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Doç. Dr. Sezen GÜNGÖR

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**INTERNATIONAL STUDIES
IN THE FIELD OF
MANAGEMENT AND ORGANIZATION**

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CHAPTER 1

WHEN FIT IS TOO GOOD: DETECTING CONSTRUCT CONTAMINATION IN INNOVATION AND ENTREPRENEURIAL ORIENTATION REGRESSIONS

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1 Introduction

A cross-sectional survey of 201 small enterprises, using three Likert regressors to predict a Likert outcome, reports a coefficient of determination of 0.982 [Ojekemi and Adebayo, 2020]. Read as a substantive claim, this says three innovation scales account for 98 percent of the variation in entrepreneurial posture across firms. Read as a diagnostic signal, it says something else entirely. Instruments in this literature carry measurement error large enough that reliabilities in the mid-0.7s are routinely reported as acceptable, and a model cannot explain variance its instruments do not reliably capture. A fit that high is a symptom rather than a result, and the field has no cheap, routine way to tell the two apart.

The likely mechanism is definitional rather than statistical. Miller [1983] characterised the entrepreneurial firm as one that innovates, acts proactively and accepts risk, and the instrument that followed [Covin and Slevin, 1989] operationalises EO as the aggregate of those three facets. Regressing that aggregate on product, process and market innovation puts an innovativeness facet on both sides of the equation, so part of the outcome is regressed on itself. The overlap is recognised conceptually [George and Marino, 2011, Covin and Wales, 2012], but as a question of construct definition to be settled by theoretical preference. Its quantitative consequence for reported fit has not been characterised, leaving reviewers with no calibrated expectation of what an uncontaminated model should look like. A second gap compounds the first. Established tools for detecting construct overlap, such as the average-variance-extracted comparison [Fornell and Larcker, 1981] and the heterotrait-monotrait ratio [Henseler et al., 2015], require item-level data or a full covariance matrix. A reader holding only the published article can run none of them, so contaminated estimates pass unchallenged into the literature and the syntheses built on it. Consistency screens that do operate on published summaries exist in neighbouring fields [Nuijten et al., 2016, Brown and Heathers, 2017], but they target reported test statistics and the granularity of reported means, not the identities that constrain a fitted linear model.

We address both gaps. We assemble a five-test screen consuming only quantities that published tables already print, four of whose tests hold for any least-squares fit irrespective of specification or distributional assumptions. We then build a generative measurement model in which definitional overlap is an explicit parameter, calibrate it to a published study, and map overlap against attainable fit. Finally we apply the screen to that study. The aim is not to adjudicate one article but to supply a check costing minutes and a numeric expectation reviewers can use.

2 Background

2.1 The dimensionality of Entrepreneurial Orientation

Whether EO's facets should be summed into one score or modelled separately has been argued for three decades. Lumpkin and Dess [1996] added autonomy and competitive aggressiveness and argued the dimensions vary independently; George and Marino [2011] showed the choice between composite and facet-level treatment changes substantive conclusions; Anderson et al. [2015] proposed a reconceptualisation in which innovativeness and proactiveness form the construct while risk-taking is an outcome of it. Miller [2011] revisited the original formulation and Covin and Wales

[2012] surveyed the resulting measurement practice, yet meta-analytic and configurational work continues to use the composite [Rauch et al., 2009, Wiklund and Shepherd, 2005]. The empirical tradition linking innovation activity to firm outcomes descends from the three-stage framework of Crépon et al. [1998], on which the study we examine rests. What this debate has not produced is a statement of what the composite does to a regression using innovation as a regressor. The question is treated as one of construct validity, answered by argument about what EO is. We take the standard composite as given and ask a narrower, mechanical question: holding the measurement model fixed, what fit can such a regression attain?

2.2 Discriminant validity and measurement-induced bias

The toolkit for establishing that two constructs are empirically distinct is mature. The Fornell and Larcker [1981] criterion compares average variance extracted against shared variance; the heterotrait-monotrait ratio [Henseler et al., 2015] improves on it. Distortions from single-informant cross-sectional designs are catalogued by Podsakoff et al. [2003], and Bollen and Lennox [1991] set out when composite indices behave as reflective rather than formative measures. Underlying all of these is classical test theory: reliability bounds observable association, a result due to Spearman [1904] and operationalised through coefficient alpha [Cronbach, 1951] and its composite extension [Mosier, 1943, Shrout and Fleiss, 1979]. Every one of these procedures requires item-level or covariance input. That is the practical gap: the reliability bound in particular is a strong constraint evaluable from printed alphas alone, yet is essentially never applied to published regressions.

2.3 Consistency screening of published results

A separate literature detects internal inconsistency in published statistics. *statcheck* recomputes reported p values from reported test statistics and degrees of freedom [Nuijten et al., 2016]; the GRIM test checks whether a reported mean is attainable given sample size and response granularity [Brown and Heathers, 2017]. Both were motivated by the recognition that analytic flexibility and reporting error are widespread [Simmons et al., 2011]. Neither exploits the identities a fitted least-squares model must satisfy with respect to its own descriptive statistics, and neither has been applied to entrepreneurship survey research. Our screen adds five such tests to this family.

3 Method

3.1 A five-test consistency screen

Assume a reader holds a published table reporting an intercept b_0 , slopes b_k , t statistics, a coefficient of determination R^2 , scale means $\bar{x}_k$ and standard deviations s_k , reliabilities, and the sample size n , and holds nothing else. Test 1, the centroid identity. Any least-squares fit including an intercept passes through the sample centroid:

$$\bar{y} = b_0 + \sum_k b_k \bar{x}_k. \quad (1)$$

This follows from the normal equations alone, holding whatever the model's quality, the error distribution, or the specification error present. The reported coefficients evaluated at the reported predictor means must reproduce the reported outcome mean.

Test 2, range admissibility. For a bounded outcome on $[y_{\min}, y_{\max}]$ and regressors bounded on $[x_{\min}, x_{\max}]$, the fitted value sweeps a span of $(\sum_k b_k)(x_{\max} - x_{\min})$, which cannot exceed $y_{\max} - y_{\min}$ without producing fitted values outside the instrument's attainable range.

Test 3, the reliability ceiling. By the attenuation relation [Spearman, 1904], the observable correlation between two composites is bounded by the geometric mean of their reliabilities:

$$R \leq \sqrt{\rho_{yy}\rho_{xx}}. \quad (2)$$

Composite reliabilities follow from published facet alphas by Mosier's formula [Mosier, 1943]. Because facet intercorrelations are rarely printed, we evaluate the bound across a range of assumed values. Test 4, the standardised slope bound. Each slope converts to $\beta_k = b_k s_k / s_y$. Values far outside unit magnitude require extreme suppression, a reportable condition that is almost never reported.

Test 5, standard-error coherence. From $SE(b_k) = s_e / (s_k \sqrt{n-1} \sqrt{1-R_k^2})$, where R_k^2 is the squared multiple correlation of regressor k on the others, a reported $t = b_k / SE(b_k)$ implies a value for $1/\sqrt{1-R_k^2}$. That quantity cannot fall below 1 for any dataset. Tests 1, 2, 4 and 5 are assumption-free given the printed quantities; Test 3 requires an assumption about facet intercorrelations and is reported as an interval.

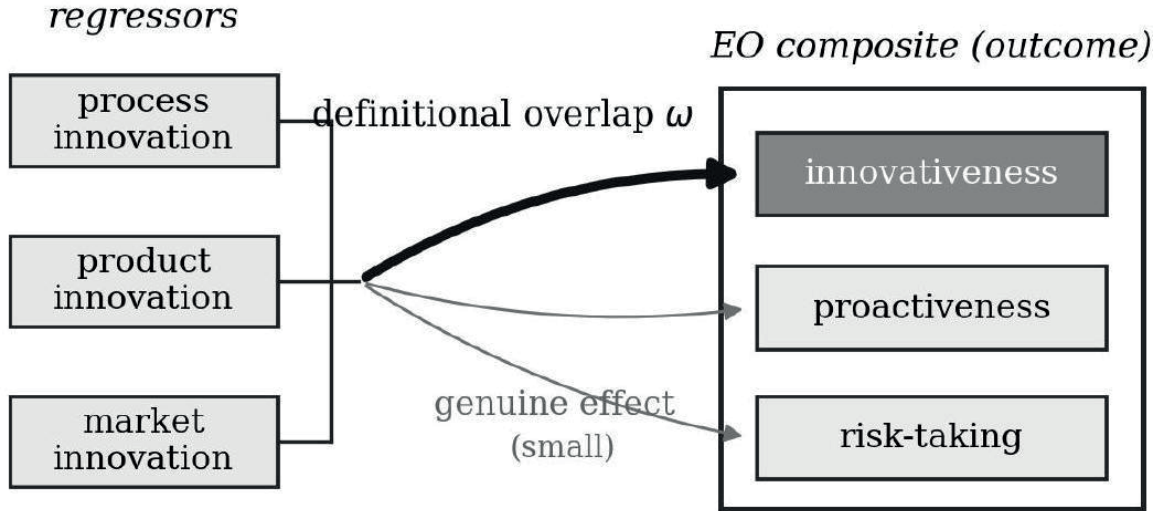


Figure 1: The source of the contamination. The dominant operationalisation defines Entrepreneurial Orientation as a composite of innovativeness, proactiveness and risk-taking. Regressing that composite on process, product and market innovation places a near-synonym of the regressors inside the outcome (heavy arrow), so part of the outcome is regressed on itself. Only the two remaining facets (light arrows) can carry a genuine and separately identified effect.

3.2 A generative model of construct overlap

To quantify what overlap does, we generate synthetic responses under a congeneric measurement model. A common innovation factor ξ drives the three innovation scales, each loading $a = 0.70$ with independent unique variance. An orthogonal core factor η drives the two uncontaminated EO facets, which also carry a small genuine effect of ξ

with coefficient 0.15 . The contaminated facet draws a share ω of its true-score variance directly from ξ :

$$T_{\text{inn}} = \sqrt{\omega}\xi + \sqrt{1-\omega}\zeta, \zeta \perp \xi, \quad (3)$$

so $\omega = 0$ is a clean design, $\omega = 1$ makes the facet a pure alias of the regressors, and ω indexes definitional overlap on a continuum. Calibration ties the simulation to the case study. Item loadings are set to $\sqrt{\bar{r}}$, with $\bar{r}$ recovered from each published alpha by inverting the Spearman-Brown relation, $\bar{r} = \alpha/(k - \alpha(k - 1))$ for a k -item scale, so realised alpha reproduces the published value. Continuous scores are shifted to the published mean and standard deviation, clipped to $[1, 5]$ and rounded to integers, reproducing five-point responses. At each replication we fit the conventional composite outcome and the same outcome with the innovativeness facet removed, sweeping ω across 21 levels from 0 to 1 with 400 replications each at $n = 201$. The study is deterministic given the recorded seed.

3.3 Ceiling sensitivity design

A ceiling from one parameterisation could be an artefact of that choice. We therefore evaluate seven configurations at total overlap, relaxing in turn the common-factor loading, the reliabilities, the Likert discretisation and the composition of the outcome, and finally all at once. The last is adversarial by construction: it grants perfect reliability, continuous rather than five-point responses, strongly correlated innovation constructs, and an outcome consisting solely of the contaminated facet, making it more favourable to a high R^2 than any real study could be.

Table 1: The five-test consistency screen applied to the published estimates. Every test fails, under every reading of the composite outcome that the published text admits.

Test	Requirement	Observed	Result
1. Centroid, facet mean	$\bar{y} = 3.610$	10.101	fail (gap 6.491)
1. Centroid, facet sum	$\bar{y} = 10.830$	10.101	fail (gap 0.729)
1. Centroid, item sum	$\bar{y} = 47.350$	10.101	fail (gap 37.249)
2. Fitted span (mean / sum)	$\leq 4 / \leq 12$	33.464	fail
3. Ceiling, facet $r = 0.3/0.5/0.7$	$R \leq 0.925/0.940 / 0.950$	0.991	fail
4. Standardised slope (sum / mean)	≈ 1	3.250 / 9.751	fail
5. Implied collinearity term	≥ 1	0.157	fail (impossible)

4 Results

4.1 The case study fails all five tests

The published model reports $\hat{y} = -22.729 + 5.958\text{PRO} + 0.374\text{PRD} + 2.034\text{MRK}$ with $R^2 = 0.982$ and $n = 201$ [Ojekemi and Adebayo, 2020]. Table 1 reports the screen. Evaluated at the published predictor means, Equation (1) gives 10.101. The published text admits three readings of the composite outcome: the facet-mean reading gives an outcome mean of 3.610, a gap of 6.491; the facet-sum reading gives 10.830, a gap of 0.729; an item-sum reading gives 47.350. The facet-sum reading is the most charitable and we carry it forward, but it still fails, since rounding in three-significant-figure means cannot produce a discrepancy of 0.729. The fitted value spans 33.464 points across the admissible range of the regressors, against an admissible outcome span of 12 under the facet-sum reading and 4 under the facet-mean reading; with all regressors at the scale floor the model predicts -14.363, below the minimum attainable score on any reading. The reliability ceiling of Equation (2) evaluates to 0.925, 0.940 and 0.950 at assumed facet intercorrelations of 0.3, 0.5 and 0.7, and the reported multiple correlation of 0.991 exceeds all three. Standardised slopes reach 3.250 under the facet-sum reading and 9.751 under the facet-mean reading.

Test 5 is the most informative because it is invariant to how the composite was built. The reported R^2 implies a residual standard deviation of 0.157; with $t = 53.833$ the implied standard error of the process-innovation slope is 0.111; together these imply $1/\sqrt{1 - R_k^2} = 0.157$, a quantity bounded below by 1 by construction. No dataset can produce it. The screen establishes that the reported model cannot be reproduced from its own table. It does not identify which step produced the fault and should not be read as doing so.

4.2 Overlap inflates fit roughly tenfold

Figure 2 reports the sweep. Mean R^2 rises monotonically with ω , from 0.026 at zero overlap to 0.263 at total overlap, a factor of roughly ten. The specification with the innovativeness facet removed stays flat near 0.031 across the entire sweep with no trend in ω , isolating contamination as the source of the rise rather than any genuine association. The largest standardised slope never exceeds 0.300 anywhere in the sweep. The calibration implication is direct. A well-specified model of this design should explain a small fraction of the variance in EO, on the order of a few percent when the outcome is clean and at most a quarter when maximally contaminated. Values in the high tenths lie outside what the design can produce.

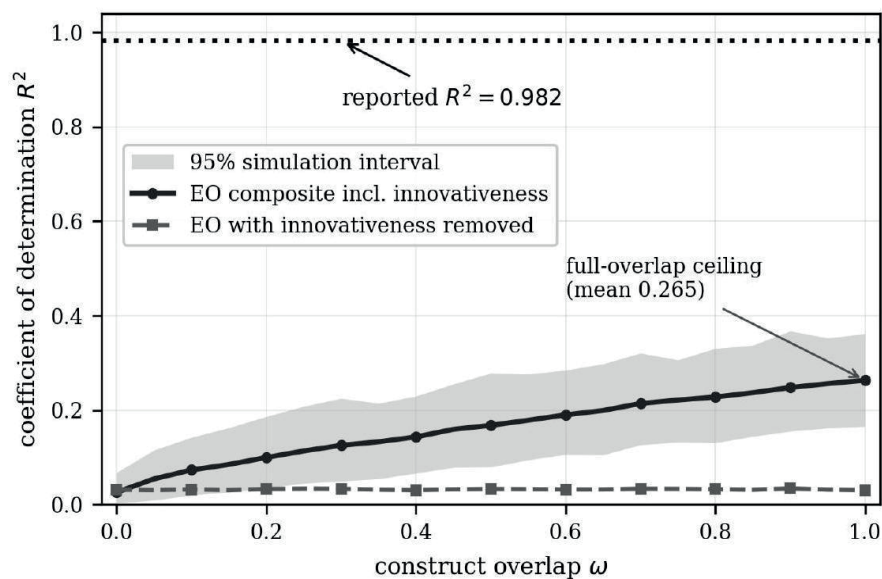


Figure 2: Construct overlap inflates model fit but cannot reach the reported value. Solid line: mean R^2 from regressing the conventional three-facet composite on process, product and market innovation as the shared-variance parameter ω increases. Dashed line: the same regression after the innovativeness facet is removed from the outcome. The band is the 95 percent simulation interval across 400 replications at $n = 201$. Overlap raises R^2 roughly tenfold, from 0.026 to 0.263, yet the reported value of 0.982 lies far above the ceiling attained at total overlap.

4.3 The ceiling is robust and a gap survives

Figure 3 reports the sensitivity analysis. Strengthening the common innovation factor raises the attainable value to 0.345; near-perfect reliability raises it to 0.280; removing the Likert discretisation leaves it at 0.261. Defining the outcome as the contaminated facet alone, which is no longer the construct the literature uses, reaches 0.603. The adversarial maximum reaches 0.953 on average with an upper simulation percentile of 0.963. No configuration reaches the published value. This yields a decomposition. Construct overlap is a real and large effect, sufficient to raise fit by an order of magnitude and so to turn a negligible association into one that looks substantial. It is not sufficient to produce 0.982. A residual gap of roughly 0.72 in R^2 remains unexplained by contamination, and its existence means a second fault must be present alongside the design problem. The impossible standard error found by Test 5 is consistent with that conclusion, since no measurement design of any kind can generate it.

5 Discussion

5.1 A corrected estimation protocol

Four changes would prevent this failure mode at almost no cost. First, when innovation measures appear as regressors, remove the innovativeness facet from the outcome and report facet-level estimates separately; the composite is not a neutral summary in this design but the mechanism of the bias, and facet-level reporting recovers the information George and Marino [2011] showed it discards. Second, report the full correlation matrix among scales and at least one discriminant validity statistic, which is what lets a reader run the checks that currently require raw data. Third, report the fitted value at the

predictor means: one line that makes Equation (1) checkable by anyone, and that would have caught the present case before submission. Fourth, use the simulation

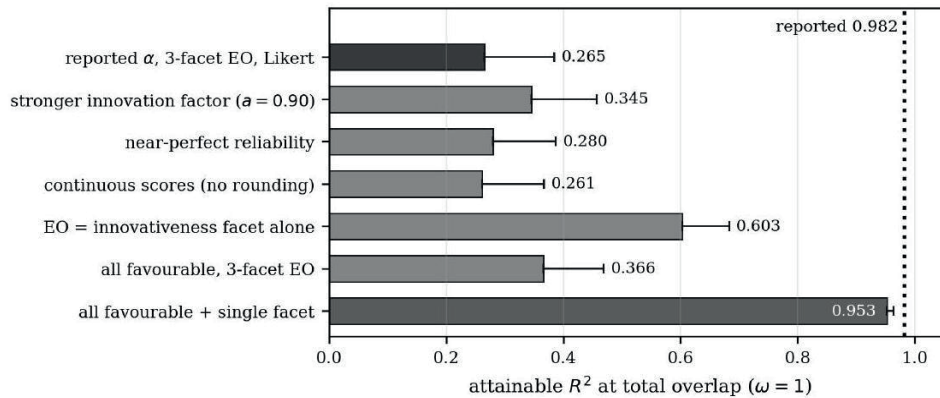


Figure 3: The ceiling is robust to the simulation assumptions. Each bar reports attainable R^2 at total overlap under a progressively more favourable configuration; whiskers mark the 97.5th percentile. Even the adversarial maximum, which assumes perfect reliability, continuous rather than five-point responses, strongly correlated innovation constructs, and an outcome consisting solely of the contaminated facet, peaks at 0.953 and does not reach the reported 0.982. as a reviewing heuristic, since for this design and these instruments a clean model should explain single-digit percentages of variance, and anything above roughly a quarter warrants a check on the composition of the outcome before it warrants excitement.

5.2 Scope and limitations

The screen detects irreproducibility, not its cause: a failure is a signal to seek the raw data, not a verdict on any particular step, and we have phrased our findings accordingly. Test 3 depends on assumed facet intercorrelations because they are seldom printed and is reported as an interval; the other four do not. The simulation uses a congeneric model with an equally weighted composite, and other weighting schemes would shift the ceiling, though the sensitivity analysis suggests the shift is small relative to the observed gap. Access to the original responses would permit the facet-level re-estimation the protocol recommends and would let the residual gap be attributed rather than bounded. A single case demonstrates the screen but says nothing about how common the pattern is; applying it at scale is cheap, since every input is already printed.

6 Conclusion

We have set out a five-test consistency screen that runs on a published results table alone, and quantified how definitional overlap between an Entrepreneurial Orientation composite and its innovation regressors inflates model fit. Overlap raises the coefficient of determination roughly tenfold in a measurement model calibrated to a published study, while the same regression with the contaminated facet removed stays flat. Applied to that study, all five tests fail, and the reported fit exceeds what total contamination can produce even under adversarial assumptions, leaving a residual gap of roughly 0.72 that points to a second and separate fault. The wider point is procedural. These checks need no data beyond what journals already print, take minutes to run, and generalise to any bounded-scale regression reported with descriptive statistics. Making them routine is a small change to reviewing practice with a disproportionate return.

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CHAPTER 2

INTERNATIONAL DISTRIBUTION CHANNEL STRATEGY IN THE DIGITAL AGE: MARKETING INFORMATION SYSTEMS, CHANNEL DESIGN, AND DISTRIBUTOR RELATIONS

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1. Introduction

This perspective is based on traditional international marketing and channel management approaches that require firms to determine the appropriate level of financial involvement and control over their overseas distribution activities. These activities included inventory management, customer communication, conveying market and product information, conducting sales negotiations, and providing technical and after-sales services. In this context, distributors and other intermediaries served as a crucial bridge between manufacturers and geographically dispersed foreign customers.

However, the international distribution landscape has changed significantly. Digital technologies have blurred the lines between manufacturers, intermediaries, and customers, creating new opportunities to coordinate international business operations. Digital platforms, e-commerce, customer relationship management systems, marketing analytics, cloud-based information systems, and increasingly artificial intelligence enable firms to collect, process, and share market information at a speed and scale unimaginable under traditional distribution models. Consequently, recent research positions digital transformation among the key forces reshaping firms' internationalization processes and business models (Verhoef et al., 2021).

This transformation is making information a central resource in international channel management. Traditional marketing intelligence relied heavily on sales representatives, customers, suppliers, distributors, industry publications, and other market contacts. This type of information helped managers identify developments in the marketing landscape and support decisions regarding market opportunities, competitors, and distribution partners. In today's markets, these resources remain valuable, but are complemented by digital customer data, platform analytics, CRM systems, social media, automated market intelligence, and increasingly AI-powered analytics tools. Therefore, the relationship between marketing and information systems has become significantly more integrated.

Another relevant issue is the reciprocal nature of channel selection. While manufacturers evaluate potential distributors, distributors simultaneously evaluate potential suppliers. Therefore, attractive channel relationships depend on the value each party expects to receive from the other. A manufacturer might seek market coverage, customer reach, sales effort, market intelligence, and service capabilities, while distributors might expect adequate profit margins, reliable sourcing, training, promotional support, information sharing, and participation in joint market planning. This two-way relationship forms a crucial basis for understanding channel collaboration and long-term performance.

The growth of omnichannel structures further complicates this relationship. Manufacturers may operate their own digital channels while also relying on independent distributors, marketplaces, retailers, or other intermediaries. While such configurations can increase market coverage and customer accessibility, they can also lead to conflicts over customers, pricing, territories, information ownership, and the distribution of sales functions. Therefore, a contemporary international channel strategy must address not only channel selection but also channel integration and governance.

This chapter develops an integrated perspective in which marketing information systems function as a capability enabling the entire international distribution process. Rather than viewing information systems as a separate technological function, the chapter positions them within the strategic management of distribution relationships.

Information flow continues throughout the entire process, rather than forming a single, independent stage. Feedback from distributor performance, customer interaction, and market developments is fed back into the intelligence system and influences subsequent strategic decisions. Therefore, international distribution management can be understood as a continuous learning and adaptation process, rather than a one-time selection of foreign market intermediaries.

2. International Distribution Channel Strategy and Design

International distribution strategy refers to the organizational arrangements that determine how firms deliver their products and services to customers across national borders. While distribution is sometimes treated primarily as an operational function, its international dimension is inherently strategic because channel choices affect market access, customer relationships, information flow, control, resource commitments, service quality, and ultimately, competitive performance.

Therefore, a firm's distribution strategy should be aligned with its overall international marketing strategy. Entering an international market involves a series of interrelated decisions such as product adaptation, pricing, promotion, communication, logistics, market coverage, and customer support. The channel structure determines who will perform these activities and how responsibilities, risks, and rewards will be distributed among participating organizations.

Therefore, distribution partners can be interpreted not only as points of sale but also as strategic resources. They can provide market intelligence, an established marketplace, customer relationships, a trained sales team, inventory financing, product availability, shorter delivery times, lower costs of entering the market, customer communication, product positioning, competitive analysis, and greater market awareness (Barney, 1991; Porter, 1985).

Digital transformation has reinforced the strategic importance of information sharing and rapid response capabilities in international distribution channels. Therefore, manufacturers should evaluate potential intermediaries not only based on their market reach and sales capacity, but also on their ability to exchange information, coordinate activities, and respond to changing customer requirements (Verhoef et al., 2021).

Therefore, the strategic question is not whether intermediaries are inherently more preferable than direct distribution. The relevant question is which combination of channel functions creates the greatest value under the specific conditions of the international market.

However, these advantages come at a cost. Establishing direct operations in multiple markets requires financial investment, personnel, market knowledge, administrative resources, and local organizational capabilities. Maintaining inventory, managing operations, providing technical support, and serving geographically dispersed customers can be expensive. Therefore, direct distribution can be economically challenging when individual markets are small or fragmented.

However, indirect distribution also carries another type of risk: dependence on the intermediary. The manufacturer may have less direct contact with customers, reduced visibility into market developments, and weaker control over product positioning, promotional efforts, and service quality. Furthermore, an independent distributor often represents their own commercial interests and may simultaneously manage competing or complementary product lines.

Today, international distribution increasingly involves hybrid channel structures. A firm can sell directly to strategic customers, use distributors for smaller customers, operate its own e-commerce platform, sell through digital marketplaces, and work with physical channel partners for services or logistics.

Digital platforms have expanded the range of distribution configurations available to manufacturers. Direct online sales, independent distributors, digital marketplaces, and hybrid arrangements can all coexist in the same international market. However, the effectiveness of these configurations depends on the coordination of customer relationships, pricing, service responsibilities, and cross-channel information flow (Verhoef et al., 2015).

In conclusion, hybrid channel design requires clear decision-making regarding customer segmentation, account ownership, pricing, regional responsibility, service responsibility, lead allocation, and information sharing.

A distribution channel should not be evaluated solely by counting the number of intermediaries between the producer and the customer. A more useful perspective examines

the functions performed within the channel and determines which participant can perform each function most effectively.

The relative importance of these functions varies depending on the products and markets. For example, the thesis' channel design checklist defines product characteristics (such as community, perishability, unit value, standardization, product range breadth, and technical complexity); company factors (such as size, financial strength, management expertise, and desired control); and channel member factors (such as availability, willingness, service capacity, quality, and relative cost).

An industrial product with high technical requirements may necessitate local engineering capability and extensive customer support, making specialized distributors valuable even if the manufacturer possesses digital direct sales capabilities. A standardized digital product may require minimal physical distribution, thus enabling extensive international direct sales. A consumer product requiring broad physical availability can rely on retailers and logistics networks while also utilizing online channels for communication and customer engagement.

Multichannel management emphasizes the integration of customer interactions across physical and digital channels. Customers can search for products through one channel, receive technical advice through another, and complete purchases through a third. Such behaviors require manufacturers and intermediaries to coordinate information, service quality, and customer experience across the distribution system (Verhoef et al., 2015).

In this architecture, information moves not only downwards but in multiple directions. Customer data, forecasts, inventory information, market intelligence, service records, and competitive insights constantly circulate among participants.

For small and medium-sized enterprises (SMEs) operating internationally, digital technologies can facilitate access to foreign customers without requiring extensive investments in their own distribution networks. However, local intermediaries may remain important in terms of technical support, customer relations, logistics, and market-specific information. Consequently, digitalization should be seen as an opportunity to complement and restructure existing distribution relationships, rather than replacing them (Verhoef et al., 2021).

Therefore, the international channel should be understood as a dynamic ecosystem rather than a static chain of intermediaries. Participants may join and leave, responsibilities may change, digital technologies may redistribute channel functions, and customer behavior may alter the relative importance of specific marketing pathways (Teece et al., 1997).

International channel design should begin with the requirements of the target market, rather than the most familiar or administratively convenient distribution structure for the manufacturer. This principle is strongly emphasized in the original thesis. The channel design process addresses questions such as whether products need to be locally available, whether immediate service is required, whether products need to be customized, whether customers expect significant direct communication with the manufacturer, and to what extent the distribution channel should add value.

Order matters. Choosing an agent first and then trying to fit customer requirements into that structure reverses strategic logic.

The company must determine the target customer base and type. Coverage can range from highly selective distribution to broad market accessibility.

Large and concentrated markets may justify greater direct involvement, as sales opportunities can offset the fixed costs of a direct sales structure.

Technically complex products may prefer shorter distribution channels, as manufacturers need to have closer contact with customers. However, specialized technical distributors can also add significant value by providing application expertise and local support.

Experience is also important. Companies with well-developed international marketing skills are generally in a better position to manage operations directly than companies entering foreign markets for the first time.

Therefore, the managerial goal should not necessarily be the complete elimination of conflict. Some disagreements are inevitable when independent channel members have different goals. The aim is to prevent dysfunctional conflict from harming collaboration and customer value.

The importance of relational governance should also be acknowledged. Recent research highlights commitment, trust, interdependence, and enforcement as key elements of sustainable channel governance (Morgan & Hunt, 1994).

Table 1*Comparative Canal Design Considerations*

Decision Factor	More Direct Participation	More Distributor Participation	Hybrid/Digital Configuration
Customer density	High	Low	Mixed sections
Average transaction value	High	Low-medium	Mixed
Technical complexity	High	Distributor with expert skills	Direct digital + local technical partner
Local stock requirements	Annoyed	High	Distributor/order fulfillment partner
The need to contact the manufacturer.	High	Annoyed	Digital direct selling + partner service
Geographic distribution	Low	High	Digital access + local procurement
Producer resources	Strong	Annoyed	Moderate/strong
Requested control	High	Medium/low	Selective control

Note: The conceptual comparison is adapted from the episode's channel design discussion; criteria require market-specific evaluation.

3. Marketing Information Systems and Digital Transformation

The original thesis treated marketing intelligence as a central component of international marketing research. It defined the marketing intelligence system as the procedures and resources that managers use to continuously learn about developments in the marketing environment. Information was expected to be obtained not only from formal research but also from interactions with salespeople, customers, suppliers, distributors, publications, and other managers.

perception Changes in regulations , technology, customer preferences, or competitive structure can alter the attractiveness of an existing distribution arrangement.

Secondly, intelligence supports channel design decisions. Before deciding how many agents should be in the channel, managers need information about customer location, purchase frequency, order size, required service levels, local availability, and technical support.

Third, intelligence supports partner selection and development. Potential distributors should be evaluated in terms of market knowledge, customer relationships, financial resources, organizational capabilities, and strategic alignment.

This is an important point. A distributor should not be seen as the ultimate recipient of information from the manufacturer. In a well-functioning international channel, the distributor simultaneously receives and produces market intelligence.

The existence of valuable information does not guarantee that it will be shared. International distribution relationships involve independent organizations with different purposes, incentives, and sources of power. Therefore, information sharing represents both a strategic resource and a management challenge.

From a managerial perspective, information exchange should be understood not only as a technological issue, but also as a relational and governance issue.

The fundamental principle of this thesis, that channel selection is a two-way process, also applies to information sharing. Suppliers evaluate distributors, and distributors simultaneously evaluate suppliers. When both parties perceive the relationship as mutually valuable, the likelihood of sustainable information exchange is higher.

Customer relationship management (CRM) is particularly important because it provides a structured mechanism for integrating information about customers, interactions, and sales opportunities.

decision quality .

Therefore, international channel managers should consider not only whether partners have CRM systems, but also whether these systems are compatible with the manufacturer's information requirements.

Historically, manufacturers have primarily evaluated factors such as sales capabilities, financial strength, market reach, customer relationships, inventory capacity, and technical expertise. Modern evaluations, however, also consider the distributor's ability to collect, manage, and share reliable digital information.

Online marketplaces and intermediaries often possess superior information about customer searches, purchases, prices, and demand patterns because they observe transactions occurring between multiple sellers. This creates a new type of information asymmetry.

Traditionally, a local distributor may possess superior information due to their proximity to customers. In platform-based distribution, however, the platform itself may possess the richest market data (Parker et al., 2016).

Recent research highlights the strategic impacts of digital transformation and multichannel coordination, particularly in terms of information asymmetry, platform management, and the integration of distribution channels (Verhoef et al., 2015; Verhoef et al., 2021).

on the basis It should not be evaluated. Furthermore, the platform's data access policies, transparency of customer information, control over pricing and customer relationships, compatibility with existing distribution channels, and potential conflicts with independent distributors should be examined. Ownership, accessibility, and strategic use of customer and

transaction data should be given particular consideration. These issues are important because digital platforms can simultaneously facilitate market access and create new forms of information asymmetry and channel dependency (Parker et al., 2016; Verhoef et al., 2015).

Traditional channel management has often relied heavily on managerial experience, periodic sales reports, and qualitative assessments. These remain valuable, particularly in relationship-intensive international markets, but digital analytics can complement managerial assessment by identifying patterns that may not be immediately apparent.

Demand forecasts can be improved by combining historical sales data, supply chain information, market conditions, and digital customer activity. Better forecasts can increase product availability while reducing excess inventory.

Manufacturers operating internationally often work with multiple distributors. Analytical data can help make comparisons between partners and identify differences in terms of efficiency, market growth, or service performance.

Distributor performance can be affected by market size, economic conditions, product maturity, regulatory factors, and competitive intensity. Comparisons that ignore these contextual differences can lead to misleading results.

Channel relationships encompass dimensions that are difficult to capture with quantitative data alone, such as trust, commitment, entrepreneurial motivation, local reputation, cultural understanding, and relationship quality.

While technology can identify patterns and improve predictions, managers also bear the responsibility of interpreting these results within the relational and institutional context of the foreign market.

This does not mean rejecting the traditional relationship-based model. On the contrary, digital information capabilities empower the producer's ability to learn from and coordinate these relationships.

Without collaborative relationships, advanced information systems may produce limited knowledge due to partners' reluctance to share data. Conversely, strong relationships without adequate information systems can limit the speed and quality of decision-making.

Digital transformation has altered international distribution without addressing its fundamental strategic challenges. Companies still need to understand foreign customers, identify appropriate marketing pathways, select skilled intermediaries, coordinate channel relationships, and evaluate performance. What has changed significantly is the technological environment in which these activities take place.

Therefore, the question today is not whether digital technologies are important for international distribution. The more important question is how digital capabilities should be combined with channel and relational capabilities to improve international market performance.

Digitalization is sometimes interpreted primarily as a mechanism for eliminating intermediaries. Manufacturers can communicate directly with customers, operate e-commerce channels, collect customer information, and provide digital support without being entirely dependent on traditional distributors.

The thesis states that the contributions of channel partners include market intelligence, established customer relationships, inventory financing, sales capabilities, market sensitivity, and competitive analysis.

This distinction is particularly important for international markets, where geographical, institutional, cultural, and service requirements continue to create value for skilled local partners.

Traditional marketing intelligence focused on gathering information about markets, customers, and competitors. Today's digital systems, however, significantly increase the quantity, frequency, and variety of available data.

A manufacturer might possess extensive customer and distributor data but lack the analytical capabilities to interpret it. Alternatively, they might generate useful insights but be unable to effectively communicate them to channel partners.

International channel information capability refers to the collective ability of a firm and its partners to generate, integrate, share, interpret, and apply market and channel information to distribution decisions.

Similarly, an algorithm might identify a distributor with seemingly superior financial and market characteristics, but it might not capture management quality, reliability, cultural compatibility, or the manufacturer's willingness to improve its business (Davenport et al., 2020).

The following section examines international distributor selection and relationship management, focusing on partner assessment, strategic alignment, digital readiness, contractual and relational management, information sharing, joint planning, and long-term distributor development.

4. Distributor Selection and Relationship Management

Choosing an international distributor is one of the most important decisions in the foreign market development process. A distributor does much more than simply provide access to customers. Depending on the channel structure, the distributor may represent the manufacturer in the local market, manage inventory, develop customer relationships, provide technical support, gather market intelligence, conduct promotional activities, and contribute to forecasting and market planning.

not as a search for an organization willing to buy and resell the product , but as a strategic talent decision .

On the other hand, a skilled distributor can accelerate foreign market development by providing resources that would require significant time and investment for the manufacturer to develop independently.

Therefore, an effective distributor selection process should evaluate not only the candidate's current business capabilities but also their strategic fit, learning potential, quality of knowledge, digital readiness, and capacity to develop a sustainable relationship with the manufacturer.

This avoids a common channel selection error: choosing a distributor primarily because they are visible, large, or enthusiastic, but not determining whether their actual customer base corresponds to the manufacturer's target market.

Digital information can significantly improve this initial stage. Market databases, online business directories, CRM information, trade data, digital platform activity, and publicly available corporate information can help manufacturers create a more accurate profile of potential customers before approaching potential distributors.

However, local distributor knowledge remains valuable, especially in fragmented or relationship-intensive markets where official databases do not fully reveal actual purchasing networks.

A mandatory criterion represents a minimum requirement. Failure to meet this criterion usually means elimination, regardless of the candidate's strengths in other areas.

Customer numbers alone are not sufficient. A distributor with 5,000 customers may be less valuable than a distributor with 300 customers who closely match the manufacturer's target audience.

Market access should also be verified, rather than relying entirely on the distributor's presentation. Manufacturers can compare the claimed coverage with customer interviews, market information, and independent data.

Financial adequacy is particularly important when distributors are expected to hold inventory. This thesis explicitly acknowledges inventory financing and local product availability as significant advantages offered by channel partners.

However, financial size should not automatically be the determining factor in the selection. A smaller distributor may place greater strategic importance on the manufacturer's product range compared to a much larger organization.

Therefore, a technically complex product should not be given to a distributor simply because it has broad market reach. In addition to the ability to generate demand, the ability to provide after-sales customer support is also necessary.

The reciprocal nature of the relationship is important here. The thesis explicitly defines channel selection as a two-way process where suppliers select dealers and dealers simultaneously select suppliers.

Therefore, digital readiness should become a formal part of the due diligence process for today's distributors, rather than being reviewed only after a distributor has been assigned.

Competitive representation should not automatically exclude a distributor, especially in industries where specialist agents often represent multiple competing suppliers. Instead, managers should evaluate the potential consequences.

Another important aspect is the priority the distributor gives to the manufacturer's products. As Gökmen (2001) emphasizes, a supplier benefits when their products receive consistent managerial attention, are provided with adequate promotional resources, and occupy a meaningful position in the distributor's portfolio.

This process also facilitates the transition to the next stage. Choosing the right distributor is necessary but not sufficient. Long-term international channel performance depends on what happens after the selection: how expectations are aligned, how information is exchanged, how trust is built, how conflicts are managed, and how joint activities are coordinated.

Selecting a qualified distributor does not guarantee effective channel performance. The value of an international distribution relationship develops through how the parties define expectations, exchange information, coordinate activities, develop skills, and evaluate results over time. Therefore, distributor management should be treated as an ongoing strategic process rather than an administrative activity following partner appointment.

International manufacturer-distributor relationships involve organizations with diverse goals. Manufacturers typically seek market penetration, brand development, reliable customer service, market intelligence, and appropriate interest in their products. Distributors, on the

other hand, seek attractive profit margins, business potential, reliable sourcing, marketing support, technical support, and a relationship that contributes to their competitive position.

The aim is not to eliminate the differences between the interests of the producer and the distributor; rather, it is to ensure sufficient alignment so that both sides understand how value is created and shared.

Distribution agreements form the formal basis of the relationship. This thesis emphasizes explicit agreements, particularly in areas such as regional coverage, exclusivity, resale arrangements, participation in promotional activities, and process management.

Current agreements should also address additional questions arising from hybrid and digital distribution. These may include handling online sales, strategic accounts, digital leads, marketplaces, customer information, data protection, and cross-border transactions.

However, contract details alone cannot manage every possible future situation. International markets are characterized by uncertainty, and manufacturers and distributors frequently encounter unforeseen circumstances while negotiating agreements. Therefore, relational mechanisms such as trust, commitment, communication, and collaborative problem-solving are important in addition to formal contract management.

Training represents one of the clearest mechanisms by which a manufacturer can improve its distributor capacity. This thesis includes initial product and sales training as a formal stage in distributor development.

Digital technologies have also changed the way things are presented. Learning platforms, virtual demonstrations, webinars, and shared information systems enable manufacturers to provide continuous training across geographically dispersed distribution networks. However, personal interaction is still valuable in situations where technical complexity is present or relationship building is important.

This thesis incorporates both jointly developed sales forecasts and joint sales plans into the distributor development process. This is particularly important because local distributors often possess information that manufacturers cannot easily obtain from centralized sources.

Forecasting should also be understood as a collaborative information process. While distributor forecasts may include local customer information, manufacturers can contribute broader product, supply, and international market information.

Digital systems allow forecasts to be updated more frequently and compared with pipeline, inventory, and actual sales data. This reduces reliance on annual plans and supports more adaptable decision-making processes.

The relationship developed in this section centers on information exchange. A distributor can provide market intelligence, customer information, competitive information, and forecast input, while a manufacturer can provide product, strategic, supply, and market development information. This thesis treats such information flows as a crucial component of channel value.

This is especially important in hybrid channels. If the manufacturer is also selling directly, a distributor may be hesitant to share detailed customer information. Similarly, if distributors represent competing suppliers, manufacturers may restrict strategic information.

Digital technology facilitates the exchange of information, but it doesn't eliminate relational concerns. In some cases, increased data visibility can make governance more sensitive, as both parties can observe activities that were previously less transparent .

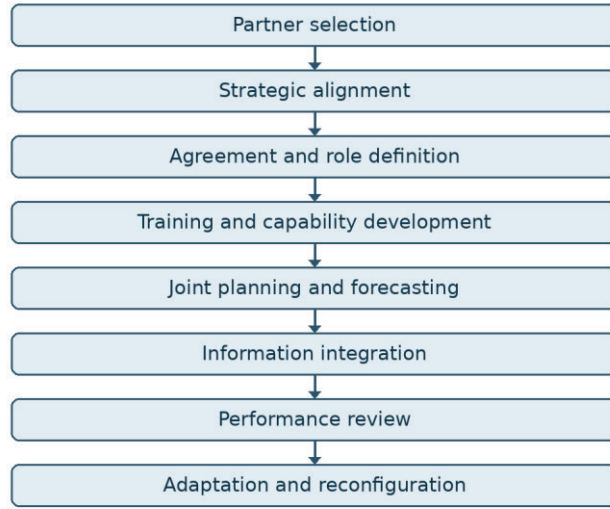
Factors such as overlapping channels, competing channels, inadequate communication, or perceived injustice can lead to conflicts. This thesis, specifically addressing target conflict and lack of communication, proposes training, communication, explicit agreements, controls, evaluations, and measurement as mechanisms for preventing or managing such problems.

Not every conflict is necessarily destructive. Disagreement can reveal changing market conditions or weaknesses in existing regulations. Therefore, the goal should be effective conflict management rather than the unrealistic elimination of all channel tensions.

Table 2*Proposed International Distributor Selection Evaluation Table*

Selection Size	Example Indicators	Suggested Weight
Market access and customer compliance	Target customers, coverage, customer relationships, market reputation.	20%
Commercial and financial power	Financial stability, investment capacity, inventory financing.	15%
Sales and marketing skills	Sales team, market development, promotion, finding potential customers.	15%
Technical and service capacity	Technical staff, application support, training, after-sales service	15%
Strategic and relational alignment	Quality management, commitment, communication, long-term perspective.	15%
Digital and information skills	CRM, analytics, data quality, integration, e-commerce	10%
Portfolio and competitive alignment.	Complementarity, competing brands, supplier priority.	5%
Governance and compliance	Legal compliance, reporting, ethical standards, contract preparation.	5%
Total		100%

Note: The weights are sample data to aid in the decision-making process, not experimentally estimated coefficients.

Figure 1*International Distributor Relationship Development Life Cycle*

Performance feedback informs renewed strategic alignment.

Note: This is a conceptual illustration developed by the author based on a relationship management framework.

5. Integrated Framework and Managerial Implications

Distributor performance appraisal completes the management cycle. The thesis explicitly places distributor performance appraisal at the end of the distributor development process. The contemporary framework expands on this principle by treating performance information as feedback for strategic adaptation.

One distributor might achieve high sales figures because they operate in a large and rapidly growing market, while another might achieve lower absolute sales figures despite much stronger market penetration. Similarly, short-term sales can mask weaknesses in areas such as customer development, service quality, information sharing, or inventory management.

Table 3 presents a multidimensional approach to distributor performance evaluation, combining retrospective indicators such as sales and profitability with prospective indicators such as pipeline development, training participation, market development, and information quality.

Effective international distribution depends on the alignment of channel structuring, information capacity, and relational/governance capacity within a continuous process of market learning and strategic adaptation (Neslin et al., 2006; Teece et al., 1997).

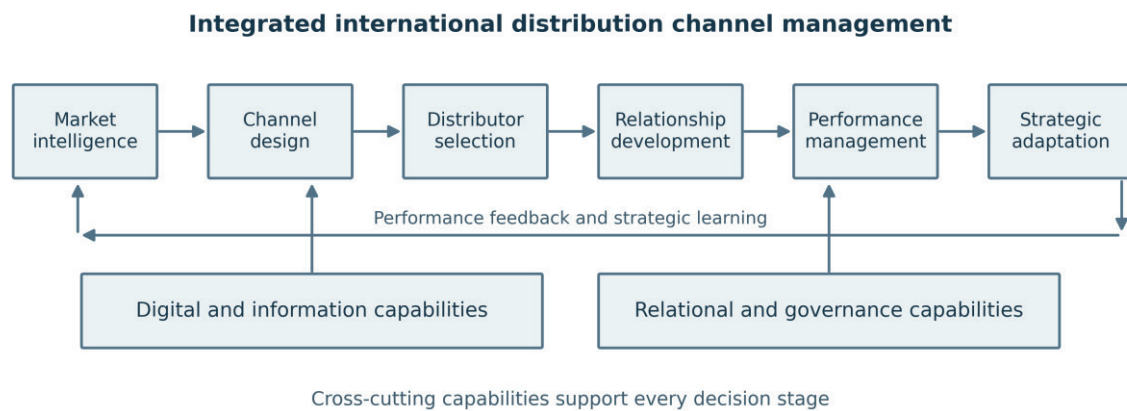
As markets, technologies, and customer requirements change, how should a firm continuously structure and restructure its channel relationships and talent portfolio?

The channel structure chosen during the initial entry into a foreign market may become unsuitable as the market evolves. Increased sales may justify direct investment. Increased digitalization may enable direct customer interaction. A distributor may develop new technical or digital capabilities. Alternatively, its strategic importance may diminish as customer behavior changes.

The proposed six-stage framework expands upon the sequential channel management logic developed by Gökmen (2001). It integrates market intelligence, channel design, distributor selection, relationship development, performance management, and strategic adaptation. Digital information capabilities and relational management support the entire process, while performance feedback informs subsequent decisions.

Figure 2

Integrated International Distribution Channel Management Framework



Note : The conceptual framework developed by the author expands upon Gökmen's (2001) work. Digital information capabilities and relational governance function across all six phases, while performance feedback supports continuous strategic adaptation.

First and foremost, international distribution should be treated as a strategic capability, not merely a decision to be made at the end of logistics processes. Channel structure dictates access not only to customers but also to information, relationships, service capabilities, and local expertise.

Secondly, firms should begin channel design with customer and market requirements rather than existing intermediaries. This preserves a key principle of the original channel design approach: market requirements determine the functions the channel must fulfill.

Thirdly, distributor selection should be made more systematic. While traditional criteria such as financial strength, market coverage, customer relations, sales competence, and technical capacity remain important, digital readiness, data quality, information sharing ability, and system compatibility should also be added.

Fourth, manufacturers must distinguish between distributor selection and distributor development. Appointment initiates the relationship but does not complete it. Training, joint forecasting, market planning, system integration, and regular performance reviews should be included in distributor management processes.

Fifth, companies operating hybrid channels must clearly define customer ownership, pricing policies, lead allocation, service responsibilities, and information rights. While digital direct channels can strengthen customer reach, they can also harm distributor relationships if their roles are unclear.

Sixth, distributor performance should be evaluated from a multidimensional perspective. While sales and profitability are of primary importance, customer development, service, information quality, digital engagement, and strategic contribution provide significant additional evidence.

Which channel participant can most effectively perform each of the required functions, and how can these functions be integrated through information and governance mechanisms?

This question can be particularly important for SMEs. Digital technologies may reduce some barriers to international customer access, but independent distributors may remain essential resources in terms of local knowledge, service capacity, relationships, and physical market presence.

Table 3*Proposed International Distributor Performance Framework*

Dimension	Representative Indicators
Financial	Sales growth, gross profit margin, profitability, payment performance
Market Development	New customers, market penetration, target segment coverage.
Sales Application	Sales pipeline development, conversion rate, forecasting success.
Customers and Services	Response time, complaints, service quality, customer loyalty
Operational	Inventory turnover rate, availability, delivery performance
Relationship	Commitment, cooperation, joint planning, participation in training.
Information	Forecasting accuracy, reporting quality, contribution to market intelligence.
Digital	CRM usage, data completeness, digital leads, e-commerce capability
Strategic	Investment, agreed-upon goals, brand development, long-term market contribution.

Note: The proposed dimensions are management indicators; they have not been empirically validated in this section.

6. Conclusion

International distribution has undergone a significant transformation as digital technologies have expanded the ways firms reach customers, exchange information, coordinate partners, and monitor market performance. However, many of the fundamental challenges of international channel management remain: firms must understand customers, allocate channel functions, select appropriate partners, manage relationships, acquire reliable market intelligence, and adapt to changing conditions.

This section integrates market intelligence, channel design, distributor selection, relationship development, performance management, and strategic adaptation within a single framework, based on established international distribution principles and expanding upon the sequential channel management logic developed by Gökmen (2001).

Firstly, international distribution is becoming more hybrid rather than purely direct. Digital technologies offer manufacturers new ways to reach customers, often co-existing with distributors, platforms, service providers, and other intermediaries.

Secondly, information capability has become a central channel capability. Competitive advantage increasingly depends not just on possessing market knowledge, but on the ability to generate, integrate, share, interpret, and apply that knowledge across organizational boundaries.

Third, relationships across digitally enabled channels retain their strategic importance. Technology can increase transparency and coordination, but effective collaboration remains dependent on role clarity, mutual value, trust, governance, and proper management of channel conflicts.

Within such an ecosystem, channel structures must evolve as customer requirements, market conditions, technologies, and shared capabilities change. Consequently, performance monitoring serves not only as a control mechanism but also as input for continuous strategic adaptation.

Therefore, the fundamental management challenge is no longer simply identifying the "best" international distribution channel; it is developing an adaptable architecture that can integrate market access, the capabilities of local partners, knowledge resources, digital technologies, and inter-organizational relationships over time.

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CHAPTER 3

THE MEDIATING ROLE OF JOB SATISFACTION IN THE EFFECT OF EMPLOYEES' JOB STRESS ON TURNOVER INTENTION¹

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¹ Extended version of the paper presented at the 18th International Business Congress, the full text of which was published. Artificial Intelligence Ethics Statement: The author did not use artificial intelligence in the preparation of this research, in data collection, or in data analysis. The author wishes to state that the artificial intelligence tools ChatGPT and Claude were used in translating the text from Turkish into English and in the final proofreading process..

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1. INTRODUCTION

Today, the success of organizations depends on having employees who go beyond formal job descriptions and generously devote their time, attention, and energy to their organizations. Employees who internalize their work, enjoy doing it, and add value to their organizations through what they produce have become indispensable to organizations (Baysal & Fidan, 2022: 139). However, factors such as rapid technological and industrial change, organizations' growing job demands and performance expectations, the difficulties and pressures employees face in their daily lives, material and non-material dissatisfaction, and insufficient opportunities for promotion and advancement have raised employees' stress levels (Bayar & Öztürk, 2017: 526; Şahin & Seçgin, 2026: 82).

Job stress (JS) reduces employees' job performance, productivity, motivation, and comfort levels. It can also reduce their comfort in daily life and lead to prolonged unhappiness. Over time, this may cause employees to become disengaged from their jobs and even to consider leaving (Çankaya, 2020: 122). Turnover intention (TI), which arises from excessive stress, may lead employees to leave their jobs after a certain period (Büyükbeşe, 2011: 48). From the standpoint of business management, the departure of qualified human resources, an important source of competitive strength, is not a desirable situation (Ertürk & Erdirençelebi, 2018: 604). This is because the departure of qualified employees causes substantial costs for businesses (related to the time and money spent on recruitment, training, and ensuring job performance) as well as negative consequences (such as disruptions to work plans, adverse effects on sustainable competitive advantage over competitors, decreased motivation among the remaining employees, and concerns among former employees about conflict and incompatibility with newly hired employees) (Kanbur, 2018: 150).

Another factor that influences TI is "job satisfaction." Behaviors such as TI and quitting are largely related to the level of satisfaction individuals derive from their jobs (Bölükbaşı, 2025: 1407). Job satisfaction (JSat) refers to the feeling that arises from the match between employees' expectations of their jobs and the work they actually perform (Kaygın & Naktiyok, 2012: 103). If employees obtain the necessary satisfaction from their jobs and workplaces, they will hold a positive attitude toward their jobs and work environment (Çekmecelioğlu, 2005: 28). Accordingly, an employee with a positive attitude has a high level of JSat. One of the most important factors distinguishing successful businesses from others is having employees who experience a high level of JSat. While high JSat increases employees' tendency to remain in the organization, low JSat strengthens their tendency to leave their jobs. In this context, JSat is regarded as an important variable in predicting employees' TI (Bölükbaşı, 2025: 1407).

As in all sectors, there is intense competition in the vegetable oil manufacturing sector as well. In this competitive environment, employees may occasionally be exposed to pressures, and this may cause them to experience stress. In particular, during periods when seasonal workload increases, stress levels among employees may rise even further. To reduce employees' stress levels, their JSat levels need to be increased. Increasing JSat levels is possible by improving the work environment and working conditions and by reducing excessive workload. Otherwise, an increase in stress levels may be observed among individuals working in businesses that produce sunflower oil. Over time, this situation may lead to the development of TI among employees and ultimately to quitting. This, in turn, will bring additional cost burdens to businesses.

Studies conducted on employees in different sectors in the literature have identified significant relationships among JS, TI, and JSAT. These studies have concluded that there is a positive relationship between JS and TI (Bhat, Tariq & Rainayee, 2024; Çankaya, 2020; Karagöz & Erdoğan, 2023; Şahin & Seçgin, 2026; Tekingündüz & Kurtuldu, 2015), a negative relationship between JS and JSAT (Büte, 2015; Kim et al., 2014; Okutan, 2026; Turunç & Erkuş, 2010), and a negative relationship between JSAT and TI (Akbolat et al., 2014; Baysal & Fidan, 2022; Biçer & Erdoğan, 2025; Gül et al., 2008). Therefore, it was considered that JSAT plays a mediating role in the relationship between JS and TI. A limited number of studies examining the mediating role of JSAT in the relationship between JS and TI have been found in the literature (Akçakanat, 2019; Akyüz, 2022; Dodanwala & Santoso, 2022; Kafashpoor et al., 2014; Sivük & Seyhan, 2021). This situation was considered a gap in the field and provided the basis for conducting this study. Accordingly, the aim of this study is to determine whether job satisfaction is a mediating variable in the effect of job stress on turnover intention. In line with this aim, the sample of the present study consists of employees of sunflower oil production businesses operating in the province of Edirne. The businesses examined in this study are among those in which the relationships among JS, TI, and JSAT can be observed.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1. Job Stress

Within the fundamental logic of the classical management approach of the 1920s, human beings were viewed as machines. However, within the framework of today's modern management approach, the human element has moved to the center of businesses. Consequently, the "human element" has become the most important resource for organizations (Çankaya, 2020: 122). Today, the rapid changes and developments in both technology and job design processes have led to increased competition among businesses (Karagöz & Erdoğan,

2023: 408). Increased competition has brought time pressure and constantly changing working conditions to businesses. This situation has pushed employees' physical and psychological limits, leading to the widespread occurrence of stress in working life (Şahin & Seçgin, 2026: 82). In today's world, where competitive and overwork-oriented industrial life prevails, stress has become more pronounced and has begun to pose a threat to people (Özkalp & Kirel, 2013: 397).

The concept of stress has been defined in different but interrelated ways by researchers in various fields, including medicine, psychology, psychiatry, and physiology. The concept of stress is derived from the Latin word "estricia" and the Old French word "estrece." In the 17th century, the concept was used to refer to meanings such as disaster, trouble, distress, grief, misfortune, and pain. In the 18th and 19th centuries, the meaning of the concept changed, and it was used in reference to objects, individuals, or psychological states to denote meanings such as force, pressure, and coercion. Thus, the concept of stress began to be used to refer to the resistance shown by objects and individuals against deformation under the influence of such forces (Yirik et al., 2014: 6224). The concept of stress was first defined by Hans Selye (1977) as "the nonspecific response of the body to any external demand" (as cited in Kılıç et al., 2013: 19). Stress is the response shown to a situation, an action, or the physical or psychological strain experienced by an individual. According to another definition, it is the physical or emotional response an individual exhibits to potential threats in their environment (Büyükebeşe, 2011: 37). JS, on the other hand, is defined as a state of tension that arises as a result of the employee's interaction with their environment (Efeoğlu & Özgen, 2007: 239). The United States National Institute for Occupational Safety and Health defines JS as "the harmful physical and emotional responses that occur when the demands of a job do not match the worker's abilities, resources, or needs" (Yenihan et al., 2014: 40). In brief, the stress experienced by employees in the work environment is referred to as "job stress" (Turunç & Çelik, 2010: 86). JS is considered one of the most significant health hazards for workers worldwide (Salama et al., 2022).

Today, the workplace is the area in which stress is most frequently experienced. Although working life aims to provide individuals with economic, psychological, social, and cultural satisfaction, working life and the workplace have become major sources of stress for many people (Yamuç & Türker, 2015: 394). Situations that cause stress within businesses include employees having to do what those in management positions want rather than fulfilling the requirements of their duties; managers failing to develop their relationships with subordinates because they believe that their subordinates will compete with them; the authority granted being insufficient despite the broad scope of responsibilities; and an individual's

responsibilities being excessively high or perceived as higher than they actually are (Karakaya & Gürel, 2015: 21).

Not all stress experienced by individuals should be considered negative. On the contrary, if stress can be maintained at an optimal level, it can contribute to employees' development (Karagöz & Erdoğan, 2023: 408). A certain level of stress can provide individuals with energy and motivate them. Some experts argue that individuals working under moderate stress perform at higher levels (Büyükebeşe, 2011: 36). However, when stress is experienced excessively by employees, it negatively affects their development (Karagöz & Erdoğan, 2023: 408).

Employees' exposure to excessive stress negatively affects not only the employees themselves but also the business. On the one hand, excessive and prolonged stress experienced by employees leads to individual consequences such as fear, conflict, depression, extreme fatigue, hypertension, diabetes, sleep disorders, feelings of worthlessness, burnout, and physical illnesses. On the other hand, it also results in organizational consequences such as absenteeism, job dissatisfaction, discontent, reduced performance and productivity, and psychological withdrawal from the work group (Büyükebeşe, 2011: 48; Karagöz & Erdoğan, 2023: 411; Salama et al., 2022; Tekingündüz et al., 2015: 4). Furthermore, excessive and prolonged stress can lead to the development of TI among employees and eventually cause them to leave their jobs after a certain period. As a result, organizations may face serious problems, including healthcare expenditures, theft, sabotage, compensation payments to employees who leave their jobs, and expenses incurred in recruiting new employees to replace those who have left (Yamuç & Türker, 2015: 394). Therefore, workplaces, where employees spend a significant part of their lives, need to be examined, organizational stress factors need to be identified, and measures must be taken to minimize or eliminate these factors (Özkaya et al., 2008: 164).

2.2.The Relationship Between Job Stress and Turnover Intention

It is observed that factors such as technological advancements, digitalization, economic problems, pandemic crises such as covid-19, and increasing global competition have led employees to make decisions to leave their jobs much more frequently (Baysal & Fidan, 2022: 141).

TI refers to an employee having plans and thoughts of leaving their current job or workplace during the period leading up to their departure at a certain point in time. An employee who has such plans and thoughts will evaluate the current conditions, establish expectations, and, if the level at which these expectations are met is low, put these thoughts into action and leave the job (Yenihan et al., 2014: 40). Turnover is defined as employees voluntarily saying goodbye to an organization. An employee's departure from an organization is an extremely

costly situation for both the organization and the individual (Salama et al., 2022). The departure of qualified employees, in particular, entails even greater costs for businesses. The emergence of a qualified employee's intention to leave and the subsequent translation of this intention into action lead to various costs for businesses, such as losing the qualified employee, recruiting a new employee to fill the vacant position, and providing training to the new staff member. Furthermore, an employee's departure may reduce social interactions among the remaining employees and disrupt communication between them, give rise to anxiety and uneasiness, and cause adaptation problems with newly recruited personnel (Ertürk & Erdirençelebi, 2018: 606). Therefore, businesses should take care to prevent their qualified employees from developing the TI their jobs.

TI occurs when employees do not receive support for career development and new opportunities in the businesses where they work, or when the efforts they expect from management for their professional training and personal development are absent or insufficient (Biçer & Erdoğan, 2025: 108). In addition, TI may also arise due to JS (Manoppo, 2020). Individuals working under excessive stress in the work environment may develop the intention to leave their jobs because they believe that their expectations are not being met, and they will eventually leave their jobs after a certain period. Therefore, an increase in JS leads to an increase in TI (Kim & Oh, 2025; Yenihan et al., 2014: 39).

Research has shown that there is a significant positive relationship between JS and TI. In their study, Salama et al. (2022) aimed to examine the mediating role of burnout in the relationship between JS and TI among employees in the hospitality sector in Egypt. The results of the study revealed that JS had a positive effect on TI among employees in Egypt's hospitality sector. Yenihan et al. (2014) aimed to examine the relationship between JS and TI in a study conducted among employees of an automotive company operating in the automotive sector in Sakarya. The analyses revealed a significant and positive relationship between JS and TI. Günday and Keleş (2017) aimed to examine the effect of JS on TI in their study. For this purpose, they conducted a survey among white-collar employees working in different sectors in Istanbul. The analysis revealed that the organizational stress levels of white-collar employees had a positive effect on TI. Savaş and Erol (2017) aimed to investigate the mediating effect of depression levels on the effect of JS on TI among personnel working in the field of education. The results of the study showed that JS had a positive effect on TI. In their study of private school teachers in economically underdeveloped states of India, Bhat, Tariq & Rainayee (2024) concluded that an increase in employees' stress levels increased TI. Other studies in the literature have also found that JS positively affects TI (Çankaya, 2020; Karagöz ve Erdoğan,

2023; Kim & Oh, 2025; Şahin & Seçgin, 2026; Tekingündüz & Kurtuldu, 2015). Based on previous studies investigating the relationship between JS and TI, the following hypothesis was developed to test the effect of employees' JS on TI.

“H1a: Job stress has a positive and significant effect on turnover intention.”

2.3.The Mediating Role of Job Satisfaction in the Relationship Between Job Stress and Turnover Intention

Job satisfaction (JSAT) is defined as the feeling of contentment an employee derives from their job or workplace. According to another definition, JS is a feeling arising from the degree to which an employee's expectations regarding their job align with the work they perform (Çekmeceliolu, 2005: 28). JS is expressed as a reflection of how an employee feels about their organization in various respects (Dodanwala & Santoso, 2022). Employees working at different levels encounter many positive and negative situations throughout their working lives. In the face of all these situations, employees desire to be happy, feel at ease, and experience satisfaction in the organizations to which they devote their efforts (Karakaş & Gökmen, 2018: 105). The feeling of satisfaction may arise from internal factors originating from the individual, such as title, seniority, education, and gender, or from external factors related to the organization in which they work, such as the work environment, working conditions, and salary (Baysal & Fidan, 2022: 141).

When employees feel that their expectations are being met by the business, their level of satisfaction increases (Çekmeceliolu, 2005: 28). However, when employees working in demanding, exhausting, and stressful environments feel that their expectations are not being met, their level of satisfaction decreases. Among employees with low levels of satisfaction, motivation, performance, and productivity decline, while absenteeism, lateness, and TI may increase (Karakaş & Gökmen, 2018: 118). Therefore, businesses must meet all employees' needs in order to minimize stress. In other words, business management must provide employees with the most suitable conditions in terms of workplace working conditions, salary levels, occupational safety, and occupational health. Thus, employees' levels of satisfaction with their work and working conditions will increase (Öztürk & Aygün, 2020: 212). An increase in an employee's level of satisfaction may lead to the employee feeling psychologically comfortable and happy in the organization where they work, resulting in increased job performance and productivity, the establishment of a healthy organizational structure, reductions in absenteeism, TI, and turnover rates, and greater loyalty to the organization (Doğar & Gürsoy, 2017: 119; Özdemir, 2008: 80; Sivük & Seyhan, 2021: 187).

Studies have shown that there is a negative relationship between JS and JSAT. Accordingly, an increase in employees' JS levels increases their level of JSAT. Klassen and Chiu (2010) investigated the effects of teachers' JS on JSAT in a study conducted among 1,430 teachers in Canada. The results of the study revealed that teachers' stress levels negatively affected their JSAT levels. Karakaş and Gökmen (2018) aimed to examine the relationship between employees' emotional labor, JSAT, and JS. For this purpose, a survey was conducted among 273 civil servants working in the public sector in the province of Konya. The results of the study revealed a significant negative relationship between JS and JSAT. Bayar and Öztürk (2017) aimed to examine the effects of research assistants' JS levels on JSAT and its subdimensions in a study conducted among 233 research assistants working at Süleyman Demirel University. The results revealed a negative relationship between JS and JSAT, as well as its subdimensions. In a study conducted by Okutan (2026) among employees in the kitchen departments of businesses in the tourism sector, the aim was to examine the effect of JS experienced by kitchen staff on JSAT. The study was conducted among kitchen employees working in four- and five-star hotels operating in the province of Erzurum. The results revealed that high levels of JS among kitchen employees negatively affected their level of JSAT. Other studies conducted among employees in the literature have also found that JS negatively affects JSAT (Efeoğlu & Özgen, 2007: 246; Kim et al., 2014; Farah et al., 2023; Macaroğlu & Koçoğlu, 2023). Based on previous studies investigating the relationship between JS and JSAT, the following hypothesis was developed to test the effect of employees' JS on JSAT.

“H1b: Job stress has a negative and significant effect on job satisfaction.”

JSAT is highly important for both employees and businesses. This is because low levels of JS among employees can lead to various negative situations in the workplace (Tanşu, 2009: 117). Therefore, employees who are dissatisfied with their jobs may develop the intention to leave, whereas employees who are satisfied with their jobs are less likely to seek new employment. In other words, employees with high levels of JS have low levels of TI (Taşkaya & Aksoy, 2023: 119).

Studies examining JSAT and TI together indicate that there is a negative relationship between these two variables. Yücel and Koçak (2018) aimed to identify the mediating role of burnout in the relationship between JS and TI. For this purpose, a survey was conducted among 308 employees at a public hospital operating in the province of Erzincan. The results revealed a significant negative relationship between JS and TI and found that burnout had a full mediating effect on this relationship. In a study examining the relationships among mobbing, JS, and TI in hotel businesses, Akbolat et al. (2014) found negative relationships between

mobbing and JS, and between JS and TI. Studies conducted among employees in the literature have also reported findings indicating that JS has a negative effect on TI (Baysal & Fidan, 2022; Biçer & Erdoğan, 2025; Gül et al., 2008; Dağdeviren & Kara, 2022; Taşkaya & Aksoy, 2023). Based on previous studies examining the relationship between JS and TI, the following hypothesis was developed to test the effect of employees' JS on TI.

“H1c: Job satisfaction has a negative and significant effect on turnover intention.”

In line with the studies in the literature, JSAT and JS are considered key antecedents of employees' TI (Dodanwala & Santoso, 2022). Accordingly, employees' TI may increase due to high JS arising from excessive workload and negative emotions in the workplace. However, high levels of JSAT with their jobs/workplaces weaken the effect of JS on TI (Salama et al., 2022). Studies in the literature that examine JS, Tİ, and JSAT together have identified relationships among these three variables. Akova et al. (2015) found a negative relationship between JS and JSAT and a positive relationship between JS and Tİ. In addition, the study concluded that JS had a statistically significant effect on both JSAT and Tİ. Kafashpoor et al. (2014), in their study of 242 employees at a public hospital in Iran, found that JSAT played a full mediating role in the effect of JS on Tİ. In their study of primary healthcare workers in Jilin Province, China, Ning et al.. (2023) aimed to determine the relationship between JS and TI among employees and to examine the mediating effects of JSAT and work engagement in this relationship. The findings revealed an indirect effect of JS on TI through JSAT. In their study, Akçakanat (2019) tested whether JSAT levels and subjective perceptions of fatigue played a mediating role in the effect of air traffic controllers' perceived JS on Tİ. The study found that intrinsic satisfaction and extrinsic satisfaction mediated the relationship between perceived JS and Tİ. In a study conducted among healthcare workers employed at a public hospital during the covid-19 pandemic, Akyüz (2022) concluded that JS did not have a significant direct effect on TI but had a significant indirect effect on TI through job dissatisfaction, with job dissatisfaction playing a mediating role in this indirect effect. The literature has identified findings indicating that JSAT plays a mediating role in the effect of JS on TI (Dodanwala & Santoso, 2022; Kafashpoor et al., 2014; Ning et al., 2023; Sivük & Seyhan, 2021).

Based on the conceptual framework and previous studies, JSAT was considered to potentially have a mediating effect on the relationship between JS and Tİ, and the following hypothesis was formulated. The research model is presented in Figure 1.

“H1d: Job satisfaction mediates the effect of job stress on turnover intention”.

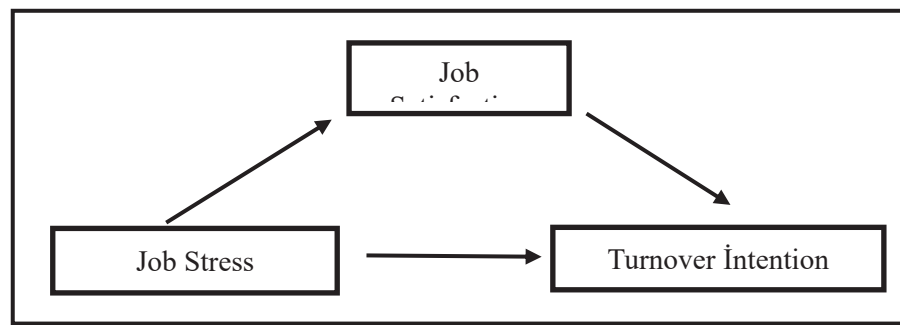


Figure 1. Research Model

3. RESEARCH METHODOLOGY

3.1. Population and Sample of the Study

The population of the study consists of employees of sunflower oil production enterprises operating in Edirne. According to information obtained from the Edirne Provincial Directorate of Agriculture, there are a total of 10 oil production enterprises in the province. Of these 10 enterprises, 4 did not participate in the survey due to their heavy workloads, and the survey was conducted at the remaining 6 enterprises. A total of 110 people work at the enterprises included in the survey. Convenience sampling was used in the study. The study sample consists of 105 employees, as 5 of the 110 employees who participated in the survey provided incomplete responses to the questionnaire.

Of the employees included in the study, 50.5% ($n = 53$) were male and 49.5% ($n = 52$) were female. Regarding age, 47.6% ($n = 50$) were between 31 and 40 years old, 28.6% ($n = 30$) were between 20 and 30 years old, 21% ($n = 22$) were between 41 and 50 years old, and 2.9% ($n = 3$) were aged 51 or older. In terms of marital status, 61% ($n = 64$) were married and 39% ($n = 41$) were single. Regarding educational attainment, 40% ($n = 42$) held a bachelor's degree, 23.8% ($n = 25$) had completed high school, 22.9% ($n = 24$) held an associate degree, 6.7% ($n = 7$) had completed primary education, and 6.7% ($n = 7$) held a postgraduate degree. In terms of job positions, 32.4% ($n = 34$) worked in accounting, 25.7% ($n = 27$) in public relations, 11.4% ($n = 12$) in human resources, 10.5% ($n = 11$) in marketing, and 4.8% ($n = 5$) in other positions, such as security and secretarial roles. Regarding length of service in their current positions, 47.6% ($n = 50$) had worked for less than one year, 30.5% ($n = 32$) for 1–3 years, 11.4% ($n = 12$) for more than 8 years, and 10.5% ($n = 11$) for 4–7 years.

3.2. Research Technique and Data Analysis

The study data were collected by means of a questionnaire. It contained items on employees' demographic characteristics and 12 items rated on a five-point Likert scale (5 = strongly agree, 1 = strongly disagree). The responses were analyzed with the SPSS 20.0 statistical software package. As a first step, the skewness and kurtosis coefficients were checked to determine whether the study variables were normally distributed, and values between -3 and +3 are taken to indicate a normal distribution (Eroğlu, 2005: 209). Next, exploratory factor analysis (EFA) was applied to examine the construct validity of the scales. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess whether the scales were suitable for factor analysis, and Cronbach's alpha was used to evaluate their reliability. Finally, correlation analysis was carried out to examine the relationships among employees' JS, JSat, and TI, and the four-step regression procedure proposed by Baron and Kenny (1986) was applied to determine whether JSat mediates the relationship between JS and TI.

3.3. Scales Used in the Study

Job Stress Scale: The scale used to measure employees' JS levels was developed by Cohen, Kamarck, and Mermelstein (1983). Küçükusta (2007) adapted it into Turkish and examined its validity and reliability. The scale is unidimensional and has four items (Küçükusta, 2007: 140). In this study, the JS scale yielded a skewness of 0.360 and a kurtosis of -1.327, which show that it is normally distributed. The KMO measure of sampling adequacy for the JS scale was 0.84, and Bartlett's test of sphericity gave $p < 0.000$. Together, these findings show that the matrix of relationships among the variables is suited to factor analysis and that the data are appropriate for it. Exploratory factor analysis (EFA) showed that all items of the JS scale loaded on a single factor, with loadings between 0.85 and 0.91. This factor accounted for 75.91% of the total variance, which supports the construct validity of the scale. Cronbach's alpha for the JS scale was 0.89, showing that the scale is reliable.

Job Satisfaction Scale: The scale used in this study was developed by Hackman and Oldham (1975). Basım and Şeşen (2009) adapted it into Turkish and examined its validity and reliability. The scale assesses employees' overall JSat as a single dimension and has five items (Şeşen, 2010: 197). In this study, the JSat scale yielded a skewness of -0.459 and a kurtosis of -0.349, which show that it is normally distributed. The KMO measure of sampling adequacy, which was used to determine whether the scale was suitable for factor analysis, was 0.75, and Bartlett's test of sphericity gave $p < 0.000$. These findings show that the data are adequately suited to factor analysis. Exploratory factor analysis (EFA) showed that all items loaded on a

single factor, with loadings between 0.51 and 0.91. This factor accounted for 58.12% of the total variance, which supports the construct validity of the scale. Cronbach's alpha for the JSat scale was 0.79, showing that the scale is internally consistent and highly reliable..

Turnover Intention Scale: The employees' turnover intention was measured with a unidimensional, three-item scale developed by Wayne, Shore, and Linden (1997). Küçükusta (2007) translated it into Turkish and examined its validity and reliability (Küçükusta, 2007: 141). In this study, the TI scale yielded a skewness of 1.787 and a kurtosis of 2.329, which show that it is normally distributed. Exploratory factor analysis (EFA) was applied to examine the construct validity of the scale. The KMO measure of sampling adequacy was 0.75, and Bartlett's test of sphericity gave $p < 0.000$. These findings show that the dataset is adequately suited to factor analysis. The EFA showed that all three items loaded on a single factor, with loadings between 0.94 and 0.96. This factor accounted for 89.86% of the total variance, which supports the construct validity of the scale. Cronbach's alpha, computed to evaluate the reliability (internal consistency) of the TI scale, was 0.75, showing that the scale is reliable.

4. RESEARCH FINDINGS

Employees' JSAT levels were found to be above average, whereas their JS and TI levels were below average (Table 1). This situation can be considered positive for both the enterprises and the employees. According to the correlation analysis results, a significant negative relationship was found between JS and JSAT ($r = -0.296$, $p < 0.002$), while a significant positive relationship was identified between JS and TI ($r = 0.528$, $p < 0.000$). The results also revealed a significant negative relationship between employees' JSAT and TI ($r = -0.429$, $p < 0.000$).

Table 1. Correlation Analysis Results for the Variables

Variables	Mean	Standard Deviation	1	2	3
JS	2,30	1,15	-	-	-
JSAT	3,73	0,83	-0,296**	-	-
Tİ	1,59	1,03	0,528**	-0,429**	-

**Correlation is significant at the 0.01 level (two-tailed).

The results of the four-step test proposed by Baron and Kenny (1986) to determine the mediating role of JSAT in the relationship between JS and TI are presented in Table 2. In the first step, JS was found to have a positive and significant effect on TI ($\beta = 0.528$, $p < 0.000$), and JS was observed to explain 52.8% of TI ($F = 39.768$, $R^2 = 0.279$, $\text{Sig.} = 0.000$). Accordingly, hypothesis H1a was accepted.

In the second step, JS was found to have a negative and significant effect on JSAT ($\beta = -0.296$, $p < 0.002$), and JS was observed to explain 29.6% of JSAT ($F = 9.865$, $R^2 = 0.087$, $\text{Sig.} = 0.002$). Accordingly, hypothesis H1b was accepted. In the third step, JSAT was found to have a negative and significant effect on TI ($\beta = -0.429$, $p < 0.000$), and JSAT was found to explain 42.9% of TI. ($F = 23.294$, $R^2 = 0.184$, $\text{Sig.} = 0.000$). Accordingly, hypothesis H1c was accepted.

Table 2. Regression Analysis Results

Model	Independent Variables	Dependent Variables	Regression Coefficients					Model Statistics
			B	Standard Error	β	p	R^2	
1. Step	Constant		0,502	0,192		0,010	0,279	39,768
	İS	İAN	0,473	0,075	0,528	0,000		
2. Step	Constant		4,28	0,174		0,000	00,87	9,865
	İS	İT	-0,214	0,068	-0,296	0,002		
3. Step	Constant		3,572	0,421		0,000	0,184	23,294
	İT	İAN	-0,533	0,110	-0,429	0,000		
4. Step	Constant		2,069	0,470		0,000	0,360	28,747
	İS	İAN	0,393	0,074	0,439	0,000		
	İT (Mediating Variable)		-0,372	0,103	-0,300	0,000		

In the fourth step, the mediating variable, JSAT, was included in the analysis. At this stage, JS was found to have a positive and significant effect on TI ($\beta = 0.439$, $p < 0.000$), whereas JSAT had a negative and significant effect on TI ($\beta = -0.300$, $p = 0.000$). While the effect of JS on TI was $\beta = 0.528$ ($p < 0.000$) in the first step, its effect decreased to $\beta = -0.300$ ($p < 0.000$) in the fourth step when the mediating variable, JSAT, was included in the model. These results indicate that JSAT partially mediates the effect of JS on TI. Furthermore, the Sobel test revealed that the mediating effect was statistically significant ($Z = 3.142$; $p = 0.002$). Thus, hypothesis H1d can be considered partially supported.

5. CONCLUSION AND RECOMMENDATIONS

Today, technological advancements, innovations, and increasing global competition place pressure on businesses and intensify competition. Business owners may face heavy burdens in their efforts to operate their companies more profitably and ensure their sustainability in the global competitive environment. This situation can lead to pressure, excessive workloads, and stress among employees. Individuals who work under prolonged and excessive stress can no longer contribute to achieving organizational goals (Bhat et al., 2024). As a result, employees' JSAT decreases, their TI increases, and, after a certain period, undesirable outcomes such as leaving the workplace may occur. The aim of the present study is to test the mediating role of JSAT in the effect of JS on turnover intention. In line with this

objective, employees of sunflower oil production enterprises operating in Edirne constituted the study sample.

According to the findings obtained from the survey, JS was found to have a positive and significant effect on Tİ. Previous studies investigating the effect of JS on TI also support the findings of the present study (Bhat et al., 2024; Çankaya, 2020; Günday & Keleş, 2017; Karagöz & Erdoğan, 2023; Kim & Oh, 2025; Salama et al., 2022; Savaş & Erol, 2017; Şahin & Seçgin, 2026; Tekingündüz & Kurtuldu, 2015: 1510; Yenihan et al., 2014: 45). Accordingly, an increase in employees' JS will lead to an increase in their Tİ.

Another finding of the present study is that JS has a significant negative effect on JSAT. Accordingly, as employees' stress levels increase, their JSAT levels decrease. Other studies in the literature supporting the present study have also found that JS negatively affects JSAT (Bayar & Öztürk, 2017: 542; Büte, 2015: 5; Efeoğlu & Özgen, 2007: 246; Klassen & Chiu, 2010; Karakaş & Gökmen, 2018; Macaroğlu & Koçoğlu, 2023; Turunç & Erkuş, 2010: 428).

Another finding of the present study is that JSAT negatively affects TI. According to this result, as employees' JSAT levels increase, their TI levels decrease. Previous studies have also found that JSAT negatively affects TI (Akbolat et al., 2014: 13; Baysal & Fidan, 2022; Biçer & Erdoğan, 2025; Gül et al., 2008: 6; Taşkaya & Aksoy, 2023; Yücel & Koçak, 2018).

The mediation analysis revealed that JSAT partially mediates the negative relationship between JS and Tİ. In other words, as employees' JS levels decrease, their JSAT levels increase, and this increase in JSAT partially reduces Tİ. Consequently, owners and managers of sunflower oil production enterprises need to identify the sources of stress that employees face or may face and develop effective methods to reduce or eliminate these sources. To this end, employees can be provided with support such as salary increases, bonus schemes, improvements in working conditions and promotion opportunities, reductions in excessive workloads, and job security. These measures may help reduce employees' stress levels and increase their JSAT. As a result, employees' TI may decrease.

The contribution of this study is that its findings are expected to provide important insights for owners of sunflower oil production enterprises seeking to make the most of their employees' potential in order to sustain their operations in a globally competitive environment, as well as contribute to future research.

One of the limitations of the study is that the sample consists solely of individuals employed at sunflower oil production enterprises operating in Edirne. Including oil factories operating in provinces outside Edirne in the study may yield different results. The second

limitation is that the study focuses on only one sector. Studies conducted in different sectors may produce different results.

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CHAPTER 4

NET ZERO POLICY AS A BOUNDARY CONDITION: HOW CIRCULAR ENTREPRENEURSHIP SHAPES SUPPLY CHAIN SUSTAINABILITY THROUGH CAPABILITY DEVELOPMENT

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Introduction

The intersection of entrepreneurial posture, institutional policy, and supply chain sustainability has attracted increasing scholarly attention as firms navigate mounting environmental pressures alongside competitive imperatives (Centobelli et al., 2021; Chari et al., 2022). Circular economy entrepreneurship (CEE), the strategic orientation toward identifying and exploiting circular value-creation opportunities represents one such response, yet the conditions under which CEE translates into measurable supply chain outcomes remain incompletely understood.

Net zero policy (NZZ) has emerged as a potentially significant boundary condition for this translation process. In developed institutional environments, regulatory enforcement mechanisms provide exogenous pressure that may independently drive sustainable supply chain behaviour. In emerging economies such as Nigeria, however, enforcement capacity is comparatively limited (Khanna & Palepu, 1997), creating a context in which voluntary adoption of NZZ commitments may carry stronger signaling value than nominal regulatory compliance. Firms that voluntarily integrate net-zero targets into operational planning in such an environment may do so from genuine strategic commitment, which could amplify the effect of entrepreneurial orientation on capability development.

Despite these theoretical possibilities, three critical gaps remain in the existing literature. First, the mechanism through which NZZ moderates the entrepreneurship-supply chain sustainability relationship has not been formally tested. Second, the role of circular economy capability (CEC) as a mediating construct between CEE and circular supply chain sustainability (CSCS) has received limited empirical attention. Third, multi-level moderated mediation frameworks integrating NZZ as both a first-stage and second-stage moderator have not been applied in sub-Saharan African manufacturing contexts. This research addresses these gaps through by building a moderated mediated model applied to a sample of 447 Nigerian manufacturing firms.

2. Related studies and hypotheses

2.1 Circular economy entrepreneurship and CEC

Circular economy entrepreneurship refers to the proactive identification and exploitation of opportunities arising from circular economy principles including waste valorization, closed-loop resource flows, and regenerative production systems (Iyiola, 2026). This orientation provides firms with the motivation and strategic direction to pursue circular economy investments, yet motivation alone is insufficient to generate supply chain outcomes. The translation of entrepreneurial intent into observable supply chain sustainability requires organisational capability, specifically, the capacity to routinise, embed, and execute circular practices across operational and inter-organizational processes.

Drawing on the practice-based view (PBV; Zollo & Winter, 2002), circular economy capability (CEC) is conceptualized as the accumulated set of organizational routines, processes, and knowledge systems that enable a firm to systematically execute circular economy principles. In the PBV sense, these practices include waste audit routines, closed-loop procurement procedures, reverse logistics planning, and circular supplier evaluation protocols observable, transferable behaviors that represent the operational infrastructure through which entrepreneurial orientation is converted into supply chain outcomes. We therefore propose:

H1: CEE is positively associated with CEC.

2.2 Circular economy capability and circular supply chain sustainability

Circular supply chain sustainability (CSCS) reflects the degree to which circular economy principles are embedded in supply chain operations, including reduction of environmental incidents, adoption of eco-friendly supply chain processes, and circular material integration (Das, 2017). The capability–performance relationship in the circular economy literature suggests that firms with higher CEC will more effectively implement practices that reduce environmental impact and promote circularity across supply chain activities (Centobelli et al., 2021). We propose:

H2: CEC is positively associated with CSCS.

2.3 CEC as a mechanism of the CEE-CSCS relationship

The preceding arguments suggest that CEE drives CSCS through the intermediate step of capability accumulation. Entrepreneurial orientation provides the strategic impetus for circular investments; those investments generate the organizational routines and systems that constitute CEC; and those routines then enable systematic embedding of circular principles in supply chain operations. This indirect pathway is consistent with dynamic capability theory (Teece, 2007) and the PBV (Zollo & Winter, 2002), both of which emphasise the role of intermediate capability structures in translating strategic intent into performance outcomes. We propose:

H3: CEC mediates the relationship between CEE and CSCS.

2.4 Net zero policy as a moderator

NZP, as operationalized in this study (Lee et al., 2023), captures the degree to which a firm has voluntarily adopted net-zero emissions goals and integrated climate strategy into operational planning. In Nigeria's institutional context, characterized by limited regulatory enforcement capacity and incomplete institutional frameworks (Khanna & Palepu, 1997), voluntary NZP adoption represents a stronger strategic signal than environmentally nominal compliance would in a high-enforcement context. This study proposes two distinct moderation pathways through which NZP shapes the CEE–CEC–CSCS chain. Specifically, NZP may amplify the CEE→CEC relationship by providing the institutional legitimacy, resource allocation justification, and strategic coherence necessary to convert entrepreneurial orientation into systematized capability. Under high NZP commitment, firms are more likely to allocate resources to circular capability development, to integrate circular practices into formal management systems, and to sustain the organizational learning processes that constitute CEC accumulation. Thus, it is proposed that:

H4: NZP moderates the CEE–CEC relationship such that the positive association is stronger under high NZP.

It is theoretically plausible that NZP might also directly moderate the CEE–CSCS link, bypassing capability development to directly shape the relationship between entrepreneurial orientation and supply chain outcomes. However, this pathway is theoretically less compelling, because CSCS is a complex, institutionally embedded outcome that typically requires capability infrastructure rather than responding directly to entrepreneurial orientation under policy pressure. Combining the preceding arguments, NZP's primary role may be to amplify the full indirect pathway from CEE through CEC to CSCS, rather than operating at any single stage independently. Thus, it is proposed that:

H5: NZP moderates the indirect effect of CEE on CSCS through CEC (moderated mediation).

3. Methodology

3.1 Research design and sample

The study employed a quantitative, cross-sectional survey design with a two-wave data collection strategy providing procedural separation to reduce common method bias. The design contribution is methodological noise reduction rather than causal ordering demonstration. Data were collected from Nigerian manufacturing firms listed in the Nigerian Stock Exchange and the Manufacturers Association of Nigeria directory. Of 779 questionnaires distributed, 447 usable responses were retained, yielding a response rate of 57.38%. Non-response bias was assessed by comparing early and late respondents on key study variables; no significant differences were observed ($p > .05$), suggesting non-response bias is unlikely to distort findings.

3.2 Common method variance control

Procedural and statistical controls were employed to address common method variance (CMV). Procedurally, the two-wave data collection separated predictor and outcome measurement by three weeks. Statistically, Harman's single-factor test yielded a maximum explained variance of 27.18% for any single factor, below the 50% threshold (Podsakoff et al., 2003). Additionally, a marker variable (theoretically unrelated to the study constructs) was included in the survey; its correlation with all study constructs was $r = 0.02$ ($p > .05$), confirming low shared method variance. VIF values were all below 3.3. While these controls are well-established in the literature, it is acknowledged that single-source survey data from individual managers creates a potential for common method variance that cannot be fully eliminated

Measures

CEE. CEE was measured using a validated scale capturing the firm's proactive orientation toward identifying and exploiting circular economy opportunities, including resource recovery, closed-loop production, and circular value proposition development.

NZP. The NZP scale (Lee et al., 2023) comprises three items measuring the degree to which the firm has adopted net-zero emissions goals and integrated climate strategy into its operational planning. Representative item: "The firm seems to do a good job of setting sectoral goals for net zero" ($M = 3.093$, $SD = 1.132$, five-point Likert scale). The scale captures internal strategic adoption of net-zero commitments rather than externally imposed regulatory compliance, which is the theoretically relevant operationalization for the institutional void argument: voluntary policy adoption in a weak enforcement context is a stronger signal of genuine strategic commitment than nominal regulatory compliance.

CEC. CEC was operationalized as the accumulated organizational capabilities and knowledge systems enabling systematic execution of circular economy principles, consistent with the PBV framework.

CSCS. The CSCS scale (Das, 2017) captures the extent to which environmental sustainability principles are embedded in supply chain practices, including reduction of environmental incidents, adoption of eco-friendly supply chain processes, and circular material integration. While this scale was developed for general sustainable supply chain measurement rather than CE-specific contexts, its items reflect core dimensions of CSCS as conceptualized in this study.

All scales used five-point Likert response formats. Scale reliability and validity were confirmed through confirmatory factor analysis (see Section 3.4).

3.4 Measurement model

Confirmatory factor analysis (CFA) in AMOS established acceptable measurement model fit: CMIN/df = 2.451, IFI = 0.976, CFI = 0.976, NFI = 0.966, TLI = 0.969, RMSEA = 0.050. All factor loadings were significant ($p < .001$). RMSEA = 0.050 is at the upper boundary of good fit (Hu & Bentler, 1999); the 90% confidence interval for RMSEA was not reported in the source study and would provide additional precision in future measurement validation. Convergent validity was supported by AVE values exceeding 0.50 for all constructs, and discriminant validity was confirmed using Fornell-Larcker criterion and HTMT ratios (Henseler et al., 2015).

3.5 Analytical strategy

Hypotheses were tested using Hayes' PROCESS macro (Model 59) in SPSS, which enables simultaneous estimation of moderated mediation. Bootstrap confidence intervals (5,000 samples) were used throughout. Interaction terms were computed using mean-centered variables to reduce multicollinearity.

4. Results

4.1 Descriptive statistics and correlations

Table 1. Descriptive Statistics and Correlations

Variable	M	SD	1	2	3	4
1. CEE	3.412	0.987	—			
2. NZP	3.093	1.132	0.312**	—		
3. CEC	3.287	1.043	0.421**	0.378**	—	
4. CSCS	3.531	0.912	0.389**	0.512**	0.447**	—

Note. $n = 447$. ** $p < .01$.

4.2 Hypothesis testing

Table 2. PROCESS Model 59 Results

Path	β	SE	t/z	p	95% CI
CEC Equation ($R^2 = 0.088$)					
CEE $\rightarrow$ CEC	0.081	0.021	3.857	< .001	[0.040, 0.122]
NZP $\rightarrow$ CEC	0.124	0.033	3.758	< .001	[0.059, 0.189]
CEE $\times$ NZP $\rightarrow$ CEC (H5)	0.089	0.026	3.427	< .001	[0.038, 0.140]
CSCS Equation ($R^2 = 0.345$)					
CEE $\rightarrow$ CSCS	0.143	0.039	3.667	< .001	[0.066, 0.220]

Path	β	SE	t/z	p	95% CI
NZP → CSCS	0.498	0.041	12.146	< .001	[0.418, 0.578]
CEC → CSCS	0.217	0.048	4.521	< .001	[0.123, 0.311]
CEE × NZP → CSCS (H6)	−0.008	0.031	−0.258	> .05	[−0.069, 0.053]
CEC × NZP → CSCS	0.139	0.041	3.390	< .001	[0.058, 0.220]
Moderated mediation					
Index of moderated mediation	—	—	—	—	[0.058, 0.220]
Conditional indirect: Low NZP	0.045	—	—	ns	
Conditional indirect: Mean NZP	0.136	—	—	< .01	
Conditional indirect: High NZP	0.267	—	—	< .001	

Note. Bootstrap CI based on 5,000 samples.

The model explains 8.8% of variance in CEC ($R^2 = 0.088$), reflecting the theoretically expected multi-source structure of circular economy capability: beyond CEE and NZP, CEC is shaped by firm-level investments in human capital, supplier development, digital infrastructure, and managerial knowledge systems that were not measured in this study (Centobelli et al., 2021; Chari et al., 2022). The significant interaction term nonetheless establishes that NZP is a meaningful amplifier of the CEE–CEC relationship within this explained variance, while acknowledging that the majority of CEC variance reflects determinants beyond the scope of the present model. Including additional CEC antecedents in future research is recommended.

Full PROCESS Model 59 output, including all coefficients for both the CEC mediator equation and the CSCS outcome equation, is available from the corresponding author upon request. Key reported coefficients are referenced in Table 2.

NZP moderates the CEE→CEC: Supported. The CEE × NZP interaction term was positive and significant ($\beta = 0.089$, $SE = 0.026$, $t = 3.427$, $p < .001$, $CI[0.038, 0.140]$). Simple slope analysis confirmed that the CEE–CEC relationship was non-significant at low NZP ($\beta = -0.003$, ns), significant at mean NZP ($\beta = 0.081$, $p < .01$), and significant and stronger at high NZP ($\beta = 0.165$, $p < .001$). Further, hypothesis regarding NZP moderating CEE→CSCS) is not supported. The CEE × NZP interaction term for the CSCS outcome equation was non-significant ($\beta = -0.008$, $p > .05$, $CI[-0.069, 0.053]$). H4 is supported.

For H5, the moderated mediation index $CI[0.058, 0.220]$ excludes zero, confirming that NZP significantly moderates the indirect effect of CEE on CSCS through CEC. The conditional indirect effect is negligible and non-significant at low NZP ($\beta = 0.045$, ns), significant at mean NZP ($\beta = 0.136$, $p < .01$), and substantial at high NZP ($\beta = 0.267$, $p < .001$).

5. Discussion

5.1 CEE, CEC and the capability development pathway

The results confirm that CEE is positively associated with circular economy capability, and that this relationship is positively moderated by net zero policy commitment. These findings align with the PBV proposition (Zollo & Winter, 2002) that strategic orientation toward circular practices is converted into observable capability waste audit routines, closed-loop procurement procedures, reverse logistics planning, and circular supplier evaluation protocols through systematic organizational learning and resource allocation. NZP functions as an institutional enabler that amplifies this conversion process by providing strategic coherence, internal legitimacy, and justification for capability-building investments.

The low R^2 for the CEC equation ($R^2 = 0.088$) warrants explicit acknowledgement. The model explains 8.8% of variance in CEC, reflecting the theoretically expected multi-source structure of circular economy capability: beyond CEE and NZP, CEC is shaped by firm-level investments in human capital, supplier development, digital infrastructure, and managerial knowledge systems that were not measured in this study (Centobelli et al., 2021; Chari et al., 2022). The significant interaction term nonetheless establishes that NZP is a meaningful amplifier of the CEE–CEC relationship within this explained variance, while acknowledging that the majority of CEC variance reflects determinants beyond the scope of the present model. The substantial model fit for the CSCS equation ($R^2 = 0.345$), by contrast, suggests that the NZP→CSCS pathway accounts for a meaningful portion of supply chain sustainability variance.

5.2 The non-support for H4: theoretical interpretation and alternative explanations

The non-support of H6 ($NZP \times CEE \rightarrow CSCS$: $\beta = -0.008$, $p > .05$) requires careful interpretation. This null result is theoretically consistent with, though not sufficient by itself to demonstrate, the argument that NZP is a capability-enabling rather than a behavior-mandating institution. It is important to note that H6 non-support is consistent with multiple alternative explanations that cannot be ruled out within the present design: (a) the CSCS measure, as a focal-firm perceptual assessment, may be insufficient to detect direct moderation effects that would be observable at the inter-organizational level; further, the insufficient statistical power for the direct interaction term in the presence of a strong NZP main effect ($\beta = 0.498$) may have obscured a genuine moderation; and also the genuine absence of direct moderation remains possible.

5.3 Net zero policy as a boundary condition

The large NZP main effect on CSCS ($\beta = 0.498$) confirms that net zero policy adoption is itself a strong predictor of supply chain sustainability outcomes. This finding is consistent with an alternative interpretation that committed NZP firms achieve superior CSCS regardless of the CEE–capability pathway. The moderated mediation H5 narrows this alternative by demonstrating that NZP specifically amplifies the entrepreneurial pathway through capability, but the large main effect cautions against treating capability as the sole or even dominant mechanism through which NZP influences CSCS.

In the Nigerian institutional context, characterized by limited regulatory enforcement capacity (Khanna & Palepu, 1997), voluntary NZP adoption signals genuine strategic commitment to sustainability. In the PBV sense, high-NZP firms are more likely to systematically resource and embed circular practices including waste audit routines, closed-loop procurement procedures, reverse logistics planning, and circular supplier evaluation protocols creating the operational infrastructure through which CEE is converted into supply chain outcomes. This interpretation is consistent with the simple slope pattern, which shows a negligible CEE–CEC relationship at low NZP but a substantial positive relationship at high NZP ($\beta = 0.165$, $p < .001$).

5.4 Theoretical contributions

Based on an extensive scan of the literature, this study makes three contributions to the circular economy and sustainable supply chain management literatures. First, it provides the first formally tested moderated mediation model of the CEE→CEC→CSCS pathway, extending prior mediation analyses (Centobelli et al., 2021) by identifying NZP as a boundary condition that amplifies capability development.

Second, it demonstrates that the PBV (Zollo & Winter, 2002) can be productively integrated with institutional theory to explain why NZP moderates capability-building: high NZP firms are more likely to formalize and routinize circular practices because the strategic context created by voluntary net-zero commitment provides the organizational justification and resource allocation rationale for capability investment.

Third, it generates theoretically motivated propositions about the institutional void context (Khanna & Palepu, 1997): in weak enforcement environments, voluntary NZP adoption may carry higher signal value and may therefore amplify capability-building effects more strongly than equivalent voluntary adoption in high-enforcement contexts.

5.5 Practical implications

Findings carry several implications for managers and policymakers in emerging economy manufacturing contexts.

For managers, the simple slope results demonstrate that CEE investments yield substantially stronger capability returns under high NZP commitment ($\beta = 0.165$) than at low commitment ($\beta = -0.003$, ns). Firms should therefore align net-zero policy adoption with circular economy entrepreneurship initiatives to maximize capability returns. Specifically, waste audit routines, closed-loop procurement procedures, reverse logistics planning, and circular supplier evaluation protocols are most effectively embedded when supported by an explicit net-zero strategic framework.

For policymakers, the large NZP main effect on CSCS ($\beta = 0.498$) suggests that initiatives encouraging voluntary NZP adoption through sectoral benchmarking, green certification programs, and public sustainability reporting requirements may yield supply chain sustainability dividends beyond their direct regulatory intent. In Nigeria's current institutional environment, creating credible frameworks for voluntary net-zero commitment may be more actionable than strengthening regulatory enforcement in the short term.

6. Conclusion

This study examined net zero policy as a boundary condition for the relationship between CEE and sustainable supply chain outcomes, with circular economy capability as a mediating mechanism. Using Hayes' PROCESS Model 59 applied to 447 Nigerian manufacturing firms, the study found that NZP significantly moderates both the CEE–CEC relationship (H5

supported) and the full indirect CEE→CEC→CSCS pathway (H7 supported), while the expected direct moderation of CEE–CSCS was not supported (H4 not supported). The H4 null result is theoretically consistent with the capability-channeling argument, and this interpretation is strengthened by the affirmative H5 finding, while acknowledging that alternative explanations including measurement limitations and power constraints cannot be ruled out within the present design.

To the best of the authors' knowledge, these findings extend circular economy and sustainable supply chain management literatures by providing the first formally tested moderated mediation framework for the CEE–capability–supply chain pathway, identifying NZP as a capability-amplifying boundary condition in an emerging economy context. Future research employing multi-country comparative designs, multi-source data collection, and CE-specific supply chain measurement instruments would strengthen and extend these conclusions.

7. Limitations and future research directions

This study has several limitations that should be considered when interpreting findings. First, all data were collected from Nigerian manufacturing firms through self-report measures completed by individual supply chain managers. While CMV controls (Harman's test, marker variable, VIF diagnostics) suggest that common method variance is unlikely to explain the pattern of results, single-source data from individual managers cannot fully eliminate this concern. Future research employing multi-source data collection, manager-reported CEE and NZP alongside objective supply chain performance records would provide a stronger basis for the results. Second, CSCS was assessed through the perceptions of a single supply chain manager per firm. While this captures the focal firm's integration of circular principles into supply chain operations, it is an imperfect proxy for supply chain system-level sustainability, which is inherently a dyadic and network-level construct. Future research using multi-firm, dyadic, or network-level data collection would provide a more rigorous test of the policy-to-supply-chain pathway.

Third, although procedural separation across two waves reduces same-occasion response salience, a three-week interval does not establish meaningful causal ordering for slow-moving constructs such as capability accumulation and supply chain sustainability integration. Longitudinal designs with longer intervals ideally 12–24 months would better capture the temporal dynamics of capability development.

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