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Mentoring, training and financing as drivers of entrepreneurial performance: Empirical evidence from the Fez-Meknes region, Morocco, using PLS-SEM

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Abstract: Entrepreneurial support should be viewed not only as a strategic lever for development but also as a mechanism for business consolidation and long-term survival. This research presents the results of an empirical study examining the contribution of support structures to the performance of 150 entrepreneurs in the Fez-Meknes region of Morocco. The study is structured around four key dimensions: mentoring, financing, training, and networking, drawing on a theoretical framework that integrates resource-based theory [1, 2], human capital [3], social capital [4, 5], and organisational ecology [6, 7]. Using a quantitative approach based on a structured Likert-scale questionnaire, data were analyzed through a two-stage methodology combining principal component analysis (PCA) and Partial Least Squares Structural Equation Modeling (PLS-SEM). The results reveal that mentoring (β=0.264, $p<0.01$), training (β=0.314, $p<0.01$), and access to finance (β=0.251, $p<0.01$) have a significant positive impact on business performance (R^2=0.769), whilst networking shows no significant effect. These findings highlight the importance of contextually aligned, sector-specific support and suggest that policymakers should prioritize tailored mentoring, targeted training programs, and improved financial access mechanisms to enhance entrepreneurial performance in the Maghreb region.

Keywords: *Entrepreneurial performance, Funding, Human capital, Mentoring, Networking, Support structures.*

1. Introduction

Entrepreneurship is widely recognized as one of the key drivers of economic development and innovation [8]. In various parts of the world, the Fez-Meknes region in Morocco serves as an example, with 6,351 new businesses established during the first ten months of 2025 in the Fez-Meknes region [9], where economic diversification efforts are a key priority due to high youth unemployment, and entrepreneurial initiatives play an even more crucial role. However, the long-term success of these initiatives depends on various factors, among which entrepreneurial support remains one of the most important [10]. Today, support for business creation and development takes various forms, notably accelerators, incubators, and business nurseries. This role has been strengthened by the growing recognition of the importance of support for entrepreneurs. Incubators thus offer a range of resources to start-ups, such as mentoring, networking, funding, and training services [11]. While the contribution of incubators to entrepreneurship is now well documented, their evaluation remains controversial.

Entrepreneurial support is an integral part of an organisational vision in which the relationships between actors, resources, and institutional dynamics influence the creation and growth of organisations [12, 13]. The theory of entrepreneurial ecosystems, based on the importance of the entrepreneur's institutional and social environment, developed by Isenberg [14] and further explored by Mack and Mayer [15], also sheds light on one of the objectives of this study. Support mechanisms should therefore

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not be funded in isolation but should form part of a broader framework comprising funding, organisational learning, and social capital [16].

The stakes are high for researchers and practitioners interested in the effectiveness of support structures. Indeed, while several performance measures have been proposed, such as the survival rate of incubated firms [17] or certain quality indicators, such as entrepreneur satisfaction [18], the fact remains that they have a limitation: that of a single-performance approach. However, drawing on previous literature, notably [17] and Aitken and Higgs [19], scholars argue that performance is not single-dimensional but multi-dimensional [20, 21]. Consequently, a comprehensive analytical framework should consider this reality, incorporating a strategic dimension relating to decision-making scope and partnerships, an organizational dimension in terms of human resource management, and a relational dimension focusing on relationships with customers and suppliers. However, assessing this performance remains complex due to the diversity of incubation models [22].

This research aims to examine the effectiveness of entrepreneurial support mechanisms from a multidimensional perspective, drawing on various theoretical frameworks such as human capital, social capital, organisational resources, and the entrepreneurial ecosystem. It includes performance indicators, interpersonal interactions among participants in the support ecosystem, and the learning and innovation dynamics generated within the support mechanisms, with the goal of suggesting ways to improve current schemes. The study offers new insights by applying PLS-SEM modeling to 150 entrepreneurs in Fez-Meknes, a Maghreb context that has not been extensively studied empirically.

2. Theoretical Framework

2.1. Resource Theory

The literature highlights various perspectives that enable an analysis of the impact of support structures on entrepreneurs. Firstly, resource-based theory, introduced by Wernerfelt [1] and developed by Barney [2], argues that the best-performing firms are characterized by the accumulation and exploitation of strategic resources. According to Barney [2], these resources must meet the VRIN criteria: valuable, rare, difficult to imitate, and non-substitutable, to confer a sustained competitive advantage. Applied to support structures, this theory suggests that their ability to provide resources that are both unique and difficult to imitate significantly influences their capacity to support entrepreneurs. From this perspective, Clarysse et al. [10] compared technology and industrial incubators, demonstrating that the performance of these organizations depended on the alignment between the resources offered and the needs of entrepreneurs.

2.2. The Theory of Human Capital

In his 1964 work on human capital, G. Becker defined it as 'the totality of productive capabilities that an individual acquires through the accumulation of general or specific knowledge, know-how, etc.'. When applied to entrepreneurship, this theory has particularly highlighted the importance of entrepreneurs' skills and know-how in identifying opportunities and managing the unexpected. According to Davidsson and Honig [23], business incubators that invest in developing entrepreneurs' skills improve the prospects of success for the businesses they support. The human capital thus developed provides access to networks and social relationships, linking this theory to the social capital analyzed below.

2.3. The Theory of Social Capital

The concept of social capital, introduced by Bourdieu [4] and applied at the organizational level by Pennings et al. [5], highlights the crucial importance of networks and social ties in entrepreneurial dynamics. By offering entrepreneurs access to investors, potential partners, and clients through their mentoring programs, these structures help to strengthen entrepreneurs' social capital and support the businesses they create. Empirical studies, such as those by Pennings et al. [5], indicate that firm-specific social capital reduces the risk of dissolution. This perspective complements human capital by demonstrating how individual skills are activated and amplified through social relationships.

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2.4. Organizational Ecology

The ecological approach to organisations, as theorised by Hannan and Freeman [6] and Hannan and Freeman [7], argues that firms operate within a selective environment that sustains only the most well-adapted. This theory emphasises rates of creation (founding), mortality (failure), and organisational change in response to selective pressures (density, competition, legitimacy). According to Baum and Amburgey [24], constant innovation and the organisational learning capacity of a support structure determine the performance of their support system.

In summary, these various theoretical frameworks, resource-based theory [2], human capital [3], social capital [4], and organisational ecology [7], enable a multidimensional assessment of the impact of support structures on entrepreneurial performance. They form the basis for studying the four main pillars of the proposed model (funding, training, mentoring, networking) and enable the formulation of hypotheses tested empirically in the following methodological section.

2.5. Dimensions of Entrepreneurial Support

The literature on entrepreneurial support has identified several factors that influence the performance of supported entrepreneurs. These variables, which feature prominently in the literature on entrepreneurship, essentially represent the main channels through which support schemes could contribute to entrepreneurial success. They include, but are not limited to:

2.5.1. Mentoring

The quality of mentoring provided by support organizations is regarded as a key factor in developing entrepreneurs' skills and improving their decision-making [11]. Consequently, literature suggests that sector-specific mentoring positively impacts supported businesses' performance in terms of growth or stability.

2.5.2. Access to Finance

Financing is one of the cornerstones of business development [25]. Support organizations play a crucial role in facilitating access to various sources of financing: grants, venture capital, or private investors, which are often inaccessible to novice entrepreneurs due to information asymmetries or a lack of collateral. According to resource-based theory [2], effective access to finance has a direct impact on the profitability and sustainability of the supported businesses.

2.5.3. Training

Building entrepreneurial skills is also a key pillar of support [23]. The literature suggests that entrepreneurs trained in management, strategy, and innovation are better equipped to tackle many market challenges. Consequently, support structures, by developing entrepreneurs' managerial and decision-making skills, contribute significantly to business performance in terms of growth and organizational resilience.

2.5.4. Networking

Networking is a key driver of entrepreneurial support. According to Granovetter [16], support networks enable entrepreneurs to strengthen their social networks and identify new business opportunities by facilitating connections between investors, institutions, and specialists through dedicated events and programmes designed to bring together public and private sector stakeholders. According to social capital theory [4, 5], these sustainable networks can create valuable resources and contribute to the long-term growth and competitiveness of businesses.

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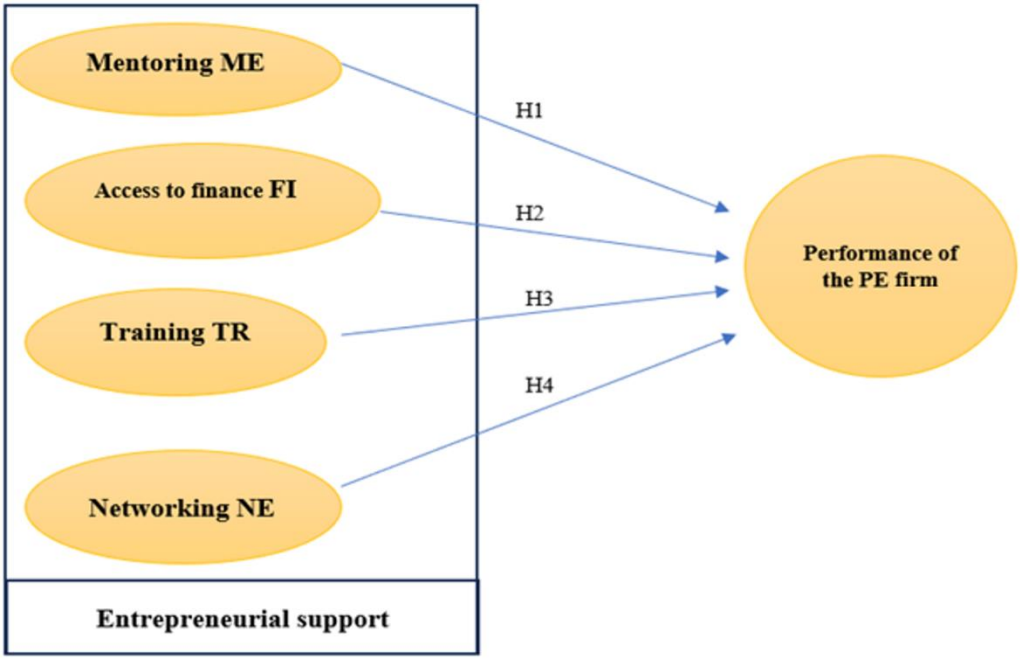

Figure 1.
Conceptual research model and hypotheses (H1–H4).

3. Methodology

The conceptual model of this study analyzes the impact of entrepreneurial support schemes on the performance of businesses in the Fez-Meknes region. It is structured around four main dimensions of support, namely mentoring, financing, training, and networking. These four explanatory latent variables aim to account for an endogenous latent variable, namely, business performance. This is operationalized based on changes in turnover and business stability. Each dimension of support is expected to have a positive effect on performance, which justifies the following four causal hypotheses linking them respectively to mentoring, financing, training, and networking. This conceptual framework follows a deductive approach, in which the relationships between variables are defined based on the literature and then tested empirically using a structural equation model estimated by the PLS method.

Table 1.
List of components and assumptions of the conceptual model.

Hypothesis number	Causality	Formulated derived hypotheses
H1	ME → PEF	Mentoring has a positive impact on business performance.
H2	FI → PEF	Financing has a positive impact on the company's performance.
H3	TR → PEF	Training has a positive impact on the company's performance.
H4	NE → PEF	Networking has a positive impact on business performance

The methodology adopted is part of a quantitative approach based on a structured questionnaire designed and refined in accordance with [26]. In this regard, each item was measured on a five-point Likert scale, enabling entrepreneurs to express their perceptions regarding the quality of support, effective access to finance, the relevance of the training provided, the networking opportunities offered, and the perceived performance of their businesses over the last five years. The sample surveyed comprises 150 entrepreneurs receiving support in the Fez-Meknes region, selected using stratified random sampling based on the business sector, company size, and duration of support. Furthermore, the data collection protocol combined a mixed-mode approach, administered face-to-face and distributed online via Google Forms, to account for the geographical dispersion and scheduling constraints of the project leaders. A

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pre-test was conducted with a sub-group of 15 entrepreneurs (9 in person and 6 online) to improve clarity, identify any ambiguous wording, and adjust certain items. Following this phase, two items were reworded, and one item deemed redundant was removed. The questionnaire, drafted in French and also available in Standard Arabic for those who wished to use it, underwent a double cross-translation by two independent translators to ensure semantic equivalence between the two versions.

From an analytical perspective, the methodology is structured in two main stages: the first exploratory and the second confirmatory, which enable the measurement scales to be refined and the structural model to be validated. Firstly, a principal component analysis is carried out using SPSS software to test the relevance of the items, the unidimensionality of the blocks, and the reliability of the measures using Cronbach's alpha, Dillon-Goldstein's rho, and the Kaiser-Meyer-Olkin criterion. The results show that the reliability indicators exceed the recommended thresholds and that the eigenvalues and KMO values are satisfactory, allowing the study to proceed to confirmatory analysis. Finally, the structural equation model is estimated using XLSTAT software via the Partial Least Squares (PLS) method. The use of the PLS method is justified by the results of the Kolmogorov-Smirnov test, which highlights the lack of normality in the data distribution. The evaluation of the external model is based on factor loadings, extracted mean variance, and cross-loadings, whilst the evaluation of the internal model is based on the coefficients of determination $\bar{R}2)$,, effect sizes, and the Goodness of Fit index.

Finally, the research hypotheses were tested using the path coefficients obtained from the PLS estimation, by examining their statistical significance based on the Student's t-statistic associated with each coefficient and the corresponding p-values, thereby enabling an assessment of the validity of the causal links.

The results show that mentoring, funding, and training have a positive and significant effect, albeit of moderate magnitude, on the performance of the supported firms. Consequently, three of the four hypotheses are confirmed (H1 to H3), while H4 is rejected. These results indirectly raise questions about the role of relational capital (via networking) in this context. Taken together, these results—obtained following a rigorous methodological process involving the construction of validated scales, exploratory factor analysis, and PLS-SEM modeling- provide a robust empirical assessment of the impact of support structures on entrepreneurial performance in the Fez-Meknes region.

4. Results

4.1. Exploratory Validation of Scales (Principal Component Analysis – PCA)

Confirmatory structural equation modeling can only be conducted after assessing the psychometric quality of measurement scales. Therefore, an exploratory study was performed to test data validity, the internal consistency of each construct, and the unidimensionality of variable sets. The suitability of data for factor analysis was initially verified using KMO and Bartlett's tests.

4.1.1. Kaiser-Meyer-Olkin (KMO) Test and Bartlett's Sphericity Test

Before analyzing the extracted components, it is necessary to verify that the data are suitable, both theoretically and statistically, for PCA. We did this by examining the Kaiser-Meyer-Olkin measure and Bartlett's sphericity test. For each variable within the dimensions of entrepreneurial support, the results are presented in Tables 2 to 6. It should be noted that, in each case, the Kaiser-Meyer-Olkin index exceeds the recommended minimum threshold of 0.500, and Bartlett's sphericity test is significant at $p < 0.001$, justifying the application of PCA.

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Table 2.
Kaiser-Meyer-Olkin test for the 'Mentoring' variable.

Kaiser-Meyer-Olkin sample precision measure.		**0.612**
Bartlett's sphericity test	Approximate Khi-squared	114.512
	DF (Degrees of freedom)	1
	Significance of Bartlett	0.000

The KMO index of 0.612 is satisfactory [27]. Bartlett's test is significant [χ^2 (1) = 114.512; $p < 0.001$], confirming that the correlations between items are suitable for PCA.

Table 3.
Kaiser-Meyer-Olkin test for the 'Financing' variable.

Kaiser-Meyer-Olkin sample precision measure.		**0.578**
Bartlett's sphericity test	Approximate Khi-squared	61.207
	DF (Degrees of freedom)	1
	Significance of Bartlett	0.000

The KMO index of 0.578 is satisfactory [27]. Bartlett's test is significant [χ^2 (1) = 61.207; $p < 0.001$], confirming that the correlations between items are suitable for PCA.

Table 4.
Kaiser-Meyer-Olkin test for the 'Training' variable.

Kaiser-Meyer-Olkin sample precision measure.		**0.645**
Bartlett's sphericity test	Approximate Khi-squared	92.954
	DF (Degrees of freedom)	1
	Significance of Bartlett	0.000

The KMO index of 0.645 is satisfactory [27]. Bartlett's test is significant [χ^2 (1) = 92.954; $p < 0.001$], confirming that the correlations between items are suitable for PCA.

Table 5.
Kaiser-Meyer-Olkin test for the 'Networking' variable.

Kaiser-Meyer-Olkin sample precision measure.		**0.683**
Bartlett's sphericity test	Approximate Khi-squared	125.986
	DF (Degrees of freedom)	1
	Significance of Bartlett	0.000

The KMO index of 0.683 is satisfactory [27]. Bartlett's test is significant [χ^2 (1) = 125.986; $p < 0.001$], confirming that the correlations between items are suitable for PCA.

Table 6.
Kaiser-Meyer-Olkin test for the 'Company performance' variable.

Kaiser-Meyer-Olkin sample precision measure.		**0.591**
Bartlett's sphericity test	Approximate Khi-squared	105.874
	DF (Degrees of freedom)	1
	Significance of Bartlett	0.000

The KMO index = 0.591 is satisfactory [27]. Bartlett's test is significant [χ^2 (1) = 105.874; $p < 0.001$], confirming that the correlations between items are suitable for PCA.

The results confirm the satisfactory fit of the data to PCA for all variables (KMO between 0.578 and 0.683; Bartlett's test significant, $p < 0.001$), allowing the analyses to proceed.

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4.1.2. Internal Reliability of the Scales

Based on these results, we present below the reliability indices for the measures, the unidimensionality of the blocks, followed by the results of the PLS model and the testing of the research hypotheses.

Table 7.
Measurement of variable reliability.

Code	Variables	Number of items	Cronbach's alpha	ρ_DG
ME	Mentoring	2	00.847	00.929
FI	Access to finance	2	00.736	00.884
TR	Training	2	00.812	00.914
NE	Networking	2	00.862	00.936
PEF	business performance	2	00.834	00.923

According to Table 7, all variables have a Cronbach's $\alpha > 0.7$ and a Dillon-Goldstein $\rho > 0.7$, confirming good internal reliability, according to the data presented by Nunnally and Bernstein [28] and Fornell and Larcker [29].

4.1.3. Testing the One-Dimensionality of Blocks

The unidimensionality of the blocks implies that each observed variable (item or question) is strongly correlated with the corresponding latent variable. This condition is met when the first eigenvalue of each latent variable is greater than 1, and half of the total eigenvalues associated with the block of the variable in question are reached [30, 31].

Table 8, therefore, presents the eigenvalues of our constructs, thereby enabling us to verify the unidimensionality of the blocks.

Table 8.
Eigenvalues from PCA and unidimensionality of constructs.

ME	FI	TR	NE	PEF
10.735	10.583	10.684	10.758	10.716
00.265	00.417	00.316	00.242	00.284

The values in Table 8 confirm excellent unidimensionality for all variables ($\lambda 1 > 1$ and $> \frac{1}{2}\Sigma\lambda i$; [30]).

4.1.4. Normality Test

The purpose of a normality test is to assess whether a sample follows a normal distribution. To evaluate the normality of our sample's distribution, the Kolmogorov-Smirnov test was applied with the Lilliefors correction.

According to Delignières [32], the Kolmogorov-Smirnov test is based on comparing the empirical cumulative distribution function with the theoretical normal distribution, both of which are determined using a table of critical values for the normal distribution.

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Table 9.
Normality test.

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	**DF**	**Significance**	**Statistics**	**DF**	**Significance**
ME1	0.205	150	0.000	0.879	150	0.000
ME2	0.244	150	0.000	0.889	150	0.000
FI1	0.227	150	0.000	0.884	150	0.000
FI2	0.247	150	0.000	0.877	150	0.000
TR1	0.232	150	0.000	0.870	150	0.000
TR2	0.238	150	0.000	0.886	150	0.000
NE1	0.209	150	0.000	0.895	150	0.000
NE2	0.240	150	0.000	0.887	150	0.000
PEF1	0.241	150	0.000	0.882	150	0.000
PEF2	0.242	150	0.000	0.881	150	0.000

Table 9 details the results of the normality test applied to our sample using the Kolmogorov-Smirnov test with the Lilliefors correction. These analyses reveal a clear deviation of our data from the normal distribution, with all KS p-values falling below the 5% significance level.

This finding of statistical asymmetry explains our choice of the Partial Least Squares (PLS) approach to model the structural equations, as this method advantageously dispenses with the assumption of normality [33]. Having previously validated the internal reliability and unidimensionality of our scales, we can now proceed to examine the measurement and structural models using PLS.

4.1.5. Model Validation using the PLS Approach to Structural Equation Modelling

4.1.5.1. Evaluation of Measurement Models

The evaluation of the measurement model focuses on the reliability and validity of the constructs selected. It is based on an analysis of factor loadings, convergent validity, and discriminant validity.

4.1.5.2. Cross-Loadings

Table 10 presents the cross-loadings of the items on their respective latent variables within the augmented PLS model. All loadings on the constructed target exceed the threshold of 0.708, while the loadings on the other constructs remain below this level, attesting to good discriminant validity and supporting the convergent validity of the selected dimensions [29, 34].

Table 10.
Factor loadings (cross-loading).

	ME	**FI**	**TR**	**NE**	**PEF**
ME1	**0.931**	0.809	0.722	0.773	0.752
ME2	**0.932**	0.726	0.743	0.714	0.760
FI1	0.712	**0.886**	0.684	0.754	0.713
FI2	0.753	**0.893**	0.729	0.706	0.736
TR1	0.740	0.743	**0.919**	0.763	0.758
TR2	0.703	0.715	**0.916**	0.726	0.742
NE1	0.779	0.782	0.750	**0.938**	0.743
NE2	0.717	0.756	0.772	**0.937**	0.737
PEF1	0.747	0.769	0.774	0.717	**0.927**
PEF2	0.758	0.740	0.739	0.746	**0.926**

4.1.5.3. Convergent Validity

According to the guidelines set out by Fornell and Larcker [29], convergent validity is confirmed if the AVE is greater than 0.5 for each dimension (Extracted Mean).
Table 11 presents the AVE values for the variables in the model.

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Table 11.
Convergent validity (AVE) and composite reliability (ρ_DG).

Latent variable	Type	Average Variance Extracted (AVE)	Rho de D.G.
ME	Exogenous	0.867	0.929
FI	Exogenous	0.791	0.884
TR	Exogenous	0.842	0.914
NE	Exogenous	0.879	0.936
PEF	Endogenous	0.858	0.923

Note: *AVE > 0.5 and ρ_DG > 0.7 for all constructs [29].

The results in Table 11 show that the CVA values for the variables are all greater than 0.5. Furthermore, the Dillon-Goldstein ρ coefficient is very high, confirming this convergent validity (D.G. ρ > 0.7) [28, 35].

4.1.5.4. Discriminant Validity

Discriminant validity is ensured when the square root of a construct's AVE (on the diagonal) exceeds the correlations between that construct and the others, thereby avoiding any conceptual confusion between dimensions [29, 35, 36]. Table 12 fully confirms that our model meets this criterion.

Table 12.
Discriminant validity.

	ME	FI	TR	NE	PEF	(AVE)
ME	0.931					0.931
FI	0.679	0.890				0.890
TR	0.619	0.632	0.918			0.918
NE	0.637	0.673	0.659	0.938		0.938
PEF	0.659	0.664	0.668	0.623	0.926	0.926

Note: *The values along the diagonal represent the square root of the AVE. All diagonal values are greater than the off-diagonal correlations [29].

As shown in Table 12, the Fornell-Larcker criterion is largely met for all constructs, confirming the absence of conceptual overlap.

4.1.6. Assessment of the Internal Model

4.1.6.1. The Coefficient of Determination R²

The coefficient of determination R^2 for entrepreneurial performance (EP) is 0.769, indicating that 76.9% of its variance is explained by the four support dimensions. This value exceeds the minimum threshold of 0.10 required in PLS-SEM [37, 38], confirming the model's explanatory robustness. The adjusted R^2, also 0.769, confirms the absence of overfitting. These results are shown in Table 13.

Table 13.
R^2 and Adjusted R^2 Results.

Latent variable	Type	R^2	Adjusted R^2
ME	Exogenous	-	-
FI	Exogenous	-	-
TR	Exogenous	-	-
NE	Exogenous	-	-
PEF	Endogenous	0.769	0.769

Note: *Only the endogenous variable (company performance) has a coefficient of determination. As the exogenous variables are not accounted for in the model, their R^2 is not calculated.

4.1.6.2. Goodness of Fit index (GoF)

This index takes into account both the performance of the structural model and that of the measurement model [39]. It is defined as the geometric mean of the average of the communities (or AVE)

across all latent variables ($\bar{H}2$) and the average of the R^2 values associated with the endogenous latent variables ($\bar{R}2$) :

GoF = $\sqrt{}$ (average AVE × average R^2)

In our case: GoF= $\sqrt{}$ (0.847 × 0.769) = 0.807

According to Ali [34] GoF values ≥ 0.36 indicate a satisfactory overall fit with a broad effect. The result obtained (0.807), therefore, confirms a very good quality of fit for the model, as detailed in Table 14.

Table 14.
Goodness of Fit.

Criterion	Absolute GoF	GoF (Bootstrap)
Absolute	0.807	0.804
Relative	0.995	0.981
External model	0.997	0.988
Internal model	0.998	0.994

The results presented in Table 14 show an Absolute GoF of 0.807, which is well above 0.36, confirming the model's overall goodness of fit [40].

These indicators confirm the validity of both the measurement models (external) and the structural model (internal). It is therefore possible to proceed to the examination of structural relationships and the testing of hypotheses.

4.1.6.3. Testing Structural Relationships

The conceptual research model comprises four exogenous variables and one endogenous variable. It was estimated using the PLS approach with XL-STAT software (version 2021). Figure 2 illustrates the impact and contribution of each entrepreneurial support dimension on business performance.

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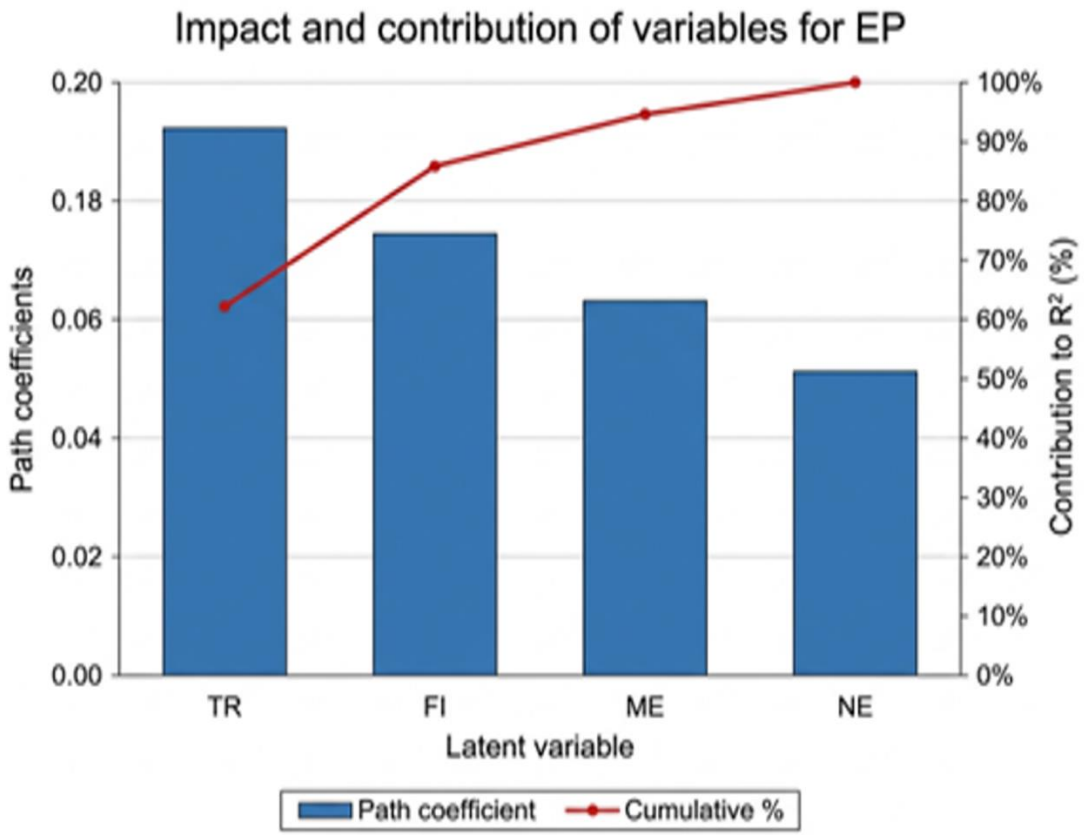

Figure 2.
The impact and contribution of entrepreneurial support variables on business performance.

The equation for the dependent variable 'Business performance' as a function of the exogenous variables is written as:

$$PE = 0.117 \times NE + 0.251 \times FI + 0.264 \times ME + 0.314 \times TR$$

4.1.6.4. The Magnitude of Direct Effects (F^2)

The direct effect size (f^2) is a key indicator for assessing the predictive validity and practical significance of structural relationships. It measures the impact of an explanatory variable on the explained variance of the endogenous variable using the formula: $f^2 = \frac{R^2_{\text{included}} - R^2_{\text{exluded}}}{1 - R^2_{included}}$

According to Cohen [41], the thresholds are: 0.02 (low), 0.15 (medium), 0.35 (high). The results (correlation coefficient R, path coefficient β, F^2) are presented in Table 15.

Table 15.
Path coefficients, R and f^2 (direct effects).

Hypothesis number	Independent Variable (The cause)	Dependent variable (The effect)	Correlation (R)	Path coefficient(β)	Effect size (f^2)	Effect
H1	ME	PE	0.812	0.264	0.077	Low
H2	FI	PE	0.815	0.251	0.064	Low
H3	TR	PE	0.817	0.314	0.116	Low
H4	NE	PE	0.790	0.117	0.014	-

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4.2. Hypothesis testing

The overall hypothesis of this research is to assess the extent to which entrepreneurial support contributes to improving the performance of supported businesses in the Fez-Meknes region.

This overall hypothesis gives rise to four derived hypotheses, which are tested and presented in Table 16.

Table 16.
Hypothesis testing.

Hypothesis number	Independent Variable (The cause)	Dependent variable (The effect)	T Student	P-Value	Test hypotheses
H1	ME	PE	3.351	0.001	Validated
H2	FI	PE	3.047	0.003	Validated
H3	TR	PE	4.100	0.000	Validated
H4	NE	PE	1.447	0.150	Not validated

Estimation of the model using the PLS approach to structural equation modeling yields three valid hypotheses out of four in total.

According to Tables 15 and 16, the endogenous variable PE (company performance) is positively influenced, albeit to a small extent, by the variables MentoraSt ($\beta = 0.264$; $f^2 = 0.077$; $t = 3.351$; $p < 0.01$), Financing ($\beta = 0.251$; $f^2 = 0.064$; $t = 3.047$; $p < 0.01$) and Training ($\beta = 0.314$; $f^2 = 0.116$; $t = 4.100$; $p < 0.01$).

These direct effects are statistically significant for H1–H3 but of small magnitude ($f^2 < 0.15$ according to Cohen [41]), indicating a modest practical impact and suggesting the presence of complementary or moderating mechanisms such as sector, duration of support, or company maturity. The 'Networking' variable has no impact on performance ($\beta = 0.117$, $f^2 = 0.014$, $t = 1.447$, $p > 5\%$). The link between networking opportunities offered by support structures and perceived performance does not appear significant in this sample.

5. Discussion of the Results

The analysis highlights that, in Fès-Meknès, training is the factor with the greatest influence on business performance, $\beta = 0.314$, $p < 1\%$. Thus, even though management and strategy training merely impart knowledge, it impacts organic operations through an organizational stabilizing effect. As noted above, supported entrepreneurs are better prepared for market challenges, which is reflected primarily in the robustness of their decision-making processes and the sustainability of their structure, beyond mere revenue growth.

Furthermore, mentoring appears to be a key factor, with a significant positive effect ($\beta = 0.264$, $p < 1\%$). This highlights a crucial aspect: the degree to which the effectiveness of mentoring aligns with the realities of the sector through the advice provided. Implicitly, mentoring that provides guidance most closely aligned with the reality of the industry to which the founder belongs also has the most favorable impact on their performance. This reflects the sub-hypothesis of human capital, according to which the development of specific skills directly improves the entrepreneur's resilience and the quality of their strategic choices.

Regarding funding, the study confirms its key role ($\beta = 0.251$, $p < 1\%$). As strategic intermediaries, support structures facilitate access to various types of grants as well as to investors who back projects. The work of these support structures helps to remove the often-insurmountable financial barriers that hinder start-ups. This finding supports the resource-based view: even favorable competitive conditions do not enable a business to outperform the competition without effective access to sources of funding.

Conversely, networking does not have a statistically significant influence on performance in this sample ($\beta = 0.117$, $p > 5\%$). Whilst academic literature often describes social capital as a key driver of

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achievements and success, this study suggests that simply expanding one's circle of professional contacts does not necessarily lead to an immediate improvement in performance. It is therefore necessary to scrutinise the targeting of networking events more closely and to examine the extent to which the knowledge exchanged actually translates into business opportunities.

Finally, the overall effectiveness of support must be addressed from a systemic perspective. The effects of support structures are not limited to their individual and isolated impacts: the performance of supported enterprises can only be fully realized if these structures are capable of consistently developing their full range of services. The training, mentoring, and funding made available to entrepreneurs must take into account the particular circumstances of project leaders and regional specificities. The businesses supported by the schemes observed in the Fez-Meknes region will only be able to achieve their maximum potential within the framework of a fully implemented system.

6. Conclusion

This research has not only made it possible to determine the effectiveness of such support mechanisms in improving business performance in the specific case of the Fez-Meknes region but has also yielded findings regarding the future of support for start-ups. More specifically, the main lesson to be drawn from this study is the value of training, which in all cases is not merely a means of transferring knowledge. On the contrary, it is a central element in the process of creating a new organization and is essential to ensuring its long-term survival.

Another key finding from this research concerns the nature of mentoring and funding. The study shows that the effectiveness of support is not merely a question of the availability of abundant resources, but of their contextual alignment. More specifically, mentoring yields results only if it is sector-specific, that is, if it incorporates a clear understanding of the sector and the entrepreneur's business. Similarly, funding only becomes a driver of sustainable performance if it removes the structural barriers specific to the regional ecosystem. Furthermore, the fact that networking appears ineffective in this study may reflect a disconnect between these general intermediaries and the need for transactional capabilities in the markets, which calls on these structures to rethink their role.

Furthermore, we also draw on the recommendations of Grimaldi and Grandi [20] and Phan et al. [21], who advocate a multidimensional assessment of the effectiveness of support measures using not only economic indicators but also organizational and relational ones. This approach is all the more relevant as it allows for the integration of the stabilizing effects of training, which are not limited to financial equilibrium alone, including in the long term. In line with the work of Hannan and Freeman [6] and Hannan and Freeman [7], organizational adaptation to a competitive environment can be considered a latent indicator, if not of capabilities, then at least of the will to survive.

In conclusion, it is important to note that the findings support the need to approach entrepreneurial support through a systemic lens, in line with the proposals of Isenberg [14] and Mack and Mayer [15]. Support structures cannot be viewed in isolation; they operate together within a complex ecosystem fueled by the actions of public actors, funders, experts, and entrepreneurs. This degree of complexity requires constant adaptation, ranging from the formalization of the schemes offered to their implementation on the ground. Furthermore, this research highlights that perceptions of effectiveness vary according to sector, entrepreneur profile, and the duration of support. This aligns with the view put forward by Hausberg and Korreck [22], according to which the diversity of incubation models requires a differentiated approach.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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