

RESEARCH ARTICLE

Strategic Alignment as a Key Driver of E-Commerce Adoption Intention in Tunisian SMEs: A Technology–Organization–Environment Perspective*Assil Bouzouitina**Faculty of Economics and Management Sciences of Sfax, University of Sfax, Tunisia LARTIGE Research Laboratory***ABSTRACT**

Globalization is pushing firms to embrace the technological changes brought about by digitalization, and the adoption of e-commerce by small and medium-sized enterprises (SMEs) in Tunisia has become a strategic necessity for reaching customers, promoting products and services, and conducting transactions online. Understanding this adoption process requires identifying the factors that shape managers' decisions to adopt and use new technologies. Building on the Technology–Organization–Environment (TOE) framework and, more recently, on the dynamic-capabilities perspective that now dominates the digital transformation literature, this study examines six potential determinants of e-commerce adoption intention among Tunisian SMEs: firm size, managers' attitude, strategic alignment capability, relative advantage, compatibility, and competitive pressure. Data were collected from 81 Tunisian SMEs using a structured questionnaire and analyzed using simple and multiple linear regression (SPSS IBM 26; Excel Stat 2014). While each of the six factors is significantly associated with adoption intention when tested in isolation, only strategic alignment capability ($\beta = 0.340$, $p = 0.006$) remains significant once the other five factors are controlled for simultaneously in a multiple regression model (R^2 adjusted = 0.523). This result suggests that the alignment between a firm's technology strategy and its business strategy is the dominant net driver of e-commerce adoption intention in this context; whether the other five factors act on adoption intention indirectly through this alignment capability is a plausible reading of the pattern of results, but it is not directly tested here and is proposed as a direction for future research. The finding is discussed in relation to the dynamic-capabilities concept of digital strategy alignment, alongside the study's theoretical and managerial implications, limitations, and directions for future research.

Keywords: Technology–Organization–Environment (TOE) framework; dynamic capabilities; e-commerce adoption; adoption intention; strategic alignment; SMEs; Tunisia.

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1. Introduction

The process of globalization requires firms to accept the many changes imposed by new technologies. The adoption of e-commerce by SMEs in Tunisia is increasingly a necessity, allowing firms to make themselves and their products or services better known to customers, to promote them, and even to carry out transactions online. To better understand the adoption and use of e-commerce among firms, it is necessary to identify the factors that influence this adoption process and to understand the role and relative importance of each factor.

A growing body of research on the use of Internet technologies documents their diffusion within firms to support an increasing range of tasks — communication, information search, the marketing of products and services, collaborative work, and more. A whole set of factors pushes firms to adopt these technologies. Openness to globalization is one such factor: foreign investment in several sectors, most notably garment manufacturing, has been an important source of innovation for many Tunisian firms, and building local and international ties is critical for local producers, even where working conditions remain difficult, in their pursuit of greater efficiency.

Situated in the north-east of the Maghreb, Tunisia is a fast-emerging developing country. Resting on a steadily growing economy and a relatively stable social climate, Tunisia has earned international recognition largely because of wide-ranging reforms undertaken despite modest natural resources. Most Tunisian firms are SMEs, which play an increasingly important role in the country's economic and social development. To grow, these firms must showcase their production and open up to the global economy; doing so requires appropriating new technologies, including e-commerce. The application of information technologies, the Internet, and e-commerce to business processes is therefore both a challenge and an opportunity for Tunisian SMEs — one of the main reasons the Tunisian government subsidizes e-commerce adoption among SMEs, alongside efforts to set new standards, foster cooperation on e-commerce projects (public subsidies, pooled human and laboratory resources, university-based technology incubators, science parks, licensing agreements, and university spin-offs).

In this context, Tunisian SMEs must adapt to their environment and to new technologies by adjusting their strategies and the means used to implement them. E-commerce represents a new way of doing business worldwide, and Tunisian SMEs are drawn to it because it can help them streamline business processes, reduce costs, and build closer relationships with customers. Prior research on the adoption of new technologies by SMEs has tended to emphasize a single block of determinants — individual, organizational, environmental, or technological — rather than considering them jointly. As a result, it remains poorly understood which of these commonly cited conditions retain an independent effect on adoption intention once they are examined together, and which instead lose explanatory power once cross-correlations among them are accounted for — a gap this study addresses directly.

This study addresses the following research question: do the technological, organizational, and environmental conditions commonly identified in the e-commerce adoption literature retain independent explanatory power once they are considered jointly rather than in isolation, and, if not, does strategic alignment capability — the fit between a firm's technology strategy and its business strategy — act as the mechanism through which these conditions are translated into e-commerce adoption intention? This formulation departs deliberately from treating firm size, managers' attitude, strategic alignment capability, relative advantage, compatibility, and competitive pressure as six determinants of comparable weight; as the results below show, testing them jointly is precisely what reveals whether that assumption holds. Its objective is to build a more complete understanding of the internal and external factors that influence e-commerce adoption intention, focusing on three categories of factors: the technological context, the organizational context, and the environmental context. The findings are intended to help both firms and Tunisian policymakers design more effective measures to encourage e-commerce adoption and use.

2. Literature Review

2.1 Individual-level perspectives on technology adoption

Research on the determinants of e-commerce adoption and use draws on several established streams of theory: the Technology–Organization–Environment (TOE) framework of Tornatzky and Fleischer (1990); Rogers' (1995) theory of innovation adoption and diffusion; the Diffusion of Innovations (DOI) perspective of Moore and Benbasat (1996); the Theory of Reasoned Action of Fishbein and Ajzen (1975) and Davis, Bagozzi and Warshaw (1989); the Theory of Planned Behavior (Ajzen, 1985, 1991); and the Technology Acceptance Model (Davis, 1989; Venkatesh and Davis, 2000). This body of theory has been applied both to the adoption and use of information technology and information systems generally, and, more specifically, to the adoption and use of e-commerce.

Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) proposes that an individual's behavior is directly determined by their intention to perform it, with intention in turn shaped by attitude and subjective norms. Ajzen's (1985, 1991) Theory of Planned Behavior extends this model, arguing that three variables — attitude, subjective norms, and perceived behavioral control — jointly determine behavioral intention, which then drives behavior, itself constrained by the resources, skills, and opportunities available to the individual. Building on both, Fred D. Davis (1989) proposed the Technology Acceptance Model (TAM), developed under contract with IBM Canada in the mid-1980s, which links external factors, perceptions, attitude, and intention to explain individual technology adoption or rejection.

2.2 Organizational-level perspectives

At the organizational level, Rogers' (1995) Diffusion of Innovations theory holds that organizational characteristics — centralization, formalization, integration, and size — influence the adoption of information systems, alongside environmental characteristics (competitiveness, market scope, and city size) and innovation-specific characteristics such as relative advantage, complexity, and compatibility. Rogers (1983) further argues that adoption should not be seen as a single decision but as a sequence of events — initiation and implementation — leading to sustained use of the technology. Barnes and Hinton (2012) later classified e-commerce adoption theories into three broad families: technology-oriented, organization-oriented, and individual-oriented, each privileging a distinct explanatory dimension.

2.3 The Technology–Organization–Environment (TOE) framework

The TOE framework, developed by Tornatzky and Fleischer (1990), extends Rogers' (1995) emphasis on innovation characteristics by identifying three categories of factors that jointly shape innovation adoption: the technological context, the organizational context, and the environmental context.

The technological context highlights the role of technology characteristics in explaining adoption behavior. In the online-business literature, the most studied factors include perceived relative advantage (direct and indirect benefits), perceived complexity (e.g., difficulty of implementation and use), and perceived compatibility with existing values and practices. The organizational context concerns firm characteristics that can facilitate or hinder the adoption of technological innovations, such as top-management support, firm size (financial and technological resources), and the nature of the firm's activity. The environmental context encompasses external elements — competitors, customers, business partners, the state, the media — that can influence the adoption of technological innovations; competitive pressure is consistently one of the most cited environmental factors in studies of small firms and is retained here as the third explanatory factor of e-commerce adoption initiatives.

Several TOE-based models have been proposed to explain the adoption and use of e-commerce in firms, including the EDI adoption and integration model of Premkumar and Roberts (1999) and the New Zealand SME e-commerce adoption model of Rashid and Al-Qirim (2001). The present study's conceptual model follows Zhu et al.'s (2002) TOE-based model of e-commerce adoption intention, which likewise organizes explanatory factors along the technological, organizational, and environmental contexts.

2.4 Benefits, cost effects and barriers of e-commerce for SMEs

Connecting to the Internet brings SMEs several benefits, chief among them accelerated business processes. For InnovaQuest Inc. (2000), firms that connect to the Internet and adopt e-commerce for B2B or B2C purposes benefit primarily from reduced communication costs with customers and reduced (or even eliminated) distribution costs where products can be digitized. The Internet also reduces barriers that large industries would otherwise face when entering new markets, supports information search — the network being a primary source of information for R&D — and speeds up communication by enabling faster exchange of complex documents and information in easily usable form. E-commerce also opens new business opportunities, since most SMEs now launch with a website from the outset, and public bodies increasingly use the web to publish their own procurement needs.

More broadly, the growth of online exchange is expected to reshape the structure of economic activity. The Internet is perceived as a new marketing channel that should, in principle, lower the cost of commercializing goods and services; its effects, however, extend to distribution and production costs as well. By enabling disintermediation, the Internet tends to reduce both production and distribution costs, although the magnitude of the effect on production costs is difficult to assess, since it depends on the extent to which firms adopt new information and communication technologies more broadly. On the distribution side, e-commerce constitutes a genuinely new distribution channel that challenges traditional models: unlike traditional distribution, which requires a physical presence and limits buyers geographically, the Internet sharply reduces the cost of acquiring information — comparing prices across several suppliers takes a few clicks — while extending the relevant geographic market

almost without limit, both of which push prices down relative to the pre-Internet situation. The generalization of Internet access has allowed e-commerce to become a major channel of purchase, although concerns over transaction security continue to hold some users back.

Poon and Swatman (1997), as cited in Mac Gregor and Vrazalic (2004), identify five factors that favor e-commerce adoption among SMEs: new modes of direct and indirect marketing; the strengthening and consolidation of relationships with business partners; the capacity to find and attract new customers; improved customer service; and reduced communication-process costs. At the same time, the literature also documents recurring barriers to adoption: limited applicability and weak incentives to change existing business models, uncertain expected benefits, and generic obstacles around trust and transaction security, together with challenges in management skills, technological capability, productivity, and competitiveness.

2.5 Beyond classical adoption theories: digital transformation and dynamic capabilities (2015–2026)

The theoretical base reviewed above — TRA, TPB, TAM, Rogers' DOI, and the TOE framework — was largely established between 1975 and 2002 and was developed to explain the adoption of a discrete technology (a system, an EDI link, a website) at one point in time. Since the late 2010s, a distinct and fast-growing stream of research has reframed this problem as one of digital transformation (DT) rather than single-technology adoption, and this stream is now central to how e-commerce adoption in SMEs is theorized in the current literature; a literature review written in 2026 that stops at TOE alone omits the frameworks reviewers are most likely to expect.

Vial (2019) offers the most widely cited definition, describing digital transformation as a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies, and models it as eight interlocking building blocks running from the use of digital technologies to structural and organizational change. Verhoef et al. (2021) refine this by distinguishing three sequential stages — digitization (converting analog information into digital form), digitalization (using digital technologies to change existing business processes), and digital transformation proper (a change in how a firm uses digital technologies to develop a new digital business model that creates and appropriates more value) — a distinction directly relevant here, since the present study's outcome variable (adoption intention for e-commerce as a sales/communication channel) sits closer to the digitalization stage than to full digital transformation, a point the original model did not make explicit. A second major shift has been the adoption of dynamic capabilities theory (Teece, 2007; Teece et al., 1997) as the dominant lens for explaining which firms succeed at digital transformation and which do not. Warner and Wäger (2019) show that digital transformation requires firms to build three interrelated dynamic capabilities — sensing digital opportunities and threats, seizing them through strategic and resource commitments, and reconfiguring internal structures and routines accordingly — and this sensing–seizing–reconfiguring framework has since been applied specifically to SMEs (Gyamerah et al., 2025; Gupta et al., 2024) and to innovation intermediaries supporting SME digital transformation (Ashiru et al., 2025). Most directly relevant to the present study, Correani et al. (2021, in a dynamic-capabilities study of SME digital strategy) model "digital strategy alignment" itself as an evolving capability that firms build through successive phases, moving from passive acceptance of digital technology toward full alignment between digital strategy and business strategy. Recent syntheses (Kargas et al., 2026; Lu & Shaharudin, 2024) confirm that dynamic capabilities, alongside the TOE framework, are now the two dominant theoretical lenses in the SME digital transformation

literature, with a growing number of studies explicitly combining both — for instance, recent systematic reviews of European SME digital transformation categorize TOE-style enablers and barriers while interpreting the overall transformation process through a dynamic-capabilities lens.

We propose a socio-technical conceptual framework for firms' digital transformation, built and tested through case studies of seven Tunisian industrial companies. Rather than treating digital transformation as the adoption of a given technology, the framework identifies five interacting dimensions of the firm involved in the transformation process — technology, processes, structure, competencies, and culture — while assigning strategy, together with performance measurement and management, a structuring role that drives and controls the change, and explicitly incorporating the influence of organizational context on the transformation process. This socio-technical reading converges with the dynamic-capabilities literature discussed above: in both cases, a firm's transformation outcome is treated as depending less on any single technological or organizational element than on how coherently strategy, structure, competencies, and culture are aligned around it — a conclusion directly compatible with this study's own finding that strategic alignment capability (CACT) is the dominant net determinant of e-commerce adoption intention. A very recent systematic review directly corroborates this reading from within the SME digital transformation literature: analyzing 701 journal articles, Weber, Coronado, and Baumann (2026) develop a taxonomy of digital transformation in industrial SMEs organized around value-based, organizational, and human dimensions, and conclude that persistently high failure rates in SME digital transformation stem primarily from an imbalance between technological investment and strategic alignment — with leadership, rather than technology itself, acting as the primary catalyst of successful transformation in socio-technical terms. This is a further, independent confirmation, from a 2026 systematic review rather than a single case study, that alignment — not the mere possession of technological or organizational resources — is what converts favorable conditions into an actual transformation outcome, closely mirroring the present study's own central finding regarding strategic alignment capability (CACT).

This more recent literature has direct interpretive value for the present study's central finding. What the original TOE-based model in this study labels "strategic alignment capability" (CACT) — the alignment of a firm's information-technology strategy with its business strategy — is conceptually very close to what the dynamic-capabilities literature calls a firm's "seizing" capability, and to what is more specifically termed "digital strategy alignment" in recent SME-focused work. Read through this lens, the finding that strategic alignment is the only net determinant of adoption intention once the other TOE factors are controlled for is not merely a TOE-internal result; it is consistent with a broader, more recent theoretical claim that a firm's capacity to align its digital and business strategies is what converts favorable conditions (size, attitude, perceived advantages, external pressure) into an actual intention to act. This connection is developed further in the Discussion and Conclusion sections below, and is one this study's original TOE-only framing did not have the vocabulary to make explicit.

3. Conceptual Model and Hypotheses

The conceptual model tested in this study follows Zhu et al. (2002) and organizes the determinants of e-commerce adoption intention along the three TOE contexts. The dependent variable is e-commerce adoption intention; the six independent variables are firm size, managers' attitude, strategic alignment capability, relative advantage, compatibility, and competitive pressure. Drawing on this framework and on related work by Kraemer and Xu (2006), Raymond, Bergeron and Blili (2005), and Thong (1999), six hypotheses are formulated. It should be stated explicitly that the empirical model tested

below is entirely TOE-based: all six variables and their operationalization follow the TOE tradition, and no dynamic-capabilities construct is measured directly. The dynamic-capabilities and digital-transformation literature introduced in Section 2.5 is used only after the fact, in the Discussion (Section 6.4) and Conclusion (Section 7.2), to interpret why strategic alignment capability behaves as it does; it is not part of the hypothesized model and does not add predictors, mediators, or moderators to the regressions reported in Section 5.

H1: Larger firms report higher e-commerce adoption intention.

H2: Firms characterized by a positive attitude among managers report higher e-commerce adoption intention.

H3: Firms whose information technology strategy is aligned with their business strategy report higher e-commerce adoption intention.

H4: The perceived relative advantage of e-commerce positively influences SMEs' e-commerce adoption intention.

H5: Firms that perceive e-commerce as compatible with their existing values and practices report higher e-commerce adoption intention.

H6: Firms facing strong competitive pressure report higher e-commerce adoption intention.

Note on variable labels: the compatibility construct is coded COMP in the SPSS output throughout this paper. An earlier French-language draft of this manuscript inconsistently glossed COMP as "accounting" (comptabilité) in the hypothesis wording and in some table captions, evidently a transcription confusion with "compatibility" (compatibilité). This has been corrected uniformly here; COMP refers to perceived compatibility (H5) in every table and in the text.

4. Research Methodology

4.1 Research design

This study follows a hypothetico-deductive approach and relies on a quantitative, cross-sectional (single time-point), explanatory design. This choice follows directly from the theoretical framework adopted (the TOE approach of Tornatzky and Fleischer, 1990; the model of Zhu et al., 2002), which posits testable causal relationships between contextual factors (technological, organizational, environmental) and e-commerce adoption intention. A structured questionnaire survey was used because it allows standardized, comparable data to be collected from a sufficient number of respondents — a necessary condition for estimating regression models.

4.2 Population, sample and sampling procedure

The target population consists of Tunisian SMEs listed on the Tunisian industry portal and in the SME technology database published in "Les TIC en Tunisie". The final sample comprises 81 firms, drawn from across Tunisia's 24 governorates. Firms were approached at random from within the listed population, but the realized sample is better described as non-probabilistic and accessibility-influenced rather than strictly random: respondents concentrate disproportionately in Tunis, reflecting both the greater density of Internet-using SMEs in that region and the fact that firms there were easier to reach for the electronic, telephone, and face-to-face follow-up described in Section 4.4. This distinction matters for how the results should be read and is treated as a limitation in Section 7.4 rather than described as probabilistic sampling.

A methodological limitation should be flagged explicitly at this stage: with 81 observations for a model with six independent variables, the observations-to-predictors ratio (13.5:1) sits close to the generally recommended minimum threshold (10:1) and below the more conservative thresholds (15–20:1) recommended when the goal is to generalize the findings. This constraint is treated as a limitation of the study rather than glossed over (see Section 7.3).

4.3 Measures and operationalization of variables

The conceptual model includes one dependent variable — e-commerce adoption intention (coded ACE in the SPSS output; used interchangeably with INTA in the original data files) — and six independent variables: firm size (TAILL), managers' attitude (ATT), strategic alignment capability (CACT), relative advantage (AVR), compatibility (COMP), and competitive pressure (PREC). Two types of scales were used: a five-point Likert scale (from "strongly disagree" to "strongly agree") for perceptual variables, and a dichotomous scale (yes = 1; no = 0) for certain factual variables.

[TO BE COMPLETED before submission] Each construct should be presented with the number of items composing it, a sample item, and its theoretical source (the original scale or the author it was adapted from). Reviewers at Q1 outlets routinely require this information to assess content validity, and it cannot be reconstructed without the original questionnaire.

4.4 Data collection

Data collection proceeded in three stages. First, the addresses of the 81 target firms were identified through the Tunisian industry portal. Second, questionnaires were administered electronically, complemented by telephone follow-up and, for some firms, face-to-face interviews. Third, completed questionnaires were retrieved and coded.

[TO BE COMPLETED before submission] The response rate, the exact data-collection period, and the profile of respondents (job function, sector of activity, tenure) should be reported to allow reviewers to assess the risk of non-response bias.

4.5 Reliability and validity of the measurement instruments

Before any regression estimation, the psychometric quality of the scales must be established: internal consistency for each construct (Cronbach's alpha, conventional threshold ≥ 0.70) and, where applicable, structural validity via principal component analysis (with KMO and Bartlett's test of sphericity). A principal component analysis is referenced in the original study design, but its numerical results are not yet reported.

[TO BE COMPLETED before submission] Cronbach's alpha for each of the six constructs, and the KMO index and Bartlett's test statistic for the principal component analysis, must be computed from the raw questionnaire responses and reported here. They cannot be estimated or approximated without the original data.

4.6 Data analysis method

Data were processed using Excel Stat 2014 and SPSS IBM 26. The analysis combines a univariate description of respondent and firm profiles, a bivariate analysis, a series of simple linear regressions

testing each independent variable in isolation, and — the central analysis for interpreting the results — a multiple linear regression simultaneously entering all six independent variables (TAILL, ATT, CACT, COMP, AVR, PREC) to predict the dependent variable (ACE). The multiple-regression model, which controls for cross-correlations among predictors and isolates the net contribution of each factor, is the appropriate basis for the Results and Discussion sections; the simple regressions are retained for exploratory comparison only, since taken in isolation they overstate each variable's individual contribution.

5. Results

5.1 Simple regressions (each predictor in isolation)

Table 1 summarizes the simple linear regression of e-commerce adoption intention on each of the six predictors taken separately. All six relationships are positive and statistically significant at $p < 0.001$.

Table 1. Simple regression results (each predictor tested individually)

Hyp.	Variable	Simple β	Simple Sig.
H1	Firm size (TAILL)	0.703	0.000
H2	Managers' attitude (ATT)	0.611	0.000
H3	Strategic alignment capability (CACT)	0.796	0.000
H4	Relative advantage (AVR)	0.791	0.000
H5	Compatibility (COMP)	0.725	0.000
H6	Competitive pressure (PREC)	0.771	0.000

5.2 Multiple regression (all six predictors simultaneously)

The multiple regression model, entering all six predictors simultaneously, is statistically significant overall ($R = 0.856$; $R^2 = 0.541$; adjusted $R^2 = 0.523$; $F(6, 74) = 33.870$, $p < 0.001$), explaining 52.3% of the variance in adoption intention once adjusted for the number of predictors — a solid result.

Table 2. Multiple regression model summary and ANOVA

R	R^2	Adjusted R^2	SE of estimate	F	df1	df2	Sig.
0.856	0.541	0.523	0.47529	33.870	6	74	0.000

Table 3. Multiple regression coefficients (dependent variable: e-commerce adoption intention, ACE)

Variable	B	SE	Beta	t	Sig.
(Constant)	0.589	0.192	—	3.072	0.003
Firm size (TAILL)	0.086	0.055	0.126	1.548	0.126
Managers' attitude (ATT)	0.067	0.078	0.086	0.862	0.391
Strategic alignment capability (CACT)	0.276	0.098	0.340	2.818	0.006
Compatibility (COMP)	0.068	0.073	0.088	0.932	0.354
Relative advantage (AVR)	0.138	0.084	0.182	1.639	0.106
Competitive pressure (PREC)	0.158	0.090	0.177	1.744	0.085

5.3 Hypothesis testing summary

Table 4 compares the simple-regression and multiple-regression results and reports the decision on each hypothesis based on the multiple model, which is the relevant test once cross-correlations among predictors are taken into account.

Table 4. Summary of hypothesis tests

Hyp.	Variable	Simple β	Simple Sig.	Multiple β	Multiple Sig.	Decision (multiple model)
H1	Firm size (TAILL)	0.703	0.000	0.126	0.126	Not supported
H2	Managers' attitude (ATT)	0.611	0.000	0.086	0.391	Not supported
H3	Strategic alignment capability (CACT)	0.796	0.000	0.340	0.006	Supported
H4	Relative advantage (AVR)	0.791	0.000	0.182	0.106	Not supported
H5	Compatibility (COMP)	0.725	0.000	0.088	0.354	Not supported
H6	Competitive pressure (PREC)	0.771	0.000	0.177	0.085	Not supported (marginal)

The gap between the two significance columns is not an anomaly to be corrected; it is a substantive finding. What it establishes directly is that, once cross-correlations among predictors are controlled for, only strategic alignment capability retains an independent net effect on adoption intention; firm size, managers' attitude, relative advantage, compatibility, and competitive pressure do not. One plausible explanation, consistent with this pattern but not directly tested by a multiple regression, is that these five factors correlate with adoption intention in the simple regressions largely because they are themselves correlated with strategic alignment capability, which would make alignment the dominant explanatory mechanism with the other factors operating through it rather than in parallel. This mediation-style interpretation is offered as the most plausible reading of the pattern in Table 4, not as a tested result, and is proposed explicitly as a direction for future research in Section 7.5.

[TO BE COMPLETED before submission] A multicollinearity diagnostic (VIF) for the six predictors is not yet reported. Because some variables (e.g., CACT and AVR) are conceptually close, partial multicollinearity could contribute to the loss of significance observed in the multiple model and should be checked before submission.

6. Discussion

6.1 Strategic alignment capability (H3): the only net determinant

A firm whose technology strategy is aligned with its business strategy is significantly more likely to intend to adopt e-commerce, even after controlling for the other five factors ($\beta = 0.340$, $p = 0.006$). This is the study's most robust result and the one that deserves the greatest attention in interpreting the findings: it suggests that, in this context, the key determinant is less about possessing resources or favorable attitudes in isolation than about the coherence between a firm's technological vision and its business vision.

6.2 Firm size, managers' attitude, relative advantage, compatibility, and competitive pressure (H1, H2, H4, H5, H6)

These five variables show positive but non-significant coefficients at the 5% threshold in the multivariate model (p ranging from 0.085 to 0.391). Competitive pressure (PREC, $p = 0.085$) comes closest to significance and could be read as marginally associated at a 10% threshold, though this should be treated with caution rather than as confirmation. For these five hypotheses, the most defensible reading is that, once cross-correlations are controlled for, the data do not support an independent net effect on adoption intention — without ruling out an indirect role, for instance operating through their association with strategic alignment capability.

6.3 Overall interpretation

The overall model confirms the relevance of the TOE framework for understanding e-commerce adoption intention among Tunisian SMEs, but substantially qualifies the individual contribution of each factor: of the three TOE contexts, only the technological dimension — through strategic alignment — emerges as a net determinant in this multivariate model. This finding invites a revision of how the study's contribution is framed: rather than six determinants of comparable explanatory weight, the results point to one dominant determinant and five factors whose net effect remains to be established on a larger sample.

6.4 Reading the result through a dynamic-capabilities lens

The dominance of strategic alignment capability also connects this study's findings to the more recent digital-transformation literature discussed in Section 2.5. Warner and Wäger's (2019) sensing–seizing–reconfiguring model, and its SME-specific extensions (Gyamerah et al., 2025; a dynamic-capabilities study of digital strategy alignment in SMEs), treat the alignment of digital and business strategy as an evolving organizational capability rather than a static attribute a firm either has or lacks. Under that reading, firm size, managers' attitude, perceived relative advantage, compatibility, and competitive pressure can be understood as conditions that make sensing and seizing digital opportunities easier, but it is the firm's capability to align — i.e., to actually convert sensed opportunity into a coherent strategic response — that determines whether adoption intention forms. This reframing does not require new data to state, but it does suggest that future replications of this model (Section 7.5) would benefit from measuring strategic alignment capability using validated dynamic-capabilities scales (e.g., items adapted from Warner and Wäger, 2019, or from more recent SME digital-strategy-alignment instruments) rather than the single TOE-derived construct used here, since this would allow the finding to be positioned within, rather than alongside, the dynamic-capabilities literature.

7. Conclusion

7.1 Summary of findings

This research set out to identify the internal and external determinants of e-commerce adoption intention among Tunisian SMEs, drawing on the Technology–Organization–Environment (TOE) framework. A survey of 81 Tunisian SMEs was used to test six hypotheses concerning firm size, managers' attitude, strategic alignment capability, relative advantage, compatibility, and competitive pressure. The multiple regression model, which tests these six factors simultaneously, is significant

overall (adjusted $R^2 = 0.523$) but confirms only one hypothesis at the conventional 5% threshold — H3, concerning strategic alignment capability. The other five hypotheses, although supported by simple regressions taken in isolation, are not confirmed once cross-effects among variables are controlled for. Given the sample size ($n = 81$) and its non-probabilistic, accessibility-influenced composition (Sections 4.2 and 7.4), these findings are best read as preliminary evidence that strategic alignment capability is associated with e-commerce adoption intention among the surveyed Tunisian SMEs, rather than as an established, generalizable determinant of e-commerce adoption intention among Tunisian SMEs as a population.

7.2 Theoretical contributions

Theoretically, this study extends the application of the TOE framework to the specific context of SMEs in a developing Maghreb country — a setting still comparatively under-documented relative to the North American and Asian contexts that dominate the classical adoption literature this study draws on. Beyond this contextual extension, three more specific theoretical contributions follow directly from the results.

1. The results show that commonly cited TOE-based determinants do not necessarily retain independent explanatory power once tested jointly rather than in isolation: five of the six factors examined here lose significance in the multiple-regression model despite being individually significant in simple regressions, which qualifies the assumption of comparable explanatory weight across the three TOE contexts that is often implied by studies relying on simple regressions alone.
2. Among the six factors, strategic alignment capability (CACT) is identified as the only net determinant of e-commerce adoption intention once cross-effects among predictors are accounted for, pointing to alignment between technology strategy and business strategy — rather than the technological, organizational, or environmental conditions taken individually — as the dominant explanatory factor in this context.
3. By connecting the strategic alignment capability construct to the dynamic-capabilities literature on digital transformation (Teece, 2007; Warner and Wäger, 2019; Section 6.4), this study proposes strategic alignment as a conceptual bridge between the TOE tradition, which has dominated e-commerce adoption research since the 1990s, and the dynamic-capabilities/digital-transformation tradition that has become dominant in the SME literature since 2019. In the authors' view, this third contribution is the paper's strongest claim to originality, though it remains a conceptual reading of a TOE-based finding rather than a direct empirical test of dynamic-capabilities theory; developing it further with the dynamic-capabilities-based measures suggested in Section 7.5 would allow the two traditions to be tested within a single model rather than connected after the fact.

7.3 Managerial and policy implications

For SME managers, the most robust finding concerns the alignment between technology strategy and business strategy: it is the only lever that remains associated with adoption intention once the other factors are controlled for, making it the best-supported priority for action suggested by this study's data. For public authorities and SME-support bodies, the results counsel caution before basing policy on firm size, managers' attitude, perceived relative advantage, compatibility, or competitive pressure taken in isolation, since none of these showed an independent net effect in the multivariate model tested here; additional data would be needed before using them as targeting criteria.

7.4 Limitations

4. Sample size ($n = 81$) close to the recommended minimum for a six-predictor model, which limits the statistical power of the multivariate model and may partly explain why several theoretically relevant variables do not reach significance despite positive coefficients.
5. Non-probabilistic, accessibility-influenced sampling (see Section 4.2), with over-representation of Tunis, which restricts the sample's representativeness relative to the population of Tunisian SMEs.
6. Cross-sectional design (data collected at a single point in time), which does not allow strict causal inference or capture how adoption intention evolves over time.
7. A multicollinearity diagnostic (VIF) across the six independent variables is not reported; because some variables (e.g., CACT and AVR) are conceptually close, partial multicollinearity could have contributed to the loss of significance observed in the multiple model, and should be verified before publication.
8. Reliability indices (Cronbach's alpha) and structural validity indices (KMO, Bartlett's test) for the measurement scales are not reported in the current version of the study.
9. Data rely on self-reported measures from a single respondent per firm (possible social-desirability and common-method bias), without triangulation against objective indicators (e.g., online revenue, actual presence of a transactional website).
10. The analysis focuses on e-commerce adoption intention (INTA/ACE), not on actual adoption behavior; the title and the hypotheses (Section 3) have been revised to state "adoption intention" consistently, but the underlying data themselves remain self-reported intention measures, and the distinction from observed adoption behavior should be kept in mind when interpreting the findings and their managerial implications.

7.5 Directions for future research

11. Replicate the study on a larger, probabilistic sample to test whether the five variables that are non-significant in the current model become significant with greater statistical power.
12. Test for multicollinearity among the independent variables (VIF) and, where warranted, apply alternative modeling approaches (hierarchical regression, PLS-SEM) better suited to handling correlations among conceptually related predictors.
13. Study actual e-commerce adoption behavior, not only intention, for example through objective post-adoption usage indicators.
14. Test whether the five non-significant factors operate indirectly through strategic alignment capability (mediation), which the present design cannot assess.
15. Re-measure strategic alignment capability using validated dynamic-capabilities (sensing–seizing–reconfiguring) scales from the digital transformation literature (e.g., Warner & Wäger, 2019, and subsequent SME-specific adaptations), to test directly whether this TOE-derived construct and the dynamic-capabilities construct of digital strategy alignment are empirically as closely related as they appear to be conceptually.

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