, but also as catalysts for growth, success and fulfillment for their entire educational community.

In sum, this study highlights the importance of fostering a positive school climate, promoting pedagogical innovation, and supporting continuing education to strengthen school management.

6. Limitations and Future Research Directions

The difficulty of contacting school principals meant that our research was time-consuming. Even more so, the use of technology with school principals could have facilitated data collection and minimized the time required.

Due to the unavailability of some school principals, our sample size dropped from 113 to 96. We are well aware that some principals may not have thought through their answers to the questionnaire.

However, opening up to the relationship between the professional characteristics of school principals and educational managerial aspects will be an important educational management follow-up for our research.

It will be important to implement the managerial aspects of education through well-trained and experienced managers who can positively influence school success specifically and the entire education system in general.

7. Conclusion

When we talk about education, we're talking about this fundamental pillar of society, and the quality of education depends to a large extent on the way schools are managed (Pelletier et al., 2015). Educational management is much more than the simple administration of resources or the supervision of day-to-day tasks. Rather, it is an equally complex field that encompasses strategic planning, decision-making, resource management, educational quality development and much more (Berrard, 1991). It all hinges on the important role played by school principals in ensuring effective management and quality learning (OECD, 2009). They have to juggle a variety of responsibilities, from managing educational staff to creating a favorable school climate and taking into account the needs of students, parents and the entire educational staff (Pelletier, 2013).

This is why our research focused on a survey of school principals dealing with the educational management and leadership aspects that should in principle be used when managing these establishments.

The aim of our research was to correlate the educational management aspects with each other, in order to deduce the missing elements in the management of Moroccan high schools in the Casablanca-Settat region, and to obtain a pedagogically relevant explanation. Although the results highlighted certain managerial aspects, this in no way means that other aspects lacked importance in the educational management field. On the other hand, the absence of aspects such as effective communication, equity and inclusion, human resources management and stress management in the results shows that they are not sufficiently evoked in the process of management and leadership within the schools surveyed.

Unity is strength. By combining these missing aspects with the others, we'll be aiming for a distinctive educational development (Mollard, 1995).

Linking educational management aspects to Maslow's pyramid, a well-known psychology theory, will enable these aspects to be arranged according to human needs in five levels, facilitating their hierarchical use (Boumahdi & Belhaj, (n.d.); Ilunga, 2022).

This study underlines the crucial importance of educational management and provides valuable data that can be used to focus attention on management and leadership within schools, whose overall aim is to promote a school environment conducive to student success and the professional development of educational staff. Our aim is to adopt a holistic approach that will make our Moroccan education system triumph in terms of performance and continuous improvement (Khennou et al., 2023).

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