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Electronic Management and Its Impacts on Achieving Organizational Justice. An Applied Approach in The El-Maa Labiod Cement Factory. Tebessa Province (Algeria)

Abstract

The current study, titled above, seeks to determine the impact of electronic management on achieving organizational justice within the factory, the field of study. To this end, three research frameworks were adopted, starting with framing the research problem in a conceptual form, and a theoretical framework that establishes the variables of the current study, in a manner more aligned with the developments of the two variables, thus avoiding routine theoretical padding. The focus was on the field approach based on the case study method, and the method of spontaneous observations and exploratory interviews, both direct and indirect. Through the study's questions posed to the study sample and the application of the aforementioned tools, it was concluded that:

Most of the investigated impacts regarding the dimensions of electronic management and organizational justice variables in the field of study were characterized by positive reflections, which establishes the effective relationship between the duality of electronic management and organizational justice. This paves the way for long-term academic prospects, reflecting the quality of the Algerian factory.

Keywords: *electronic management, Organizational Justice, reflections, factory*

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Elektron idarəetmə və onun təşkilat ədalətinə nail olunmasına təsiri. El-Maa Labiod sement zavodunda tətbiqi bir yanaşma. Tebessa vilayəti (Əlcəzair)

Xülasə

Yuxarıda adlanan cari tədqiqat fabrikdə, təhsil sahəsində təşkilati ədalətə nail olmaq üçün elektron idarəetmənin təsirini müəyyən etməyə çalışır. Bu məqsədlə, tədqiqat problemini konseptual formada tərtib etməklə başlayan üç tədqiqat çərçivəsi və iki dəyişənin inkişafı ilə daha uyğunlaşdırılmış şəkildə cari tədqiqatın dəyişənlərini müəyyən edən nəzəri çərçivə qəbul edildi və beləliklə, gündəlik nəzəri dolğunluqdan qaçın.

Əsas diqqət Case study metoduna əsaslanan sahə yanaşmasına, həm birbaşa, həm də dolaylı yolla kortəbii müşahidələr və kəşfiyyat xarakterli müsahibələr metoduna yönəldilib. Tədqiqat nümunəsinə verilən tədqiqat sualları və yuxarıda qeyd olunan vasitələrin tətbiqi nəticəsində belə qənaətə gəldi:

Tədqiqat sahəsində elektron idarəetmə və təşkilati ədalət dəyişənlərinin ölçüləri ilə bağlı tədqiq edilmiş təsirlərin əksəriyyəti elektron idarəetmənin ikiliyi ilə təşkilati ədalət arasında effektiv əlaqə quran müsbət əkslərə xarakterizə edilmişdir. Bu, Əlcəzair fabrikinin keyfiyyətini əks etdirən uzunmüddətli akademik perspektivlərə yol açır.

Açar sözlər: *elektron idarəetmə, Təşkilati Ədalət, reflekslər, fabrika*

Introduction

Given the gradual technological transformations the world is witnessing (the technological revolution, digitization, artificial intelligence), which have made a difference in various systemic fields (Boukelkoul & Redouane, 2005, p. 3), such as institutions of various types, especially financial services in the industrial sector. Factories have been compelled to develop strategies that align with the progression of these transformations, such as keeping pace with the electronic management approach.

The latter represented an important focal point for upgrading the production of the Algerian factory. Its effectiveness was enhanced by its alignment with the organizational justice variable in the requirements of the current study, to create a unique duality in the factory under study. This is within a sociological framework paved by preliminary studies of scientists, such as the socio-technical systems approach, through our inclusion of the current study under its axioms, in a duality that combined empiricism and theory, quantitative and qualitative methods, to produce results and recommendations that pave the way for more positive prospects in the field of the Algerian factory.

Research

I. Conceptual Aspect of the Study

a) Significance of the Study

The current study, "**Electronic management and its Impact on Achieving Organizational Justice**," derives its significance from the importance of the ongoing digital transformation. This does not exclude the crucial importance of organizational justice, which is more than necessary to create a balance between human resource management and the productive returns of the Algerian factory in general, similar to the factory under study. In addition, combining electronic management and organizational justice in the industrial field will add a new dimension to scientific research. Moreover, the distinctive characteristics that have shaped the current study can make a difference and, therefore, it can be distinguished by novelty and research originality, which will pave the way for new studies that enrich the Algerian university library (Al-Arishi, 2008).

b) Objectives of the Study

General Objective:

- To attempt to determine the dimensions of electronic management and its impact on achieving the principle of organizational justice in the factory, the field of study.

Specific Objectives:

- To attempt to determine the impact of digital control in production on fairness of returns in the factory, the field of study.

- To attempt to determine the impact of the digitization of industrial equipment on equality of opportunity in the factory, the field of study.

- To attempt to reveal the impact of electronic monitoring on corrective justice in the factory, the field of study.

Practical Field Objectives:

- To experience a field study in the industrial sector (satisfying scientific curiosity regarding knowledge of workflows and techniques of the factory, the field of study).

- To get acquainted with the study population and become familiar with it (factory workers of various ranks and categories), and to identify their simulations of electronic management methods.

- To subject the research sample to the methodology and tools of the current study, in addition to identifying the prevalence of organizational justice principles among them.

c) The problematic

Amid the massive digital transformation of social mobility, alongside the astonishing technological mediums that have progressively evolved from basic technology to digitization and ultimately to artificial intelligence, administrative and social structures have also undergone significant changes (Ben Said, 2008, p. 11). Consequently, this transformation strengthens organizational balance by fostering the principle of justice among members of organizations, particularly in industrial settings, through the digitization of all administrative, service, and industrial processes. This, in turn, enhances work quality and achieves the objectives for which various systems were established.

Research

The concept of **electronic management** emerges as a response to these transformative shifts, as Algerian administration seeks to digitize its functions, such as digital control, industrial equipment digitization, and regulatory oversight digitization. This process is expected to establish a balanced interaction between an organization's human and material resources, ultimately leading to what is termed **organizational justice** (Al-Asmari, 2013).

This transformation has, in turn, marked a significant turning point in the context of Algerian industrial organization. Its dimensions, distributive justice (justice of outcomes), procedural justice (justice of opportunities), and corrective justice (justice of rectification), have contributed to the integration of functions and the achievement of the objectives for which Algerian factories were established. This becomes especially relevant when electronic management and organizational justice are combined, forming a theoretical and practical synergy that fosters academic research by bridging innovation with authenticity. Moreover, applying these two concepts within the industrial field, the focus of this study, sparks investigative curiosity, prompting an exploration of the impact that electronic management has on the concept of organizational justice.

This leads us to the central research question:

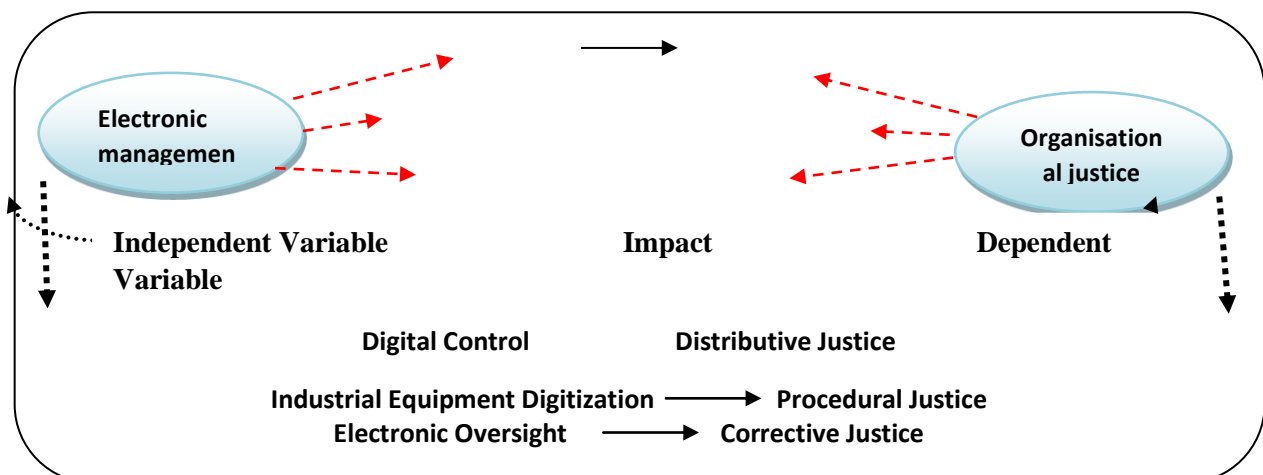
Main Research Question

➤ Does electronic management influence the achievement of organizational justice within the factory under study?

From this primary inquiry, the following sub-questions emerge:

- Does digital control over production impact distributive justice within the factory under study?
- Does the digitization of industrial equipment affect procedural justice (equal opportunities) among workers within the factory under study?
- Does electronic regulatory oversight influence corrective justice in addressing errors within the factory under study?

Framework for Formulating Research Questions



Since the study was initiated with exploratory questions due to the near-total absence of prior research (with only one existing study) related to its dimensions, whether in terms of exact correspondence or similarity, the researchers opted to formulate field-specific questions to empirically assess the phenomenon.

To achieve this, the electronic management variable was deconstructed into three components: digital control, industrial equipment digitization, and electronic organizational oversight. The term "organizational" was deliberately added to oversight to distinguish it from electronic oversight as understood in cyber security or media contexts.

Similarly, the organizational justice variable was broken down into three dimensions: distributive justice (justice of outcomes), procedural justice (justice of opportunities), and corrective justice (justice of rectification). This decomposition aims to examine how the dependent variable (organizational justice) reflects upon the independent variable (electronic management), as illustrated in the diagram above.

d) Operational Definitions of the Study

Key Concepts

Since this study is purely field-based, derived from repeated exploratory visits, the researchers sought to define the study variables in a practical, on-site manner and directly engage with their operational aspects. This approach was adopted to avoid redundant theoretical discussions of the study variables (electronic management and organizational justice).

Accordingly, based on preliminary exploratory interviews with factory leaders and some production sector supervisors, electronic management was defined as:

"The gradual transformation of administrative and industrial processes under the dominant influence of digitization, encompassing planning, execution, decision-making, and manufacturing techniques. This shift aims to create a qualitative leap by optimizing movement, minimizing wasted effort, and reducing time and financial costs. Key aspects include digital control, industrial equipment digitization, and the enforcement of electronic organizational oversight within the factory."

The Concept of Organizational Justice

Through the responses of the study sample to our inquiries, organizational justice emerged as the set of principles the factory has adhered to since its inception in cement production. These principles aim to ensure fairness for all workers, regardless of their categories or ranks, in material, moral, and humanistic aspects, in accordance with the factory's legal and ethical obligations.

Organizational justice, as conceptualized in this study, includes:

Distributive justice (justice of outcomes), ensuring fair financial compensation.

Procedural justice (justice of opportunities), which, as understood by the researchers, includes equity in time allocation, effort distribution, and individual rewards.

Corrective justice, which refers to the fair rectification of errors in tasks assigned to workers.

Additionally, impact is defined as the outcome, whether positive or negative, resulting from the interplay between the dimensions of the hypotheses outlined in the current study.

Secondary Concepts

Concept of Digital Control:

Based on the researchers' field study, digital control refers to the technological advancements that have influenced administrative operations and workers' functional performance. This transformation, driven by extensive digitization, aims to optimize effort and time while accelerating task completion within designated deadlines.

Concept of Industrial Equipment Digitization:

Industrial equipment digitization is understood as the integration of advanced technological innovations into factory machinery, making them highly sophisticated and adaptable to modern work methods, as subjecting the raw materials used in cement production to laboratory testing with electronic devices, which provide analytical results within an extremely short time. Besides, equipping grinding machines with faster, high-precision motors to enhance the efficiency of the cement manufacturing process.

Concept of Electronic Organizational Oversight:

Electronic organizational oversight can be defined as the processes aimed at monitoring individual performance, tracking administrative operations, and inspecting product quality through a digital electronic approach, with the objective of reviewing and correcting errors that occur either automatically or intentionally within the factory under study and the dimensions of organizational justice

Concept of Distributive Justice:

The concept of distributive justice can be defined as the industrial outputs, whether related to cement production, which ensures an abundant and evenly distributed supply to the market, or the financial budget, which is allocated to workers in a fairer manner, ensuring equal distribution among workers across different categories and ranks.

Concept of Procedural Justice (Justice of Opportunities):

Procedural justice (justice of opportunities) refers to the equal distribution of opportunities among individuals within the factory. This includes fairness in break times, equitable task distribution based on the worker's level of training, and the fair allocation of rewards and leave entitlements for all factory employees.

Concept of Corrective Justice:

Corrective justice can be defined as the set of processes aimed at eliminating deficiencies in the tasks assigned to workers, resulting from electronic oversight of performance. Through this oversight, errors caused by poor industrial management of personnel are identified and rectified.

e) Prior Researches:

It has been established by early scholars and researchers that social research does not start from scratch, which signifies the epistemological continuity of social phenomena. Given that the present study is novel in the composition of its variables, there exists a prior Arabic study related to this topic, albeit with a different methodological approach than the one adopted in this research. The study is as follows:

Study by Mohamed and Houssin Mohamed El-Hawacha: entitled: The Role of Electronic Management in Implementing Organizational Justice in Public Secondary Schools in the Occupied Palestinian Negev from the Teachers' Perspective, American University (Palestine).

The research question of this study focused on:

What is the role of electronic management in implementing the dimensions of organizational justice from the teachers' perspective?

Study Hypotheses:

The study formulated the following hypotheses:

- There is a moderate role of electronic management in implementing organizational justice in the study field from the perspective of female teachers.
- There is a moderate role of electronic management in implementing organizational justice in the study field from the perspective of male teachers.
- There is a difference in the mean responses of the study sample regarding the level of organizational culture among secondary school principals based on the academic qualification variable.

To empirically test these hypotheses, the study adopted a descriptive-analytical approach using a quantitative methodology. A questionnaire was utilized as the primary research tool and was distributed to a sample of 195 school teachers. Data analysis was conducted using SPSS statistical software.

Key Findings:

- There is a moderate role of electronic management in implementing organizational justice in the study field from the perspective of female teachers.
- No significant difference was found in the mean responses of the study sample regarding the level of organizational culture among secondary school principals based on the academic qualification variable. (Mohamed & Al-Hawasha, 2023)

Evaluation of the Previous Study:

The previous study outlined above demonstrates the role of electronic management in implementing organizational justice, utilizing a quantitative statistical approach (*role-based study*). However, it avoids a qualitative or integrative approach that combines both quantitative and qualitative analysis to assess the reliability and integrity of the study data. Additionally, while the study field suggests a comprehensive survey methodology covering all secondary schools, the study sample lacks coherence with the field of study.

Position of the Current Study in Relation to the Previous Study:

The current study adopts an integrative approach that combines both quantitative and qualitative methodologies within the framework of management, organization, and labour dynamics. It employs a variety of data collection tools and incorporates field-based questions, given the scarcity of prior research on the current issue.

Relying on a case study methodology, the study delves deep into the phenomenon under investigation, examining individuals, hierarchical levels, and factory units. Its research questions integrate both administrative and production dimensions of the factory, simulating novel aspects such as industrial equipment digitization and corrective justice.

Furthermore, the study establishes theoretical harmony by aligning its conceptual dimensions with factory operations and ensures a sample size that aligns with the case study methodology.

f) Theoretical Approach of the Study:

Definition of the Adopted Theory:

In the sociology of organization and labour, theory serves as a foundational pillar for any academic research, as it remains applicable across different times and contexts. The pioneer of functionalist structuralism, Amitai Etzioni, asserts that organizational theory has reached a high degree of growth, integration, and adaptability (Akkouchi, 2004/2005, p. 10) to both planned and incidental organizational situations.

Since this study focuses on the factory setting and the evolution of basic technology into what is now called electronic management, it has been determined to base this research on the socio-technical theory of organizations, developed by Emery & Trist. This scholarly duo established the aforementioned theory in their book *Systems Thinking*, where they conducted experiments on coal mining operations in Britain (Al-Salmi, 1980, p. 50).

This approach aligns with micro-level analysis, emphasizing the interaction between the worker and the machine, which falls within the microsociological framework. We have prioritized microsociological analysis since the study is a case study of the factory under investigation, rather than an examination of societies or large-scale systemic structures.

Reasons for Choosing the Theory:

- The theory is derived from experiments conducted in a factory setting, which perfectly aligns with the field of our study, El-Maa Labiod Cement Factory in Tébessa, Algeria.
- In Emery and Trist's experiments, new and advanced machinery was introduced, which corresponds to the digital control of industrial equipment, a key variable in electronic management, as adopted in the second research question.
- The second experiment conducted by Emery and Trist involved fair job distribution, equitable cooperation among work teams, and just moral encouragement within teams, which aligns with the organizational justice variable in the current study.

II. The Theoretical Aspect of the Study:

a) Theoretical Overview of the Use of Electronic Management and Organizational Justice in the Algerian Factory

The dimensions of electronic management can be embodied in digital functions that facilitate factory operations to produce goods that better align with market demands through the following:

Electronic Factory Planning: This serves as the initial phase, integrating various information systems, such as decision-making management through artificial networks, to streamline workflow

procedures. This approach is applied across different factory departments, reinforcing the strategic implementation of effective planning to ensure successful production processes.

Electronic Factory Organization: This aspect is closely related to the organizational structure, as it involves arranging activities in a manner that contributes to achieving the factory's objectives. Therefore, the organizational structure (including its units and hierarchical levels) should be aligned with digital transformation. Additionally, managers should possess a dominant electronic mindset, characterized by intelligent digital thinking and a comprehensive understanding of information systems within the factory. For instance, the electronic management of human resources (GRH) can be implemented through the digitization of employee affairs, general services, and the administration of the factory's social affairs.

Electronic Leadership: A factory cannot function without a leader, as both factory management and production processes require leadership characterized by rationality and sound judgment. Therefore, the leader must possess effective guidance skills and the ability to exert digital influence over individuals through proficiency in utilizing digital tools and technologies within the factory (Chili, 2019, pp. 47–48). Additionally, a competent supervisory role is essential to motivate workers and enhance their physical and intellectual efforts, ensuring a harmonious factory management process. The factory leadership structure consists of:

The Factory Director, assisted by the Technical Director, who is responsible for overseeing various factory departments.

The Technical Management Team, which includes supervisors tasked with technical operations, ensuring production continuity, equipment maintenance, and material supervision in the manufacturing process.

Supervisors of the Quality Control Department, responsible for analyzing the final product in specialized laboratories to maintain production standards.

b) Organizational Justice in the Factory:

The success of industrial performance depends on the effective implementation of organizational justice in all its dimensions. This encourages the human resource within the factory to develop innovative and efficient work methods, ensuring high-quality production. Therefore, it is essential to highlight the procedures and principles that regulate organizational justice in the factory:

Organizational Justice Procedures

- Ensuring objectivity in the practice of justice within the factory, meaning that organizational justice rules should be formalized to uphold the principle of fairness among workers without discrimination.
- Applying justice in administrative operations, ensuring that all tools and methods used in production are standardized and regulated.
- Distributing agreed-upon decisions fairly among the different factory departments.
- Guaranteeing equality among all workers, regardless of their rank or category, in the application of work procedures.

Principles of Organizational Justice:

- The Appeal Principle: This refers to the ability to challenge or modify decisions in a way that serves both the worker and the factory's objectives.
- The Ethical Principle: Ensuring the ethical distribution of factory resources.
- The Representation Principle: Involves representing others and including them in decision-making processes.
- The Objectivity Principle: Avoiding bias toward parties that disrupt the balance of industrial performance.
- The Accuracy Principle: Ensuring that work is based on reliable and verified information sources. (Ayedh Al-Asmeri, 2013, pp. 20-21).

c) Theoretical Relationship Between Electronic Management and Organizational Justice:

Electronic management contributes to digitally and formally disclosing the dimensions of practicing organizational justice, thereby enhancing the capabilities of the human resource to achieve

positive objectives. Additionally, electronic management is considered essential for ensuring workers' well-being, particularly after their efforts were exhausted during the era of traditional management, where workers were treated as mere machines, as described in classical organizational theories.

This leads us to conclude that electronic management fosters organizational justice by digitizing factory management processes and ensuring fair treatment of administrative bodies through more transparent and impartial practices than before.

III. The Applied Aspect of the Study:

a) The Spatiotemporal Framework of the Study:

The present study was conducted at El-maa Labiod Cement Company (SCT), located in the southern part of Tébessa Province. This company is one of the major local industrial giants in cement production. It was established on November 10, 1993, under the name SCT, which stands for Société de Ciment de Tébessa. The company has financial ties extending to both eastern and western Algeria.

The factory, situated in the southern region of Tébessa, engages in various industrial activities, including the extraction of raw materials such as gypsum, clay, and sand. Its annual production capacity is estimated at 325,000 tons. The company comprises multiple departments, including the Plant Manager's Office, the Technical Directorate, the Quality Control Directorate, the IT Department, the Supply Division, and the Raw Materials Division (Preliminary Data, 2025).

The field study was conducted over a period extending from January 5 to January 19, 2025, through site visits scheduled during the morning working hours of the factory.

b) Content of the Field Survey:

Field Survey for the Operational Definition of Study Concepts:

The first week of the study was dedicated to conducting inquiries among factory employees regarding the key dimensions of the study's title, electronic management and organizational justice. These inquiries were posed randomly, without a predetermined number of participants. Subsequently, additional questions were formulated to explore the operational definitions of these concepts in greater depth. Given that the study is novel and field-based, the two researchers opted for direct interviews to investigate these concepts thoroughly.

The direct interview questions included:

How is electronic management implemented in the company? Do you use digitalization in performing your tasks? What is your opinion on the digitization of industrial equipment? Are you subject to explicit electronic monitoring? If so, what does this monitoring entail? How would you define organizational justice? Do you believe organizational justice is present in your workplace?

Additional questions were then posed concerning the secondary concepts mentioned in the study's inquiries, such as:

Does the company follow fair opportunity distribution? If so, how is it manifested in your opinion? Is distributive justice ensured within the company? How would you define procedural justice?

In the second week, a structured interview questionnaire was distributed to assess indicators related to the study's inquiries.

c) The Research Methodology:

There is an ongoing debate regarding whether the case study method relies on the descriptive method as a foundational approach or whether it is an independent methodology with its own tools and distinct characteristics (Hamed, 1993, p. 312).

The two researchers, however, view the case study method as one that examines small-scale organizational structures, characterized by a limited number of individuals, units, and organizational levels. This perspective aligns with the nature of the present study, as the method allows for an in-depth exploration of field realities and enhances the credibility of the research findings.

d) Study Tools:

The study utilized both direct and indirect interviews to collect data. Respondents were questioned using a structured interview guide, while indirect techniques, such as echoing responses, were employed to verify the accuracy of their answers. Additionally, spontaneous observation was used to

assess indicators of electronic management, including the digitization of industrial equipment and employees' electronic performance control. The study also relied on pre-existing institutional data, such as the company's official profile and documentation.

e) Study Sample and Selection Method:

The total population of the study consisted of 399 employees, distributed across executives, supervisors, and operational workers. The sample size was determined using the following calculation: $n = 399 \times 10/100 = 39.10 \approx 40$

A simple random sampling technique was used for several reasons:

The study addresses new research questions, making random sampling the most appropriate method.

The time constraints of the study required an efficient sampling approach.

A total of 40 structured interview questionnaires were distributed, and 36 were successfully retrieved. Some forms were excluded due to damage (2) and ambiguity in responses (2), while 2 respondents did not return their questionnaires.

f) Presentation of Field Data:

First Question: Does Digital Control of Production Impact Distributive Justice in the Studied Factory?

Table (01) presents respondents' answers regarding the impact of using digitized equipment on the distribution of gains among workers.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes | 11 | 30.55% |
| No | 25 | 69.44% |
| Total | 36 | 100% |

From the data presented in Table 01, it is observed that 69.44% of respondents answered "No", while 30.55% answered "Yes". This indicates that the digitization of equipment does not significantly impact the distribution of gains among workers. This can be attributed to the fact that digitalization reduces physical effort for workers and optimizes working time, rather than directly affecting the allocation of financial or material rewards.

Table (02): Type of Impact.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Positive | 22 | 61.11% |
| Negative | 14 | 38.88% |
| Total | 36 | 100% |

It is evident from Table 02 that the type of impact is predominantly positive, with 61.11% of respondents indicating a positive effect. This suggests that the use of highly digitized equipment contributes positively to the distribution of gains among workers. Such findings align with the principles of the socio-technical approach adopted in this study, which emphasizes the integration of technology to enhance both productivity and fairness in the workplace.

Table (3): represents the respondents' answers regarding the factory's use of the smart maintenance system.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes | 24 | 66.6% |
| No | 12 | 33.3% |
| Total | 36 | 100% |

It is evident from Table (3) that the factory follows a smart maintenance system for industrial machines, as 66.6% of the respondents answered "Yes," while 33.3% answered "No." This indicates that the factory under study keeps pace with advanced digitalization, which accelerates workers' performance and enhances the quality of production.

Table (4): represents the type of impact on wage distribution.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Increase | 3 | 8.33% |
| Stable | 25 | 69.4% |
| Decrease | 8 | 22.2% |
| Total | 36 | 100% |

In Table (4), which illustrates the type of impact on wage distribution, the percentage of respondents who answered "Stable" reached 69.4%, while the percentage of those who answered "Decrease" was 22.2%. This indicates that the smart maintenance system neither reduces nor increases wage distribution, ensuring financial fairness among all workers or equity in returns.

Through the analysis of the data presented in the tables regarding the first question, it can be concluded that digital control over the factory's productivity has a positive impact on equity in returns. This impact is reflected in the stability of wages and the positive effect on the distribution of profits among workers. This finding is entirely consistent with the theoretical framework on which the current study is based.

Second Question: Does the digitalization of industrial equipment impact equity in opportunities among the factory workers under study?

Table (5): represents the respondents' answers regarding the factory's adoption of digitalization and automation for industrial machines.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes | 30 | 83.33% |
| No | 6 | 16.66% |
| Total | 36 | 100% |

All respondents predominantly answered "Yes," reaching a percentage of 83.33%. This indicates the factory's readiness for digital modernization and its commitment to leveraging all available resources to develop industrial equipment and keep pace with smart technology for improved production efficiency. This aligns with the theoretical framework of "socio-technical systems," which emphasizes the adoption of smart technology and its positive impact on accelerating performance (Houssein, & Al-Hawasha, 2023).

Table (6): represents the respondents' answers regarding gender differences in skills for using smart industrial machines.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes | 33 | 91.66% |
| No | 3 | 8.33% |
| Total | 36 | 100% |

It is evident from Table (6) that there are differences in skills for using smart industrial machines, with a percentage of 91.66%. The table below further clarifies in whose favour these differences exist.

Table (7): represents the gender with the highest proficiency in using smart industrial machines.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Males | 18 | 50% |
| Females | 18 | 50% |
| Total | 36 | 100% |

The responses of the sample indicate a self-affirmation of skills in using smart industrial machines, with both males and females equally responding at 50%. This suggests that both genders perceive their technical competencies as sufficient for leading in technological performance. Moreover, it highlights a strong technological competition between the two genders, which signals promising prospects and improved production quality for the factory in the near future.

After analyzing the content and data presented in the tables related to the second question, it becomes evident that the digitalization of industrial equipment has a positive impact on gender equity in opportunities. This positive impact is reflected in the dominance of healthy competition between males and females to advance the factory's objectives, the acceleration of digitized performance, and the adoption of modern strategies that enable the factory to pioneer effective and successful technological experiences, ultimately ensuring high-quality production.

Third Question: Does electronic regulatory oversight impact corrective justice for errors occurring in the factory under study?

Table (8) represents the respondents' answers regarding their submission to electronic oversight.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes | 36 | 100% |
| No | 0 | 0% |
| Total | 36 | 100% |

From Table (8), it is evident that all respondents answered "Yes" with a percentage of 100%. This confirms the industrial supervisors' commitment to continuous monitoring to prevent work errors that could disrupt the quality of cement production and consequently harm the product's reputation in the market.

Table (9): represents the respondents' answers regarding the type of oversight.

| Response | Frequency | Percentage |
|-----------------|-----------|------------|
| Electronic | 30 | 83.33% |
| Traditional | 5 | 13.88% |
| Self-monitoring | 1 | 2.7% |
| Total | 36 | 100% |

The responses indicate that electronic oversight dominates, with 83.33% of respondents confirming its use. Meanwhile, traditional and self-monitoring methods are being phased out by the factory's management. Based on our observations, the factory employs surveillance cameras

throughout its facilities and utilizes advanced laboratory detection devices to assess the quality and shelf life of raw materials used in cement production.

Table (10): represents the respondents' answers regarding whether advanced monitoring equipment excels in quickly detecting performance violations.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Yes | 29 | 80.55% |
| No | 7 | 19.44% |
| Total | 36 | 100% |

Table (10) shows strong support for the advancement of monitoring systems and their ability to quickly detect violations, with 80.55% of respondents agreeing. However, 19.44% expressed disagreement, primarily from operational staff such as factory security personnel, who are not directly involved in the industrial performance process—either administratively or organizationally—as their role is limited to ensuring the factory's security.

Table (11): represents the respondents' answers regarding the impact of advanced monitoring on error correction procedures.

| Response | Frequency | Percentage |
|----------|-----------|------------|
| Positive | 28 | 77.77% |
| Negative | 8 | 22.22% |
| Total | 36 | 100% |

The table shows that the majority of respondents (77.77%) perceive the impact as positive. This indicates that the digitalization of monitoring has a highly beneficial effect on correcting errors in administrative and industrial processes. It helps prevent financial and moral losses that could arise from spontaneous violations, ensuring smoother operations and increased efficiency.

After the quantitative and qualitative analysis of the third question and its field indicators, it is evident that electronic regulatory oversight has a highly positive impact in minimizing unintended errors and violations. Consequently, the factory can digitally prepare for any industrial performance contingencies, enabling it to produce goods that align with market demands and the needs of the local community.

g) Study Results and Similarities with the Socio-Technical Systems Approach:

The answers to the three study questions demonstrated the positive impact of the dimensions of electronic management and organizational justice variables:

- Digital control of production has a positive impact on distributive justice in the factory under study.
- Industrial equipment digitization has a positive impact on equity in opportunities among workers in the factory under study.
- Electronic organizational oversight has a positive impact on corrective justice concerning errors occurring in the factory under study.

The socio-technical systems theory addresses the introduction of more advanced industrial machinery into factories than before, which, in our present context, is referred to as electronic management. This, in turn, enhances workers' performance in interaction with modern technological tools. Since the theory's experiments stipulate the fair distribution of tasks among individuals, falling

under the dependent variable of organizational justice, this aligns with the positive impact of electronic management on the dimensions and indicators of organizational justice in the factory under study (Institutional Ready Data, 2025).

Conclusion

Through an in-depth examination of the present study on electronic management and its impact on organizational justice, conducted following an applied research methodology widely accepted among academic researchers and drawing on the modern theoretical framework of socio-technical systems, it has been empirically established that electronic management has highly positive effects on organizational justice. This finding underscores the need to integrate both variables to enhance the objectives of Algerian factories. Implementing the study's findings could foster greater fairness and transparency in industrial administrative and organizational processes, uphold the principle of workplace integrity, and mitigate workforce issues related to the exhaustion caused by traditional labour-intensive methods, which can be alleviated by digitizing machinery and ensuring justice in opportunities, correction, and compensation.

Accordingly, the present study recommends the following:

- Continuing research on the current study's variables while diversifying research procedures and tools.
- Strengthening scientific initiatives advocating for the digitization of Algerian enterprises and the implementation of organizational justice.
- Identifying and addressing obstacles that unexpectedly hinder the application of digitization and organizational justice.

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