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Original Article

Impact of Firm Linkages on Technology Transfer: Case of the Moroccan Aerospace Sector

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Abstract *- Technology transfer (TT) is crucial for economic actors and public institutions. It serves as a means to build new economic activities through the exchange of skills (knowledge, know-how, and interpersonal skills) between certain structures. Such technology transfer encourages firms to innovate and enhance their capabilities by adapting more rapidly to global technological developments. Thus, TT can be achieved through various channels, with multinational firms (MNCs) being the primary channel. In this context, this article focuses on technology transfer by multinational firms, examining the impact of firm linkages in the Moroccan aerospace sector. After contextualizing the study, dimensions were identified and theoretically justified, leading to the formulation of hypotheses that underpin the conceptual model of this research. A questionnaire was created and distributed to firms operating in the Moroccan aerospace sector to test these hypotheses. The responses obtained were processed and analyzed using the ordinary least squares method with IBM SPSS V24 software. This analysis identified the dimensions that strongly impact technology transfer by MNCs in the Moroccan aerospace sector.*

Keywords *- Technology transfer, Multinational firms, Developing countries, Technological spillovers, Moroccan aerospace sector.*

1. Introduction

Technology transfer is a system of economic relations through which technology developed in one organization is transformed into a commercial product or process used by another organization. It occurs when the recipient considers it new, enabling the recipient to increase its technological capabilities and innovate. This transfer can be initiated either by the organization that developed the technology or by the one that acquires it. In the latter case, the acquiring organization must have an absorptive capacity to internalize the transferred technology. According to the literature, there are different types of technology transfers:

- International Transfers (from one country to another),
- Inter-Company Transfers (from one company to another),
- Intra-Company Transfers (from one unit of a company to another), and
- Inter-Institutional Transfers (from a research center to a company).

This classification highlights the plurality of technology transfer channels, especially between firms. Among these channels, Multinational firms (MNCs) are recognized as the most important agents of international technology transfer [1]. According to these authors, technology transfer is a vehicle for Foreign Direct Investment (FDI), a channel multinationals use to spread new technologies and know-how worldwide. The role of multinational firms is crucial because they serve as intermediaries between the technology developed in one country and its dissemination in another. Thus, the linkages that multinationals maintain with local firms are essential for understanding technology transfer mechanisms. However, this form of technology transfer is subject to a number of shortcomings and obstacles. If, for example, the receiving country does not have an adequate infrastructure, a skilled workforce, legislative and regulatory facilities, a competitive industry that keeps pace with technological developments, incentives for research and development activities, etc., then the transfer of technology to the receiving country is not a viable option. With this in mind, this study investigates the impact of these linkages on technology transfer in the Moroccan aerospace sector. The choice of this sector is justified by its strategic importance for Morocco, which has become an aerospace hub in recent years. Several foreign companies have set up operations in the country, creating a dynamic ecosystem that fosters knowledge and technology transfer. According to the Ministry of Industry, in 18 years, Morocco has built a quality, diversified and competitive aeronautical base. The sector is experiencing considerable growth and a dynamism that is no longer in doubt. New and high-value-added professions have developed. Global majors have opted for Morocco as a destination. Key players have also chosen the Kingdom. These establishments are the perfect illustration of the emergence of a sector that is only gaining in performance and competitiveness. The sector currently has more than 142 companies. These created nearly 11.31 direct jobs and generated 15.6 billion dirhams in turnover in 2019. This has allowed Morocco to distinguish itself from several countries with the same level of development in Africa and Asia. The research problem is structured around the following question: What is the impact of linkages between multinational firms and local firms on technology transfer in the Moroccan aerospace sector? In other words, it is about knowing the pilot role that multinational firms can play to help local companies develop their performances. It is about knowing how foreign firms can accompany them in following the technological evolution on the axes that have been judged relevant according to the literature review. To address this question, the following hypotheses were proposed:

- H1: The more intense the linkages between multinationals and local firms, the greater the technology transfer.
- H2: The absorptive capacity of local firms positively moderates the relationship between linkages and technology transfer.
- H3: The type of linkages (formal/informal) influences the nature of the technology transfer.

The rest of this article is organized as follows: Section 2 reviews the literature on technology transfer and the role of linkages. Section 3 presents the research hypotheses. Section 4 focuses on the research model. Then, section 5 presents the research methodology. Section 6 reports the results of the empirical study and model validation test. Finally, Section 7 discusses the findings and concludes the article.

2. Literature Review

Multinational corporations (MNCs) are responsible for a significant portion of the transfer of advanced technologies worldwide. They are considered powerful and effective means of spreading technology from developed to developing countries, often viewed as the only source of new and innovative technologies typically unavailable in underdeveloped markets. Technological progress is crucial for economic growth and can stimulate economic development and industrialization. Many countries lack the resources and research and development (R&D) capabilities necessary to develop their own product and process technologies, which is especially true for developing economies [2]. Therefore, MNCs represent an important means of accessing advanced technology. The concept of technology transfer has a long and rich history of theory and research. The technology transferred by MNCs can take two forms: hard technology and soft atechnology [3]. Hard technology involves physical investment: plants, equipment, and machinery. Therefore, hard technology is thought to include the aspects of knowledge embedded in machines and equipment. On the other hand, soft technology includes knowledge, management and organizational systems, and production processes. Soft technology is thought to encompass the disembodied knowledge resulting from the transfer of operational skills. MNCs can affect host country firms through technology transfer in two ways: directly and indirectly. Foreign companies directly inject foreign capital, technologies, and management skills into their subsidiaries, increasing productivity. This is known as the direct effect of [21]. The positive direct effect of MNCs has been empirically examined and confirmed in numerous studies. However, foreign companies not only affect their subsidiaries but also other firms in the same sector or even other sectors. These indirect effects are known as spillovers or externalities. According to [4], spillovers can take the form of positive and negative externalities resulting from incoming foreign investments. Spillovers can occur internally between firms that may be in direct competition with foreign firms (intra-industry spillovers) and externally (inter-industry *spillovers) to other* firms in the host economy that are vertically integrated with foreign firms, such as suppliers (upstream spillovers) and customers [5]. To summarize, from this literature review, several ways have been identified through which technology and know-how can be disseminated from a foreign firm to other local firms, such as the demonstration or imitation effect, the competition effect, the cooperation effect or foreign linkages, and the circulation of trained labor. However, we found a scarcity of research addressing these factors' impact on technology transfer in a specific Moroccan industrial sector, particularly the aerospace sector. This sector is characterized by rapid growth, receiving significant MNCs from various nations and possessing different forms of technologies.

3. Research Hypotheses

Based on several research studies [6][7][8] and considering the Moroccan aeronautical context, six main variables that can impact technology transfer (TT) by multinational firms (MNCs) have been identified. These are: R&D cooperation, TT cooperation, partnership relations, competition, labor mobility, and imitation.

- R&D and TT Cooperation involves pooling the necessary resources to carry out R&D. TT Cooperation involves pooling the necessary resources to conduct research and development activities between two or more entities [9][10]. On the other hand, TT cooperation creates positive technological spillovers by transferring management skills and tacit knowledge [11]. Thus, R&D and TT cooperation ensures the transfer of knowledge and know-how, which positively contributes to improving the local firm's productive efficiency.

- Partnership Relations encourage local firms to adopt new technologies. The MNCs require their suppliers to participate in their value chain by asking them to meet stricter quality standards and reduce product lead times [12].
- Technology transfer through competition is a relatively complex channel that generally depends on the competitiveness of local firms. The multinational has the power to improve local firms' productivity through its impact on competition. The spillover effect resulting from competition often manifests in the following way: the presence of multinationals exerts competitive pressure on local firms. This pressure forces local firms to become more competitive and efficient, optimizing their production chains and modernizing their technologies.
- Labor mobility is another means of technology transfer from MNCs to local firms. Workers employed by MNCs acquire skills and knowledge of their technologies through practice, experience, and training [13]. Thus, this workforce will transfer this knowledge, expertise, and know-how to local firms if they are recruited by them [14].
- Local firms can increase their productive efficiency through imitation or reverse engineering of MNCs' technologies. Local firms can set benchmarks against MNCs and observe the new and improved technologies that these firms introduce into the sector [4][6].

The table below summarizes these dimensions with their theoretical justifications:

Table 1. Theoretical justifications for the firm linkages dimension

Dimension	Sub-Dimension	Theoretical Justifications
Direct/Indirect Firm Linkages	R&D Cooperation	[9][10][22][25][31]
	TT Cooperation	[11][15][34][33][30]
	Partnership Relations	[10][12][16][38][23]
	Competition	[1][2][5][6][8][11][13][15]
	Labor Mobility	
	Imitation	

Source: Compiled by the authors.

From these dimensions, the following hypotheses were derived:

Table 2. Research hypotheses

	Sub-Dimension	Hypotheses
Do linkages between aeronautical firms positively impact technology transfer?	R&D Cooperation	H1: R&D cooperation positively impacts technology transfer
	TT Cooperation	H2: TT cooperation positively impacts technology transfer
	Partnership Relations	H3: Partnership relations positively impact technology transfer
	Competition	H4: Competition through spillover effects positively impacts TT
	Labor Mobility	H5: Labor mobility has a positive effect on technology transfer
	Imitation	H6: Imitation has a positive effect on technology transfer

Source: Compiled by the authors.

4. Research Model

Based on the previously presented hypotheses, the following conceptual model has been constructed (Figure 1). It will serve as a roadmap for conducting any tests or verifications of the various proposed hypotheses related to technology transfer through Foreign Direct Investment (FDI) by multinational firms (MNCs) in the Moroccan aeronautical sector.

5. Research Methodology

The theme of this research is to determine the impact of linkages between firms on technology transfer in the aeronautical sector in Morocco. This causality will, therefore, require a positivist paradigm. The main objective is to discover and explain the reality of technology transfer in the Moroccan aeronautical sector through the linkages between multinational firms (MNCs) and local firms. Indeed, we aim to empirically test the research hypotheses in the Moroccan aeronautical sector using a hypothetico-deductive approach. The goal is to either confirm or reject the hypotheses of this research. A closed-ended questionnaire as a data collection tool will be used to achieve this objective.

5.1. Questionnaire and Pre-Test

To quantify and compare information, it is essential to conduct a survey through a questionnaire, as it is a crucial investigative tool. The information was collected from a representative sample of the population targeted to align with the research hypotheses. The first section (I) has a descriptive purpose, as it will help to position the responding companies. The second section (II), which is significantly more important, is dedicated to measuring the variables of the research model. The questionnaire is directed at executives, managers, and key players of firms operating in the Moroccan aeronautical sector, and they are required to answer all the questions. The final structure of the questionnaire consists of 31 items. These elements were measured using the Likert scale (1 = Strongly disagree, 5 = Strongly agree). To ensure the content validity of this study, an initial version of the questionnaire was first discussed with the thesis supervisor, two experts in quantitative research, three managers working in aeronautical companies, and a representative from the Ministry of Industry and Trade in the aeronautical department. Their feedback helped in revising the questionnaire. This revision was valuable for clarifying the content and understanding the items, as well as for reviewing the length and layout of the questionnaire. It also allowed the questionnaire to be better tailored to the study sector. The first version of the questionnaire was subjected to a pre-test. Face-to-face administration of the questionnaire with a limited number of respondents (10 respondents) has been conducted. Based on the pre-test results, some adjustments to the format and response options of certain questions were made to facilitate understanding. Additionally, the pre-test helped us validate the reliability of the measurement scales. Given the limited number of items (single-item variables), we were compelled to retain all items until the reliability and validity of the measurement scales were tested and analyzed.

5.2. Data Collection

In the context of the Moroccan aeronautical sector, there are currently 142 firms operating in this field, according to the Ministry of Industry and Trade and the GIMAS. The vast majority of these firms are located in the Greater Casablanca region, with 73% concentrated in Aéropôle and Midparc. These firms are a mix of wholly foreign-owned companies (subsidiaries), joint ventures, and Moroccan firms (subcontractors). However, eleven (11) companies were excluded from the sample because they were irrelevant to this research. In total, we received 57 responses has been received, representing 34% of the population. Subsequently, proceeded to clean the database, which was followed by descriptive analysis and hypothesis testing. In this process, 6 incomplete responses or those with uncertainties are detected. Over 80% of the activities in the sample are divided among manufacturing and assembly, subcontracting, maintenance and engineering, aerospace construction, cabling, precision mechanics, and design. Additionally, more than 70% of the sample consists of multinational firms, of which over 50% are wholly new subsidiaries, 20% are joint ventures, and the rest are alliances and mergers/acquisitions.

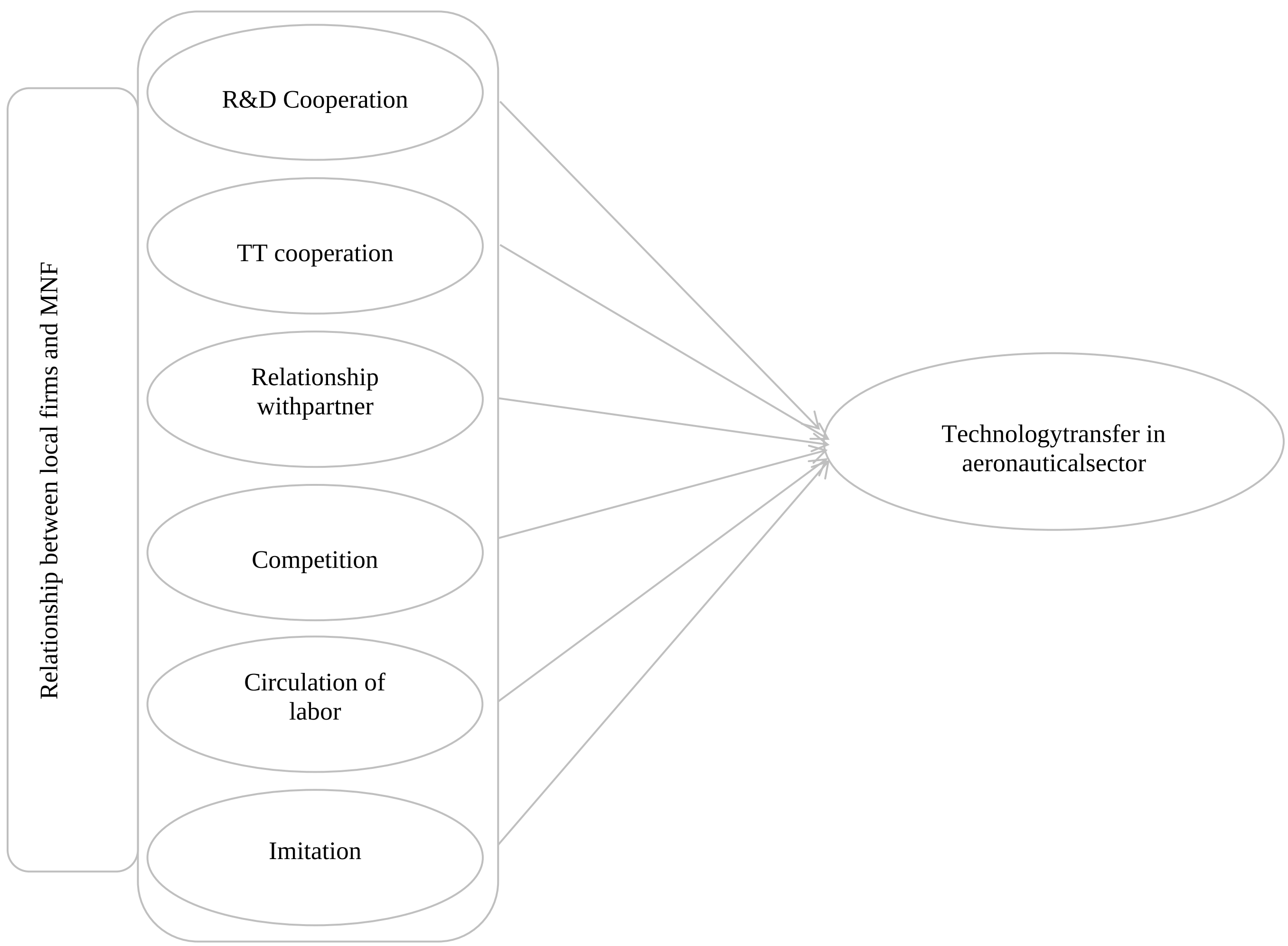


Fig. 1 Conceptual model (Source: Prepared by us

5.3. Measurement Variables

Six sub-variables are selected. First, we chose CRD to measure cooperation in R&D. Then, we opted for CTT to measure cooperation in technology transfer. Next, we focused on the variable RAP to measure partnership relations. Additionally, we chose the variable CCR to measure the effect of competition. Finally, the variables CMO and IMTwere selected to measure labor mobility and imitation, respectively.

Table 3. Summary of variables

Variables	Code
Cooperation in R&D	CRD
Cooperation in Technology Transfer	CTT
Partnership Relations	RAP
Competition	CCR
Labor Mobility	CMO
Imitation	IMT
Technology Transfer	TRT

Source: Prepared by us

5.4. Data Processing Method: Ordinary Least Squares Method

For data analysis, descriptive statistics to highlight the main characteristics of the study sample have been used. The descriptive analysis of the data collected from 57 Moroccan aeronautical firms was carried out using the statistical software SPSS (version 24).

Subsequently, we opted for econometric models based on the Ordinary Least Squares (OLS) method. Indeed, we conducted linear regressions that examine the effect of the presence of multinational companies (MNCs) on technology transfer in the Moroccan aeronautical sector.

6. Model Validation Tests

6.1. Multicollinearity Test

The table below provides the Pearson correlation coefficient matrices between dependent and independent variables.

Table 4. Correlation matrix

	CRD	CTT	RAP	CCR	CMO	IMT	TRT
CRD	1						
CTT	-,105	1					
RAP	,056	,090	1				
CCR	-,343*	,035	-,329*	1			
CMO	-,026	-,091	-,016	-,191	1		
IMT	,048	,417**	-,010	,009	-,180	1	
TRT	,191	,288*	-,090	,093	,093	,224	1

Source: Results of the empirical study

A thorough examination of this matrix reveals that the correlation coefficient values for all associations are below 0.70, which indicates the absence of any collinearity issues between the variables.

Therefore, we can rule out any multicollinearity problems among the explanatory variables.

6.2. Normality Test of the Distribution

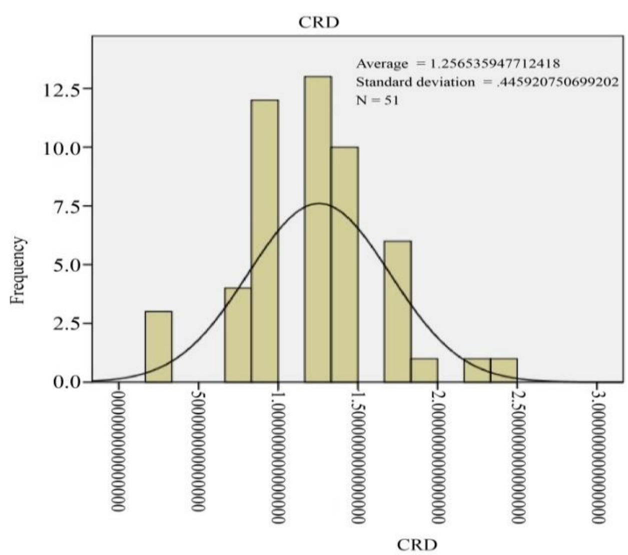
The purpose of the normality test is to ensure that the sample follows a normal distribution for all the variables in the model. The table below shows the results of this test:

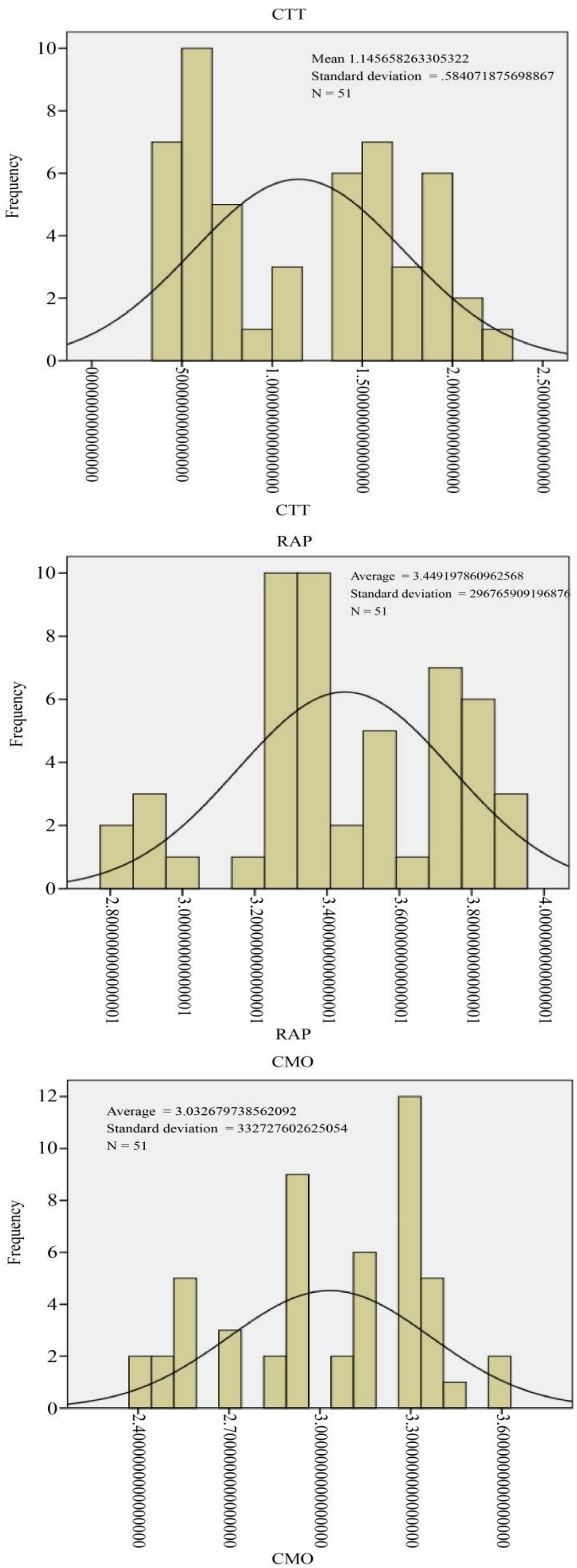
Table 5. Results of the normality test

	Skewness	Standard Error of Skewness	Kurtosis	Standard Error of Kurtosis
CRD	,090	,333	1,062	,656
CTT	,142	,333	-1,392	,656
RAP	-,312	,333	-,522	,656
CCR	,069	,333	-1,002	,656
CMO	-,430	,333	-,957	,656
IMT	-,241	,333	-,921	,656
TRT	,646	,333	1,860	,656

Source: Results of the empirical study

According to the results from the table above, we observe that for all variables, the skewness coefficients fall within the range of -1.5 to 1.5, and no kurtosis coefficient exceeds 1.5 except for the technology transfer (TRT) variable, which shows a slight deviation from normality conditions (1.86) as suggested by [19].





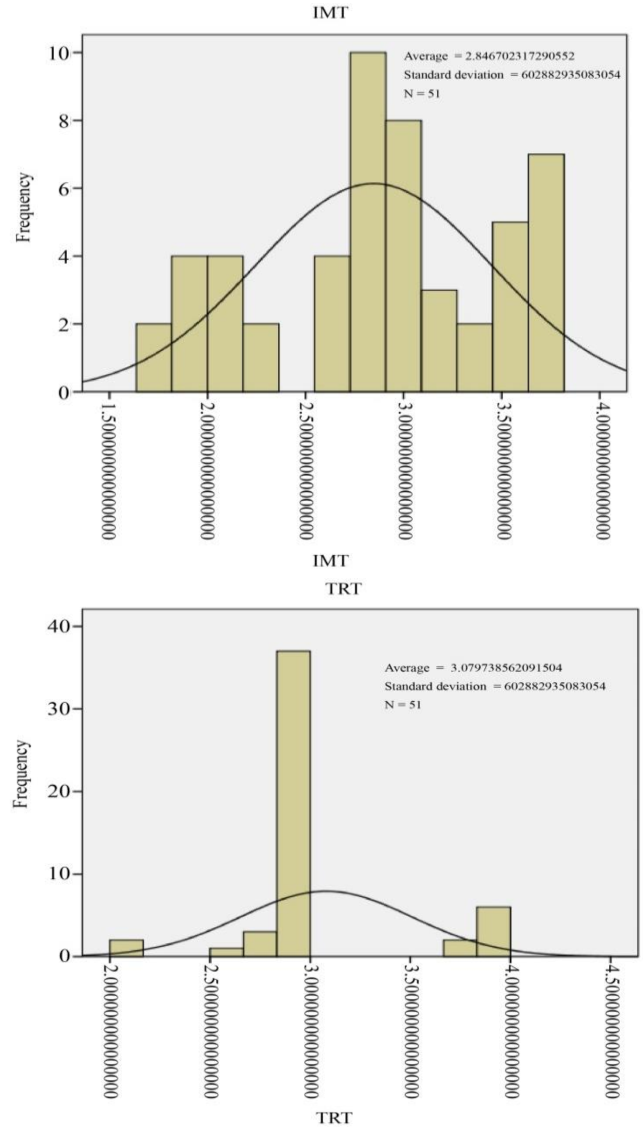


Fig. 2 Violations of distribution normality (Source: Results of the empirical study)

This can be considered acceptable according to kurtosis, which allows the coefficient to have a maximum value of 2[19]. Furthermore, the standard errors of skewness are also within the range of -2 to 2. These results confirm that the distribution is normal. Thus, no variable needs to be excluded. Also, the diagrams will be presented with Gaussian curves to examine variables that exhibit minor anomalies. According to the figures above from IBM SPSS version 24, all variables follow a normal distribution and are centered around the mean, except for the variable Relationship with Partner (RAP), which is slightly skewed to the left. A significantly negative skewness distribution confirms this.

6.3. Measurement Error Distribution Test: Heteroscedasticity Test

The heteroscedasticity test determines if the variance of the model's errors is not constant across all observations.

According to the Ordinary Least Squares (OLS) modeling rule, variances are assumed to be homogeneous, meaning that the model errors are distributed similarly. In other words, errors are said to be homoscedastic. Conversely, if measurement errors are not homoscedastic, it results in estimated model coefficients that are neither unbiased nor of minimum variance, and the estimation of their variance is unreliable [20]. In this context, a graphical method has been used to show the nature of the measurement error distribution.

The obtained result shows that the measurement errors are distributed around the regression line as a cylinder, indicating that the measurement error distribution is homoscedastic. Therefore, there is no issue of heteroscedasticity among the random terms (measurement errors) in the research models.

6.4. Durbin-Watson Autocorrelation Test: Causality Test

The Durbin-Watson autocorrelation test, also known as the causality test, is used to determine whether the measurement errors of variables or adjacent observations are correlated with each other. According to the standard, the Durbin-Watson statistic typically falls within the range [0; 4] [21]. Table 6 presents the results of the Durbin-Watson statistic for the regression models. The statistical values shown indicate the presence of positive autocorrelation among the errors of adjacent observations.

Table 6. Durbin-watson autocorrelation results

Model	Durbin Watson	dL	dU	4-dU	4-dL	Decision
Model 1	1,392	1,081	1,692	2,308	2,919	Positive Autocorrelation
Model 2	1,426	1,206	1,537	2,463	2,794	
Model 3	1,514	1,206	1,537	2,463	2,794	
Model 4	1,372	1,245	1,491	2,509	2,755	
Model 5	1,536	1,197	1,584	2,486	2,792	
Model 6	1,425	1.221	1.541	2.471	2.811	

Source: Results of the empirical study

6.5. Explanatory Analysis and Empirical Validation

To assess the relationship between variables related to the links between local firms and multinational companies (MNCs) on technology transfer, the Ordinary Least Squares (OLS) method has been used. We performed linear regressions of technology transfer on the variables in the sample. The absence of a time factor indicates that the fixed effects model is the most suitable for study (Hausman test). This model assumes that the measurement errors at the firm level are fixed over time (Himmelberg et al., 1999). This model takes the following form:

$$TRT = Constant + \beta \times CDR + \beta \times CTT + \beta \times RAP + \beta \times CCR + \beta \times IMT + \mu \quad (1)$$

**Where:

- TRT : Technology Transfer
- CDR : R&D Cooperation
- CTT : Technology Transfer Cooperation
- RAP : Relationship with Partner
- CCR : Competition
- CMO : Labor Mobility
- IMT : Imitation
- Constant: Model constant
- β: Unknown parameters (to be estimated)
- μ: Random term (residual term)**

Test the impact of the links between firms on technology transfer. To do this, the effect of R&D cooperation is first tested, followed by technology transfer cooperation. Subsequently, the effect of the relationship with the partner will be examined, and the impact of competition, labor mobility, and the imitation will be tested. To test the relationship between firm links and technology transfer, refer to the Ordinary Least Squares (OLS) method. The results of the regressions are presented in the table below:

Table 7. The regression results regarding the impact of the presence of MNCs on technology transfer

Model	TRT		
	Coefficients	**T-stat**	**Prob**
Constant	1,297	1,032	,308
CRD	,311	2,371	,022
CTT	,313	3,022	,004
RAP	-,101	-,516	,609
CCR	,346	2,088	,043
CMO	,349	2,055	,046
IMT	-,125	-1,241	,221
R^2	0,316		
Ajusted R^2	0,205		
F value	2,838		0,016
N = 51			
Significance at the 5% level			

Source: Results of the empirical study

According to the regression table using the Ordinary Least Squares (OLS) method, the T-statistics for R&D cooperation (CRD), technology transfer cooperation (CTT), competition (CCR), and labor mobility (CMO) are greater than 1.96 at the 5% significance level. In contrast, the T-statistics for the relationship with the partner (RAP) and imitation (IMT) are below this value (1.96) at the 5% significance level. Thus, the relationship between firm links and technology transfer in the Moroccan aeronautical sector must be analyzed first. The regression results show that the R-squared coefficient has an average value of 31.6%, indicating a positive relationship between firm links and technology transfer. Furthermore, the hypothesis test shows that R&D cooperation has a significantly positive effect on technology transfer (TT). Therefore, we can confirm the findings of [9], who argued that R&D cooperation facilitates technology transfer to recipient firms. Similarly, this study confirms a positive and significant relationship between technology transfer cooperation and technology transfer, supported by [22]. Additionally, the hypothesis test shows that the relationship with the partner does not have a significant effect on technology transfer, which contradicts [12], who state that maintaining upstream and downstream relationships with partners is essential for facilitating technology diffusion and transfer in a sector. The results also show that competition positively impacts technology transfer in the aeronautical sector (T-stat = 2.088). These results align well with the literature, including the works of [1][8][12][6][13], who argue that multinationals can enhance the productivity of local firms through their impact on competition. The competitive pressure exerted by MNCs on local firms forces them to be more competitive and efficient, optimizing their production processes and modernizing their technologies [13]. Additionally, local firms' competitiveness influences the level of technology that can be transferred to the host country. The hypothesis test also shows that labor mobility in the aeronautical sector has a significant and positive effect on technology transfer in Morocco, with T-stat = 2.055. The literature suggests that technology can be transferred by labor who have acquired skills and knowledge in a multinational company and then apply this experience and learning to a local firm, positively impacting the local firm's productive capacity [13]. The results show no significant relationship between imitation and technology transfer in the Moroccan aeronautical sector (prob = 22% >5%). This finding does not align with [1][6], who argue that local firms can benefit from the technologies utilized by MNCs through imitation. However, these results are logical given that the aeronautical sector employs very advanced and difficult-to-copy technologies. The table below summarizes the confirmed and rejected hypotheses:

Table 8. Summarize the confirmed and rejected hypotheses

Research Hypotheses		**Results**
Links between aeronautical firms positively impact technology transfer.		
R&D Cooperation	H1: R&D cooperation positively impacts technology transfer	Accepted
Technology Transfer Cooperation	H2: Technology transfer cooperation positively impacts technology transfer	Accepted
Relationship with Partner	H3: Relationship with the partner positively impacts technology transfer	Rejected
Competition	H4: Competition through spillover effects positively impacts technology transfer	Accepted
Labor Mobility	H5: Labor mobility has a positive effect on technology transfer	Accepted
Imitation	H6: Imitation has a positive effect on technology transfer	Rejected

Source: Prepared by us

7. Discussion and Conclusion

After conducting tests on variables related to the relationship between firm links and technology transfer in the Moroccan aeronautical sector, we found that R&D cooperation positively and significantly impacts technology transfer (TT). This result confirms the findings of [9][10], who argue that R&D cooperation ensures technology transfer to local firms. We recommend that Moroccan aeronautical firms engage in technological development by fostering R&D cooperation with foreign counterparts in the same sector. This can be achieved through establishing multilateral R&D programs between firms and public research institutions. Additionally, the results showed a positive and significant relationship between technology transfer cooperation and technology transfer. This aligns with the work of [17][22], who state that technology transfer cooperation is a key factor for technology transfer and diffusion. In this context, Moroccan aeronautical firms should establish cooperation with one or more firms for technology transfer functions by, for example, formalizing subcontracting contracts and setting up a dedicated technology transfer service. Furthermore, foreign aeronautical firms should provide local firms with industrial processes and products and the necessary technology for practical application. However, the test showed that the relationship with the partner does not significantly affect technology transfer. This contradicts[12][14], who suggest that maintaining upstream and downstream relationships with partners is essential for facilitating technology diffusion and transfer. The lack of a significant effect from the relationship with the partner may be due to the strategic nature of the relationship and the shared risks between the firms, which can vary by sector and technology. Regarding competition, the test demonstrated that this variable has a positive impact on technology transfer in the aeronautical sector. This confirms the findings of [1][2][12][6], who argue that multinationals can enhance the productivity of local firms through their impact on competition. The spillover effect resulting from competition is as follows: the presence of MNCs creates competitive pressure on local firms, compelling them to be more competitive and efficient, optimize their production processes, modernize their technologies, diversify products, and improve human capital skills [6]. Additionally, local firms' competitiveness influences the level of technology that can be transferred to the Moroccan aeronautical sector. The test on labor mobility in the aeronautical sector concluded that it significantly and positively affects technology transfer. This supports the findings of [13][14], who argue that technology can be transferred by labor who have gained skills and knowledge in a multinational company and then apply this experience and learning to a local firm, positively impacting its productive capacity. However, foreign firms seek to protect their competencies from leaking to other firms. This implies that local firms should implement policies to improve working conditions and motivation to attract skilled workers from other firms who have accumulated significant knowledge and expertise. In this way, technology transfer can be facilitated through labor mobility in the Moroccan aeronautical sector. Regarding the variable of imitation, the test results showed no positive and significant impact on technology transfer. This contradicts the findings of [4][2][6], who suggest that local firms can benefit from technologies exploited by MNCs through imitation. Given the sophisticated and advanced nature of technologies used in the aeronautical sector and their high costs, copying a given technology is very difficult, if not impossible. Furthermore, considering the small size and the subcontracting nature of the Moroccan aeronautical sector, we confirm the test results for this variable.

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