Corporate Social Responsibility and Sustainability's Effect on the Relationship Between Technological Companies' Stakeholders and Performance

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This study analyses the role played by stakeholders in technology companies. These companies can contribute to building sustainable economies through proactive strategies including innovations in products and services with socially positive impacts. However, the role of stakeholders in these firms has not been studied in detail. In addition, the effect of corporate social responsibility (CSR) on competitive success is greater in more competitive industries, such as the technology sector. This research thus focused on the mediating effect of CSR on the relationship between technology companies' stakeholders and performance. A structural equations model was used to conduct the analysis. The results show that the influence of stakeholders on these companies' performance is enhanced by CSR strategies.

Introduction

The paradigm of sustainable development presents multiple challenges to companies, requiring the adoption of strategies that meet the needs of these firms and their stakeholders while protecting and preserving the resources essential to their future success.[1] Managers who seek to balance the different interests of various stakeholders face a quandary that constantly presents management challenges.[2] Therefore, the present study's objective was to understand how firms operating in increasingly complex contexts can integrate the equally complex goal of economic, social and environmental sustainability into their innovation strategies.[1] Corporate social responsibility (CSR) is defined as organisational behaviours that go beyond serving purely economic interests to generate benefits for stakeholders.[3] The effects of CSR on competitive success is greater in sectors with high levels of competitiveness, including the technology sector, and for companies that follow proactive strategies rather than reactive ones.[4] Despite the significant role of Technology Companies (TCs) in environmental management, sustainability and CSR, this

involvement is still in its early stages.[5] TCs can contribute to building a sustainable economy with proactive strategies promoting innovation in products and services that are not only commercially attractive and environmentally sound but also those that have positive social impacts.[6] Nonetheless, the role of stakeholders has not been studied in detail in these firms. Therefore, the present study sought to achieve three related objectives. These were (1) to study the relationship between TCs' CSR strategies and performance, (2) to analyse the role played by stakeholders in these companies' performance and (3) to examine whether CSR strategies have a positive effect on TCs' stakeholders.

Hypotheses development

Stakeholders are any group of individuals which can affect or be affected [by the] achievement of the organization's objectives and can refer to shareholders, workers, suppliers, clients, local communities, creditors and even the media[7]. The resulting effects of different stakeholders on organisations have been analysed separately[8]. However, no previous research has considered the effects of all stakeholders at the same time or determined which are the most important groups for TCs. The first hypothesis of the present study was thus formulated as follows:

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H1: Stakeholders have a positive influence on technological firms' performance, and this effect can be enhanced by CSR strategies. TC managers must consider the characteristics of their business environment, remaining sensitive to the increasing pressure exerted by a wide variety of stakeholders. This awareness eventually gives rise to proactive corporate social behaviours.[9] Managers need to seek to address stakeholders' requirements actively and aim to balance multiple stakeholders' interests.[10] Clearly, stakeholders should guide CSR strategies, so the second hypothesis was developed as follows:

H2: Technology firms' stakeholders have a positive effect on CSR strategies. CSR has a positive relationship with financial benefits, particularly for the technology industry, as economic performance can be strengthened by CSR strategies.[11]

However, the effects of CSR on firm performance can vary depending on organisational culture. Thus, the last hypothesis formulated for the present study was as follows:

H3: CSR strategies have a positive effect on technology firms' performance. This study, therefore, developed a research model that examined TCs' stakeholders and their relationship with company performance, including this connection's antecedents and mediators. CSR strategy was included as a mediating variable.

Methodology

The study population was composed of firms located in Spanish science and technology parks in order to reduce heterogeneity among the companies under study. To analyse the relationships between the constructs shown in Figure 1, an original questionnaire was developed that used a Likert five-point scale (i.e. 1 = 'totally disagree' and 5 = 'strongly agree'). This approach was selected because many items referred to issues that cannot be quantified with a specific value. In general, the questionnaire included items related to CSR strategies, stakeholders and company performance in line with surveys used in other studies. The data collection phase included a total of 489 invitations sent via email, providing access through a link to the questionnaire. Eventually, 98 companies completed the survey, which represents a response rate of 20.04%. The survey data collected were analysed using a two-step structural equation modelling (SEM) approach to test the hypotheses proposed. SEM consists of constructing two submodels: the

Note: $t(0.05, 4999) = 1.645158499$, $t(0.01, 4999) = 2.327094067$, $t(0.001, 4999) = 3.091863446$
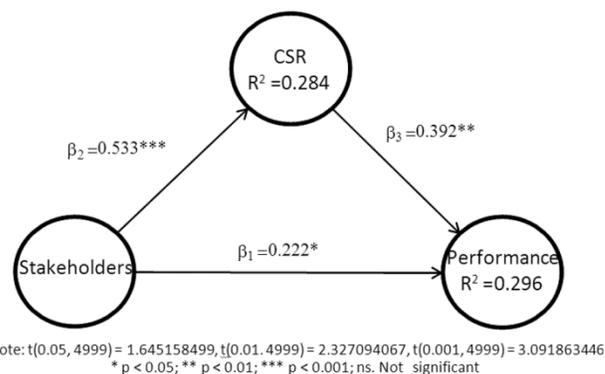* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; ns. Not significant

Fig.1 — Hypotheses testing

measurement model, which specifies the relationships between constructs and their indicators, and the structural model, which contains the relationships between constructs.[12] The specific technique chosen within the SEM approach was partial least squares, and the software used was Smart PLS 3.0.

Results and Discussion

Measurement model

Individual items' reliability can be assessed by analysing their standardised loadings(λ).[13] A standardised loading over 0.7 is desirable. Even if the λ is greater than 0.6, the result is significant, but the item will be considered adequate.[14] If a loading's confidence interval includes zero, this provides evidence that the loading is not statistically significant, making the item a candidate for removal from the measurement model. The items used in the final version of this study's questionnaire are showed in Table 1. Construct reliability is usually assessed using composite reliability (ρ_c), Cronbach's alpha (α) and Dijkstra-Henseler's rho (ρ_A). The α, ρ_A and ρ_c must be higher than 0.70 and below 0.95.[15] Table 2 shows the values obtained, thus confirming the measurement model's internal consistency. A factor has discriminant validity when its heterotrait-monotrait ratio of correlation (HTMT) is less than 0.85.[13] In the present study, all HTMTs are lower than 0.85, as shown in Table 2.

Structural model

The criteria used to assess the structural model were path coefficients (β) and their confidence intervals, namely, coefficient of determination (R^2).[13] First, when the β is less than 0.2, no causality exists, and the hypothesis is rejected. Bootstrapping (i.e. 5,000 resamples) was used to generate standard

Table 1 — Items and loadings

	Items	Description	CSR	Variables Stakeholders	Performance	Confidence Intervals 2.5%	97.5%
CSR Strategy	22_1	The organisation has identified its stakeholders.	0.749			0.575	0.846
	22_2	The organisation has mechanisms in place to analyse the needs of its stakeholders.	0.794			0.590	0.889
	22_3	The organisation can prioritise its stakeholders' needs.	0.761			0.559	0.879
	22_4	The organisation has permanent communication channels with its stakeholders.	0.752			0.587	0.862
	22_5	A CSR policy has been defined	0.750			0.581	0.849
	22_10	Operating procedures include social, environmental and economic aspects.	0.808			0.655	0.889
	22_17	Objectives have been established relating to social and environmental aspects.	0.781			0.596	0.890
	22_19	Tools are available to assess periodically stakeholders' requirements and needs.	0.766			0.660	0.864
	22_21	Results are communicated to stakeholders.	0.856			0.773	0.925
	22_22	Mechanisms for the above communication are in place.	0.857			0.776	0.917
	22_23	Corrective actions are implemented based on the results obtained.	0.803			0.660	0.906
Stakeholders	23_2	Competitors		0.819		0.692	0.891
	23_3	Suppliers		0.859		0.733	0.921
	23_5	Employees		0.680		0.463	0.815
	23_7	Auditors		0.745		0.464	0.872
	23_8	Research centres		0.668		0.383	0.817
Performance	24_01	Increased sales are achieved.			0.792	0.771	0.924
	24_02	Cost savings are implemented.			0.753	0.637	0.881
	24_03	Access to financing is improved.			0.824	0.573	0.875
	24_04	Revenues are growing.			0.792	0.720	0.911
	24_06	Access to new markets or customers is ensured.			0.771	0.599	0.884
	24_07	Competitive advantages are created.			0.888	0.616	0.856
	24_08	Return on investment is improved.			0.912	0.797	0.936
	24_11	Profitability is increased.			0.894	0.829	0.954
	24_12	Financial profitability is strengthened.			0.790	0.823	0.939
	24_13	Access to and specialisation in market segments are ensured.			0.792	0.640	0.886

Table 2 — Construct reliability and discriminate validity (HTMT)

	Cronbach's α	ρ_A	ρ_c	HTMT Values CSR	Stakeholders	Performance
CSR	0.940	0.945	0.948			
Stakeholders	0.814	0.828	0.870	0.578		
Performance	0.949	0.956	0.956	0.516	0.472	

errors, t-statistics and confidence intervals. This then enabled an assessment of the statistical significance of the path coefficients.[13] At the same time, the bootstrapping confidence intervals of standardised regression coefficients were used to accept or reject the hypotheses (Figure 1). Second, the goodness of fit of the proposed model was determined by the strength of each structural path. This analysis was done using the R^2 values (i.e. explained variance) for the dependent latent variables. For each path between constructs, the desirable values needed to be at least equal to or higher than 0.1. Each R^2 is shown in Figure 1 above. Currently, the standardised root mean square residual(SRMR) is accepted as proof of a model's goodness of fit if its value is less than 0.08[13] for both the measurement and structural models. In this case, all the SRMRs are lower than 0.08. The SRMR value for the measurement model is 0.079, and its confidence intervals – presented in brackets – are [0.059, 0.101], while the values for the structural model are 0.080 and [0.060, 0.101].

Table 3 — Total effects					
	β	T-values	P-values	2.5%	97.5%
CSR -> Performance	0.392	3.016	0.003	0.120	0.640
Stakeholders -> CSR	0.533	5.949	0.000	0.353	0.703
Stakeholders -> Performance	0.431	5.220	0.000	0.299	0.616

Mediating effect

Mediation occurs when a third mediator variable intervenes between two other related constructs. Thus, a direct effect is the relationship linking two constructs with a single arrow (Figure 1). An indirect effect is a relationship that involves a sequence of relationships with at least one intervening construct involved.[16] The effects are shown in Table 3. Taking into account these indirect effects, the relationship between stakeholders and company performance is positive so that $β_1$ increases from 0.222 to 0.431, which is also significant ($p \leq 0.001$). This relationship can be mediated by CSR, so testing explicitly for this potential mediating effect is considered worthwhile for two reasons. First, specific indirect effects have to be examined in order to know the effects' level of significance. Second, if indirect effects are significant, a partial mediation (i.e. complementary or competitive) could exist.[16] In this case, the indirect effect is 0.209 ($p \leq 0.001$). Last, to estimate the magnitude of the indirect effect, the variance accounted for (VAF) value was computed, as this represents the ratio of the indirect effect to the total effect. This final step yielded a VAF value of 0.484, which suggests that CSR partially mediates the relationship between stakeholders and company performance. This result indicates that at least 48% the total effect of stakeholders on TCs' performance is explained by the indirect effect of CSR strategies. Partial mediation occurs when the VAF is greater than 0.2 but less than 0.8. Thus, CSR partially mediates the relationship between stakeholders and company performance.

Conclusions

This study proposed a model to explain stakeholders' influence on TCs' CSR strategies, as well as these stakeholders' impact on company performance. The present research sought to fill a gap identified in the literature on TCs' stakeholders. The results for the proposed model reveal that the most significant stakeholders are employees, suppliers, auditors, competitors and research centres. The proposed model also contributes to the body of evidence related to CSR and its integration into companies' operations, by incorporating a mediating relationship through CSR between stakeholders and company performance. The results obtained confirm the significance of the relationships included in the research model, and all hypotheses were supported. Stakeholders' influence on TCs' performance was confirmed, as were the stakeholders' indirect effects on performance through CSR strategies. Therefore, this study showed that CSR mediates the relationship between stakeholders and company performance, enhancing the positive effect of stakeholders alone. The main conclusion that can be drawn is that companies in the technology sector need to base activities oriented towards their stakeholders on CSR strategies. This approach will allow TCs not only to achieve satisfactory financial results but also social and environmental benefits for society as a whole. CSR is extremely important as it helps business organisations to strengthen their performance successfully, with the key factor being the ability to meet stakeholders' needs. The findings reported in this paper are based on a sample of Spanish technology firms, so these results cannot be easily generalised to this sector in other countries. Thus, future studies will need to analyse whether the observed mediating effect occurs in other countries.

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