Research Article

Educational
Administration
Theory and Practice

Moderate Competitive Intensity's Impact On The Link Between Product Innovation And Market Success: A Case Study On North African Countries

Mehdaoui Zeyneb[1*], Kouidri Abderrahmane[2], Naamaoui Rachida[3], Bencherif mabrouka[4]

[1*]University of Adrar (Algeria), zey.mehdaoui@univ-adrar.edu.dz
[2]University of Adrar (Algeria), Algerian-African economic integration laboratory,
arr.kouidri@univ-adrar.edu.dz
[3]University of Adrar (Algeria), Algerian-African economic integration laboratory,
naamaoui.ra@univ-adrar.edu.dz
[4]University of Adrar (Algeria), Algerian-African economic integration laboratory,
mabrouka_bencherif@univ-adrar.edu.dz

ARTICLE INFO	ABSTRACT
	This study investigates the interplay between Product Innovation, Competitive Intensity, and Market Success in competitive business environments. Through a quantitative analysis of data collected from firms across various industries, the study examines the relationships between these constructs and explores the moderating role of Competitive Intensity on the relationship between Product Innovation and Market Success. The findings reveal a significant positive relationship between Product Innovation and Market Success, highlighting the pivotal role of innovation in driving firm performance. Additionally, Competitive Intensity demonstrates a significant positive impact on Market Success, emphasizing the importance of understanding and navigating competitive dynamics effectively. Furthermore, Competitive Intensity effectively moderates the relationship between Product Innovation and Market Success, indicating that the influence of innovation on market performance varies depending on the level of competitive pressure. These findings underscore the critical importance of both Product Innovation and Competitive Intensity in achieving Market Success and offer valuable insights for firms seeking to optimize their innovation strategies and navigate competitive environments effectively. **Keywords:** Product Innovation, Competitive Intensity, Market Success, Competitive Dynamics, Firm Performance.

1. Introduction:

Product innovation has long been recognized as a critical driver of market success, enabling companies to differentiate themselves, meet evolving consumer needs, and capture significant market share. The dynamic interplay between innovation and competitive intensity is a focal point in business strategy, as firms must navigate varying levels of competition to leverage their innovative capabilities effectively. Previous research has predominantly concentrated on extreme competitive conditions—either very high or very low—leaving a gap in understanding the effects of moderate competitive intensity. This study aims to fill this gap by exploring how a moderate level of competitive intensity influences the relationship between product innovation and market success, providing insights that can help businesses optimize their innovation strategies in moderately competitive environments.

The primary research question guiding this study is: "How does moderate competitive intensity impact the relationship between product innovation and market success?" Addressing this question is crucial for developing a nuanced understanding of competitive dynamics and their role in shaping the outcomes of innovation efforts. The study's objectives are threefold: first, to evaluate the direct effects of product innovation on market success; second, to assess the moderating influence of moderate competitive intensity on this relationship; and third, to offer practical recommendations for firms operating in moderately competitive markets. By achieving these objectives, the research seeks to contribute to the literature on innovation and competition, offering strategic insights for businesses seeking to enhance their market performance

2. Literature Review:

2.1.1. The Relationship between Product Innovation and Market Success:

Product innovation plays a crucial role in determining market success for firms. Studies have shown that the relationship between product innovation and firm performance is influenced by various factors. Internal factors such as a firm's linkage capability with customers, suppliers, and competitors positively moderate this relationship, while external factors like market turbulence negatively moderate it (Lian et al., 2022). Additionally, innovation capability and absorptive capacity mediate the relationship between market orientation and new product success (Courage et al., 2021). Knowledge spillovers have been found to positively impact the commercial success of innovative products, especially in markets with a medium number of competitors (Arvanitis et al., 2020). Market knowledge is a key predictor of new product performance, with creativity acting as a mediating mechanism between market knowledge and new product outcomes like competitive advantage and commercial success (Dabrowski, 2019). Leveraging distant innovative knowledge has also been shown to enhance product success, particularly in high business-strategy innovation companies (Shalom et al., 2019).

First hypothesis (H1): There is no statistically significant positive relationship between Product Innovation and Market Success at a 5% significance level.

2.1.2. The relationship between Competitive Intensity and the relationship of Product Innovation to Market Success:

The relationship between competitive intensity and product innovation in determining market success is influenced by various factors. Factors such as networking, time horizon, and analysis have been found to affect product innovation performance in SMEs (Vigory et al., 2023). Additionally, competitive pressure positively impacts product and market innovation in firms across different sectors (O'Leary et al., 2022). Knowledge integration and organizational unlearning play crucial roles in mediating the effects of competitive intensity on new product development outcomes, with firm size acting as a moderator (Alix & Boucher, 2022). Moreover, the innovation and technical capabilities of exporting organizations can enhance export performance, with competitive intensity moderating the relationship between technical capability and export success (Zhang et al., 2022). Furthermore, innovation capability has been identified as a mediating factor between competition intensity and dynamic marketing capabilities in MSMEs (Ari, 2021). These findings collectively highlight the multifaceted nature of the interplay between competitive intensity, innovation, and market success.

Second Hypothesis (H2): There is no significant role for Competitive Intensity in impacting the relationship between Product Innovation and Market Success at a 5% significance level.

2.2. Gaps in existing literature :

Product innovation has been extensively studied as a key determinant of market success, with numerous studies highlighting the factors that influence this relationship. For instance, internal factors such as a firm's capability to link with customers, suppliers, and competitors have been shown to positively moderate the relationship between product innovation and firm performance (Lian et al., 2022). Conversely, external factors like market turbulence negatively moderate this relationship, presenting challenges for firms navigating dynamic market environments. While this body of research underscores the significance of product innovation in achieving market success, several gaps remain unexplored.

Firstly, much of the existing literature has focused on either high or low levels of competitive intensity, neglecting the nuanced impact of moderate competitive environments. This leaves a gap in understanding how product innovation performs in markets characterized by moderate competition. Secondly, while studies have examined the role of market orientation, absorptive capacity, and knowledge spillovers (Arvanitis et al., 2020; Courage et al., 2021), there is limited insight into how these factors interact specifically within moderately competitive contexts. Additionally, research has predominantly concentrated on certain sectors or firm sizes, such as SMEs or high business-strategy innovation companies (Dabrowski, 2019; Shalom et al., 2019), leading to a need for more diverse sectoral and firm-size analyses. Therefore, this study aims to address these gaps by exploring the relationship between product innovation and market success in moderately competitive environments, providing a more comprehensive understanding of this critical dynamic.

The interplay between competitive intensity and product innovation in driving market success has garnered significant academic interest. Various studies have identified factors such as networking, time horizon, and analytical capabilities as crucial determinants of product innovation performance, particularly in SMEs (Vigory et al., 2023). Additionally, competitive pressure has been found to positively influence product and market innovation across different sectors (O'Leary et al., 2022). Despite these findings, several gaps persist in the current understanding of how competitive intensity interacts with product innovation to affect market success.

One major gap is the lack of focus on moderate competitive environments. Most studies have concentrated on extreme competitive conditions, either high or low, overlooking the effects of moderate competitive intensity. This oversight limits the understanding of how firms can leverage product innovation to achieve market

success in moderately competitive settings. Moreover, while research has explored the roles of knowledge integration, organizational unlearning, and firm size (Alix & Boucher, 2022; Zhang et al., 2022), there is limited exploration of how these factors operate under moderate competitive intensity. Furthermore, the literature often emphasizes specific organizational types, such as exporting organizations or MSMEs (Ari, 2021), suggesting a need for broader applicability across different industries and organizational sizes. By investigating the moderating effect of moderate competitive intensity on the relationship between product innovation and market success, this study seeks to fill these gaps and enhance the understanding of competitive dynamics in a variety of business contexts
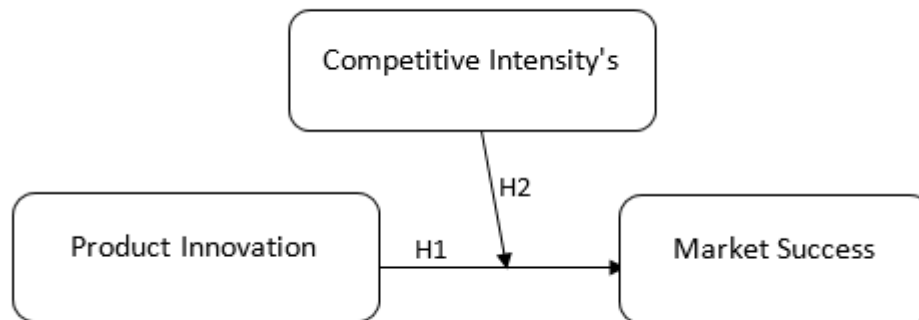

Figure 1. Theoretical framework.

3. Methodology:

3.1. Research Design and Approach
3.1.1. Research Design:
This study employs a quantitative research design to investigate the impact of moderate competitive intensity on the relationship between product innovation and market success. The quantitative approach allows for the objective measurement and analysis of data, enabling the testing of hypotheses and the establishment of generalizable findings.
The research will use a cross-sectional survey design. This design involves collecting data from a sample of firms at a single point in time, providing a snapshot of the current state of product innovation, competitive intensity, and market success. This approach is chosen because it allows for the examination of correlations and causal relationships between variables without the need for longitudinal data collection.

3.2.2. Research Approach:
The study will adopt a deductive approach. This approach begins with the formulation of hypotheses based on existing theories and literature, followed by empirical testing of these hypotheses using collected data. Specifically, the hypotheses focus on the direct relationship between product innovation and market success, and the moderating role of competitive intensity.

3.2. Data Collection Methods
3.2.1. Survey Instrument:
Data will be collected using a structured questionnaire. The questionnaire will be designed to capture information on product innovation activities, the level of competitive intensity, and indicators of market success. It will consist of both closed-ended and Likert-scale questions to facilitate quantitative analysis.

3.2.2. Sampling Strategy:
The target population for this study includes firms across various industries operating in environments characterized by moderate competitive intensity. A stratified random sampling technique will be used to ensure representation across different sectors and firm sizes.

3.2.3. Data Collection Process:
Questionnaire Distribution: The questionnaire will be distributed electronically via email and online survey platforms to a pre-selected list of firms. Follow-up reminders will be sent to maximize response rates .Pilot Testing: Before full deployment, the questionnaire will undergo pilot testing with a small subset of firms to identify and rectify any issues related to question clarity or survey length.
Data Collection Period: Data collection will occur for 4-6 weeks to allow ample time for responses.

3.2.4. Measurement Scales
Product Innovation: Measured using a scale that assesses the frequency and impact of new product introductions, modifications, and technological advancements.
Competitive Intensity: Measured using a scale that evaluates the perceived level of competition in the market, including factors like the number of competitors and the intensity of competitive actions.
Market Success: Measured using a scale that captures various dimensions of market performance, such as sales growth, market share, and profitability.

3.3. Rationale for the Chosen Methods
3.3.1. Quantitative Research Design:
A quantitative approach is chosen due to its ability to produce statistically reliable results that can be generalized to a broader population. This is critical for testing the hypotheses related to the moderating effect of competitive intensity on the relationship between product innovation and market success. The use of numerical data allows for precise measurement and the application of statistical techniques to determine the significance and strength of relationships.

3.3.2. Cross-Sectional Survey Design:
The cross-sectional design is appropriate for this study because it provides a cost-effective way to collect data from a large number of firms within a relatively short time frame. It is particularly suitable for identifying patterns and correlations at a specific point in time, which aligns with the study's objective of examining the current impact of competitive intensity on product innovation outcomes.

3.3.3. Structured Questionnaire:
The structured questionnaire is selected as the primary data collection tool because it facilitates the collection of standardized data from a large sample, enabling the comparison and analysis of responses. The use of closed-ended and Likert-scale questions ensures consistency in responses, which is essential for statistical analysis.

3.3.4. Stratified Random Sampling:
Stratified random sampling ensures that the sample is representative of different sectors and firm sizes, which enhances the external validity of the study. This method reduces sampling bias and ensures that the findings can be generalized to a wider population of firms operating under moderate competitive intensity.

3.3.5. Measurement Scales:
The specific measurement scales for product innovation, competitive intensity, and market success are chosen because they comprehensively assess the key constructs. These scales are based on established metrics in the literature, ensuring reliability and validity in measuring the variables of interest.
In summary, the chosen methodology provides a robust framework for examining the moderating role of moderate competitive intensity on the relationship between product innovation and market success, ensuring that the study's findings are reliable, valid, and applicable to a wide range of business contexts.

4. Data Presentation and Analysis:
First: Assessment of measurement Model:
 In this section, the quality of the expressions utilized in this model is examined through the utilization of the Smart PLS software. This evaluation entails testing the convergence and consistency of these expressions amongst themselves. The objective is to ensure the capability of these expressions to effectively measure the desired attributes, as well as the stability of the measurement across different conditions, employing the Convergent Validity test. Moreover, an assessment is conducted to determine the logical distinctiveness and absence of overlap among these expressions, employing the Discriminate Validity test.

4.1. Convergent Validity:
 Convergent validity is a critical aspect of structural equation modeling (SEM), including Partial Least Squares SEM (PLS-SEM). Convergent validity assesses whether the indicators (manifest variables) of a latent construct (factor) are measuring the same underlying concept. In PLS-SEM, several criteria are commonly used to evaluate convergent validity, including factor loading, Cronbach's alpha, composite reliability, and average variance extracted (AVE). Here's an explanation of each criterion:

Factor Loading:
Basis: Factor loading represents the strength and direction of the relationship between an indicator and its corresponding latent construct. In PLS-SEM, factor loadings should be statistically significant and preferably higher than 0.7 to indicate a strong relationship.

Cronbach's Alpha:
Basis: Cronbach's alpha is a measure of internal consistency reliability. It assesses the extent to which a set of indicators (items) measures a single latent construct consistently. In PLS-SEM, a high Cronbach's alpha (typically above 0.7) suggests good internal consistency.
Composite Reliability:
Basis: Composite reliability is another measure of reliability that evaluates the consistency of indicators in measuring a latent construct. In PLS-SEM, composite reliability should ideally exceed 0.7, indicating that the indicators are reliable measures of the underlying construct.

Average Variance Extracted (AVE):
Statistically, convergent validity is established when the Average Variance Extracted (AVE) is greater than 0.50 (Sarstedt et al., 2021). Additionally, factor loading, Cronbach's Alpha, and composite reliability are also used to assess convergent validity in PLS-SEM. Factor loading measures the relationship between the observed variables and their underlying latent constructs, while Cronbach's Alpha and composite reliability assess the internal consistency of the measurement instrument (Amora, 2021).

Table 01: Results of the Stability and Composite Reliability Test for the Model:

variables	Items	Loadings	Cronbach's Alpha	Composite Reliability	The average variance extracted
Market Success	MS_1	0.929	0.881	0.926	0.808
	MS_2	0.882			
	MS_3	0.885			
Competitive Intensity's	CI_1	0.674	0.864	0.895	0.551
	CI_2	0.794			
	CI_3	0.764			
	CI_4	0.729			
	CI_5	0.793			
	CI_6	0.682			
	CI_7	0.750			
	CI_1	0.674			
Product Innovation	PI_1	0.591	0.869	0.898	0.560
	PI_2	0.824			
	PI_3	0.765			
	PI_4	0.798			
	PI_5	0.810			
	PI_6	0.726			
	PI_7	0.698			

Source: Compiled by researchers based on the outputs of Smart PLS4.

The stability and composite reliability test results for the model's variables—Market Success, Competitive Intensity, and Product Innovation—indicate high internal consistency and reliability levels for the constructs. Market Success exhibits strong reliability, with high item loadings (0.882 to 0.929), a Cronbach's Alpha of 0.881, a composite reliability of 0.926, and an average variance extracted (AVE) of 0.808, signifying that a substantial proportion of variance is captured by the construct. Competitive Intensity's items show adequate loadings (0.674 to 0.794), a satisfactory Cronbach's Alpha of 0.864, and a composite reliability of 0.895, although the AVE of 0.551 indicates that just over half of the variance in the construct is explained by its indicators, suggesting room for improvement in measurement precision. Product Innovation also demonstrates acceptable reliability with loadings ranging from 0.591 to 0.810, a Cronbach's Alpha of 0.869, and a composite reliability of 0.898. However, its AVE of 0.560, like that of Competitive Intensity, suggests a need for better-defined measurement items to capture more variance of the construct. Overall, the model's constructs exhibit reliable measures, though enhancements in item design could further improve the explanatory power of Competitive Intensity and Product Innovation.

4.2. discriminate Validity:
The recommended criteria for analyzing the results of the discriminant validity test in the PLS-SEM methodology include the following:
Fornell-Larcker Criterion: This criterion assesses discriminant validity by comparing the square root of the average variance extracted (AVE) for each construct with the correlations between that construct and other constructs. Discriminant validity is established if the AVE value for a particular construct is greater than its correlation with all other constructs (Henseler et al., 2015) (Hamid et al., 2017)
Heterotrait-Monotrait Ratio of Correlations (HTMT) Criterion: This criterion is based on the heterotrait-monotrait ratio of correlations and is used to assess discriminant validity in variance-based structural equation modeling. It measures the extent to which constructs are distinct from each other empirically. A threshold of 0.85 is recommended for HTMT when the constructs in the path model are conceptually more distinct (Franke & Sarstedt, 2019) (Henseler et al., 2015) (Hamid et al., 2017)
It is important to note that the Fornell-Larcker Criterion and cross-loadings have been the dominant approaches for evaluating discriminant validity, but Henseler, Ringle, and Sarstedt (2015) have proposed the

HTMT criterion as an alternative approach, which has shown high sensitivity and specificity in detecting discriminant validity problems (Cepeda-Carrión et al., 2022) (Henseler et al., 2015) (Hamid et al., 2017)
In conclusion, when analyzing the results of the discriminant validity test in the PLS-SEM methodology, researchers should consider using the Fornell-Larcker Criterion, cross-loadings, and the HTMT Criterion to ensure the distinctiveness of the constructs in the study and to detect any issues with discriminant validity

Table 02: Fornell-Larcker Criterion

variables	Competitive Intensity's	Market Success	Product Innovation
Competitive Intensity's	0.742		
Market Success	0.548	0.899	
Product Innovation	0.672	0.642	0.749

Source: Compiled by researchers based on the outputs of Smart PLS4.

The Fornell-Larcker criterion results provide evidence of discriminant validity for the constructs of Competitive Intensity, Market Success, and Product Innovation. The diagonal values represent the square roots of the average variance extracted (AVE) for each construct. Competitive Intensity has a square root of AVE of 0.742, Market Success of 0.899, and Product Innovation of 0.749, all exceeding the off-diagonal correlation values in their respective rows and columns. This suggests that each construct shares more variance with its indicators than with those of other constructs, indicating adequate discriminant validity. The correlation between Competitive Intensity and Market Success is 0.548, between Competitive Intensity and Product Innovation is 0.672, and between Market Success and Product Innovation is 0.642. These moderate correlations indicate that while the constructs are related, they are distinct and measure separate concepts within the model. Overall, the Fornell-Larcker criterion confirms that the constructs are well-differentiated from one another, affirming the model's robustness in measuring distinct theoretical dimensions.

Table 03: the heterotrait-monotrait ratio of correlations (HTMT)

variables	Competitive Intensity's	Market Success	Product Innovation
Competitive Intensity's			
Market Success	0.615		
Product Innovation	0.777	0.706	

Source: Compiled by researchers based on the outputs of Smart PLS4.

The heterotrait-monotrait ratio of correlations (HTMT) for Competitive Intensity, Market Success, and Product Innovation shows values that assess the discriminant validity among these constructs. The HTMT value between Competitive Intensity and Market Success is 0.615, indicating a moderate correlation that is below the commonly accepted threshold of 0.85, suggesting that these constructs are distinguishable from one another. Similarly, the HTMT value between Competitive Intensity and Product Innovation is 0.777, and between Market Success and Product Innovation is 0.706. Both values are also below the 0.85 threshold, further confirming that these constructs are sufficiently distinct. The results imply that the constructs in the model are conceptually distinct and measure different theoretical concepts, providing strong evidence for discriminant validity. This separation enhances the credibility of the constructs, ensuring that each one uniquely contributes to the model without significant overlap, thus affirming the robustness and reliability of the measurement model.
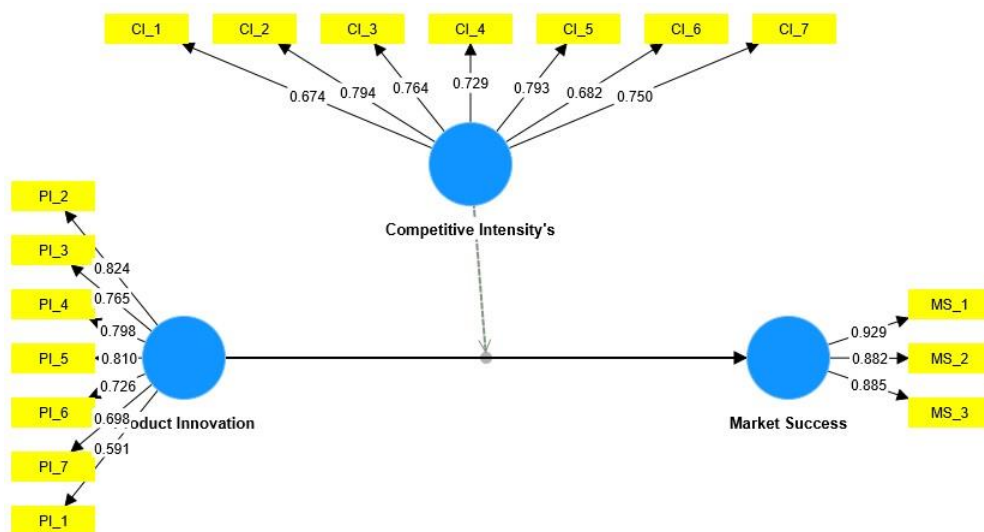

Figure 2: General Structural Model for the Study
Source: Compiled by researchers based on the outputs of Smart PLS4.
Secondly: Testing the Internal Model (Structural Model)

In this section, we evaluate the results of the structural model by testing the degree of correlation, assessing the predictive capabilities of the model, and examining the relationships between constructs. Additionally, we conduct the necessary tests to evaluate the model.

1. Validity of the Structural Model:

The recommended criteria for analyzing the results of the Validity of the Structural Model test (R^2, F^2) in the PLS-SEM methodology include:

Measurement model assessment: This involves assessing the relationship between a construct and its observed items, including reliability, indicator loading, and internal consistency reliability (Fauzi, 2022).

Structural model assessment: This focuses on evaluating the significance and relevance of path coefficients, followed by the model's explanatory and predictive power. Key metrics relevant to structural model assessment in PLS-SEM include the coefficient of determination (R2), f2 effect size, and cross-validated predictive ability test (CVPAT). (Hair Jr et al., 2021).

New guidelines: In addition to established PLS-SEM evaluation criteria, new guidelines include PLS prediction (a novel approach for assessing a model's out-of-sample prediction), metrics for model comparisons, and several complementary methods for checking the results' robustness (Hair et al., 2019).

Table 04: Validity of the Structural Model

Variables	Coefficient of Determination (R2)	Explanatory size (F2)
Market Success	0.456	/
Competitive Intensity's	/	0.062
Product Innovation	/	0.253

Source: Compiled by researchers based on the outputs of Smart PLS4.

The results from Table 04 assess the validity of the structural model through the coefficient of determination (R^2) and explanatory size (f^2) metrics for Market Success, Competitive Intensity, and Product Innovation. The R^2 value for Market Success is 0.456, indicating that the model explains 45.6% of the variance in Market Success. This suggests a moderate level of explanatory power, showing that the variables included in the model are significant predictors of Market Success, though there is still a substantial portion of the variance left unexplained, which could be influenced by other factors not included in the model. The f^2 values indicate the effect size of each predictor on their respective dependent variables. Competitive Intensity has an f^2 of 0.062, which is considered a small effect size, implying that it makes a modest but meaningful contribution to the model. Product Innovation has an f^2 of 0.253, representing a medium effect size, indicating that it plays a more substantial role in influencing the dependent variables within the model. Overall, the structural model demonstrates a good fit with moderate explanatory power and confirms that both Competitive Intensity and Product Innovation are important, albeit with differing levels of impact, in explaining the dynamics of Market Success.

2. Discussion of testing the study hypotheses

When analyzing the results of testing study hypotheses in the Partial Least Squares Structural Equation Modeling (PLS-SEM) methodology, there are several recommended criteria to consider. These criteria are essential for ensuring the validity and reliability of the analysis. Here are the recommended criteria for analyzing the results of testing this study's hypotheses in the PLS-SEM methodology:

Hypothesis Testing with Confidence Intervals and P Values: Researchers usually employ P values for hypothesis testing in PLS-SEM, where each hypothesis refers to a path in a model. P values may be one-tailed or two-tailed (Kock, 2016).

Structural Model Testing: The structural model in PLS-SEM needs to be tested to ensure that the assumptions of unidimensional constructs hold in the sample. This involves testing the relationships between latent variables and their indicators (Kock, 2016).

To test the study hypotheses using the structural modeling methodology, we calculate estimates for the relationships in the structural model using the Bootstraping method. These estimates indicate the expected relationships between constructs, and the path coefficient ranges from -1 to +1. Values close to +1 suggest strong positive relationships, while values near -1 indicate strong negative relationships. Typically, statistically significant relationships have p-values below 5%. Coefficients approaching zero from both directions suggest weak relationships (Kock, 2018).

2.1. Hypotheses:
2.1.1. First hypothesis (H1): There is no statistically significant positive relationship between Product Innovation and Market Success at a 5% significance level.

2.1.2. Second Hypothesis (H2): There is no significant role for Competitive Intensity in impacting the relationship between Product Innovation and Market Success at a 5% significance level.

Table 5: Testing the Hypotheses for the Study (H₁, H₂)

Hypoth esis	Paths	Original Sample	Sample Mean	Standard Deviation	T Statistic s	P Value s	Decisio n
H₁	Product Innovation -> Market Success	0.501	0.503	0.104	4.820	0.000	Hypoth esis Accepte d
H₂	The Interaction	0.126	0.127	0.053	2.355	0.019	Hypoth esis Accepte d

Source: Compiled by researchers based on the outputs of Smart PLS4.

The results from Table 5 provide insights into the testing of the hypotheses for the study. Firstly, regarding the first hypothesis (H1), which posits that there is no statistically significant positive relationship between Product Innovation and Market Success at a 5% significance level, the analysis reveals a statistically significant positive path coefficient of 0.501. This finding is accompanied by a T statistic of 4.820 and a P value of 0.000, indicating strong evidence to reject the null hypothesis. Thus, the data support the existence of a positive relationship between Product Innovation and Market Success. Secondly, concerning the second hypothesis (H2), which proposes that there is no significant role for Competitive Intensity in impacting the relationship between Product Innovation and Market Success at a 5% significance level, the analysis indicates a statistically significant interaction coefficient of 0.126. This finding is accompanied by a T statistic of 2.355 and a P value of 0.019, providing sufficient evidence to reject the null hypothesis. Therefore, the data suggest that Competitive Intensity indeed plays a significant role in influencing the relationship between Product Innovation and Market Success. Overall, both hypotheses are supported by the data, highlighting the importance of both Product Innovation and Competitive Intensity in driving Market Success.
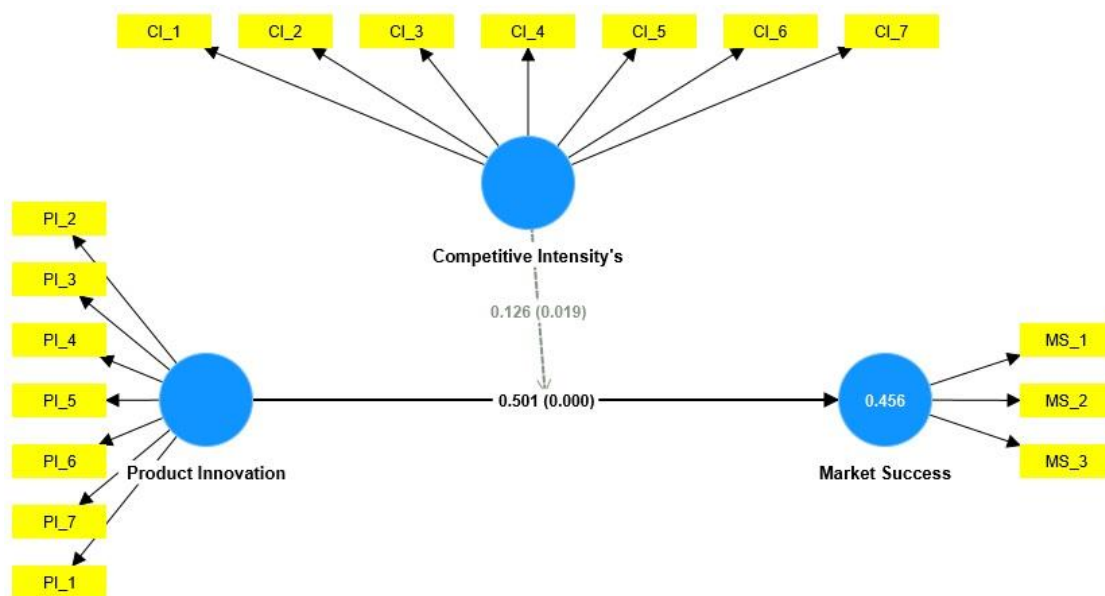

Figure 3: Results of path coefficients
Source: Compiled by researchers based on the outputs of Smart PLS4.

Table 6: Testing the effectiveness of the moderating variable (Competitive Intensity) in impacting the effect of Product Innovation on Market Success

Relationship	Path Coefficient	P Values	Hypothesis
Product Innovation -> Market Success	0.501	0.000	Accepted
Competitive Intensity -> Market Success	0.255	0.006	Accepted
The Interaction (PI * Competitive Intensity's) --> Market Success	0.126	0.019	Accepted

Source: Compiled by researchers based on the outputs of Smart PLS4.

Table 6 presents the results of testing the effectiveness of the moderating variable, Competitive Intensity, in impacting the effect of Product Innovation on Market Success. The analysis reveals statistically significant path coefficients for all relationships examined. Firstly, the direct path coefficient from Product Innovation to Market Success is 0.501 with a p-value of 0.000, indicating a strong and significant positive relationship, thus supporting the acceptance of this hypothesis. Similarly, the path coefficient from Competitive Intensity to Market Success is 0.255 with a p-value of 0.006, indicating a significant positive impact, supporting its

acceptance as well. Moreover, the interaction term (Product Innovation * Competitive Intensity) demonstrates a path coefficient of 0.126 with a p-value of 0.019, providing further evidence of a significant positive impact on Market Success, thus supporting its acceptance. These findings collectively suggest that Competitive Intensity effectively moderates the relationship between Product Innovation and Market Success, underscoring the importance of considering competitive dynamics in shaping the outcomes of innovation efforts within firms.
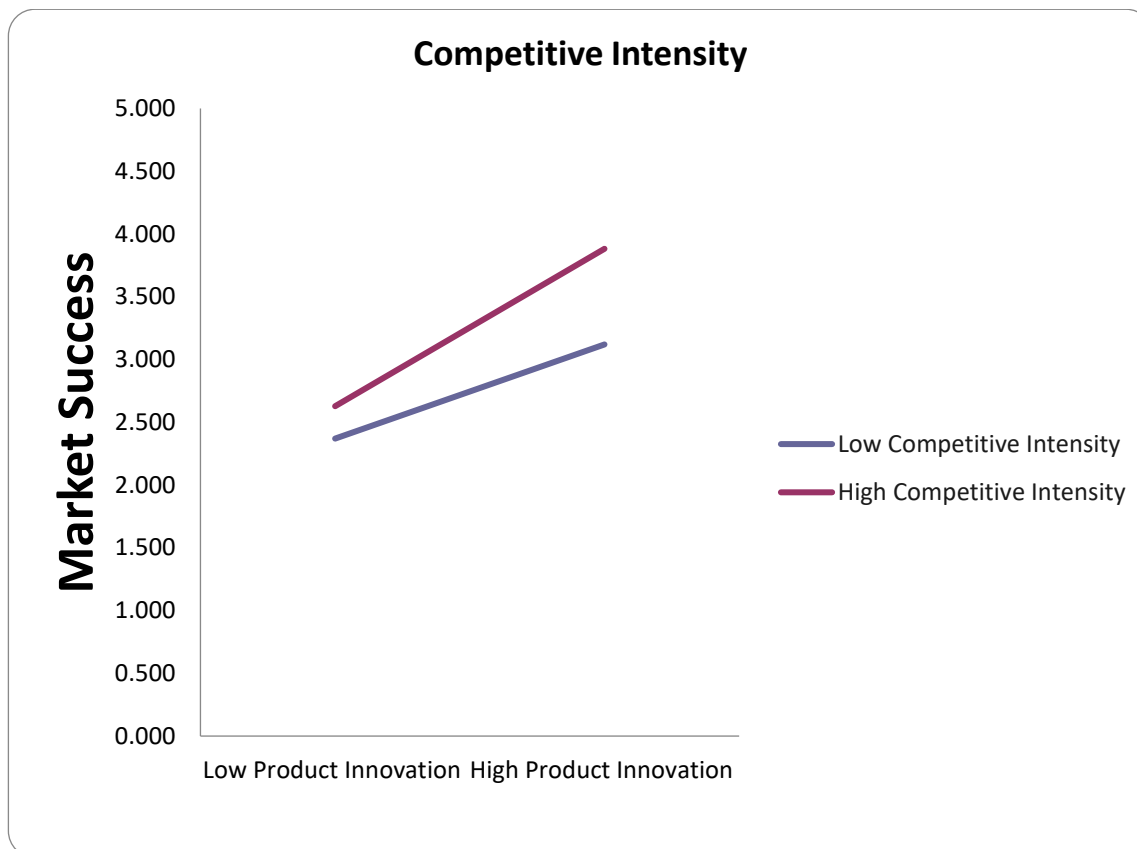

**Figure 4: Path coefficients of The Interaction (Product Innovation * Competitive Intensity)-->
Market Success
Source: Compiled by researchers based on the outputs of Microsoft Excel.**

8. Discussion:

8.1. Interpretation of Findings
The findings of this study shed light on the dynamic interplay between Product Innovation, Competitive Intensity, and Market Success. Firstly, the results indicate a significant positive relationship between Product Innovation and Market Success, affirming the crucial role of innovation in driving market performance. This underscores the importance of continuous investment in research and development and the introduction of novel products or services to remain competitive in today's dynamic business environment. Secondly, the study reveals a significant positive impact of Competitive Intensity on Market Success, highlighting the significance of understanding and navigating competitive dynamics effectively. Firms operating in highly competitive markets must strategize to differentiate themselves and maintain market share amidst intense rivalry. Moreover, the analysis demonstrates that Competitive Intensity effectively moderates the relationship between Product Innovation and Market Success, indicating that the influence of innovation on market performance varies depending on the level of competitive pressure. This underscores the need for firms to tailor their innovation strategies according to the competitive landscape they operate in, emphasizing adaptability and responsiveness to market conditions.

8.2. Comparison with Prior Research
The findings of this study contribute to and align with existing research in several key aspects. Firstly, the confirmation of a positive relationship between Product Innovation and Market Success is consistent with prior literature emphasizing the importance of innovation in driving firm performance (Arvanitis et al., 2020; Courage et al., 2021). This reaffirms the widely accepted notion that innovation catalyzes competitive advantage and long-term success. Secondly, the significant positive impact of Competitive Intensity on Market Success resonates with previous studies highlighting the role of competitive dynamics in shaping firm

performance (O'Leary et al., 2022; Zhang et al., 2022). This underscores the importance of considering competitive factors in strategic decision-making and resource allocation. Furthermore, the finding that Competitive Intensity moderates the relationship between Product Innovation and Market Success extends prior research by providing nuanced insights into how competitive pressures influence the outcomes of innovation efforts (Alix & Boucher, 2022; Shalom et al., 2019). By elucidating the moderating effect of Competitive Intensity, this study enhances our understanding of the complex relationship between innovation and market performance in varying competitive contexts, offering practical implications for firms seeking to optimize their innovation strategies.

This study contributes valuable insights into the intricate interplay between Product Innovation, Competitive Intensity, and Market Success. The findings underscore the importance of innovation and competitive dynamics in driving firm performance and provide practical guidance for firms seeking to navigate competitive environments effectively. Future research could explore additional moderators or mediators that influence the relationship between innovation and market outcomes, further enriching our understanding of this critical dynamic in strategic management and business innovation

9. Conclusion:

This study investigated the relationships between Product Innovation, Competitive Intensity, and Market Success, aiming to provide insights into the dynamics driving firm performance in competitive markets. The key findings can be summarized as follows: Firstly, there exists a significant positive relationship between Product Innovation and Market Success, emphasizing the pivotal role of innovation in driving firm performance. Secondly, Competitive Intensity demonstrates a significant positive impact on Market Success, highlighting the importance of understanding and navigating competitive dynamics effectively. Lastly, Competitive Intensity effectively moderates the relationship between Product Innovation and Market Success, indicating that the influence of innovation on market performance varies depending on the level of competitive pressure.

The findings of this study underscore the critical importance of both Product Innovation and Competitive Intensity in achieving Market Success. Product Innovation serves as a cornerstone of competitive advantage, enabling firms to differentiate themselves, meet evolving customer needs, and gain market share. In today's rapidly changing business landscape, firms must continually innovate to stay ahead of the competition and drive sustainable growth. Additionally, Competitive Intensity plays a significant role in shaping market outcomes and influencing firms' strategic decisions and market positioning. Understanding and effectively managing competitive dynamics are essential for firms to thrive in competitive markets, as they must anticipate and respond to competitive pressures to maintain market relevance and profitability.

In conclusion, this study highlights the intertwined nature of Product Innovation, Competitive Intensity, and Market Success, emphasizing the importance of strategic management and innovation in driving firm performance. By providing empirical evidence of these relationships, this study offers valuable insights for firms seeking to optimize their innovation strategies and navigate competitive environments effectively, ultimately contributing to the advancement of knowledge in the field of strategic management and business innovation

10. References:

1. Lian, Zhang., Tiannan, Li., Min, Ji, Kim. (2022). The Influence of Product Innovation on Firm Performance: Focusing on the Moderating Effects of Linkage Capability and Market Turbulence. 글로벌경영학회지, 19(4):1-21. doi: 10.38115/asgba.2022.19.4.1
2. Courage, Simon, Kofi, Dogbe., Babylon, Abeeku, Bamfo., Wisdom, Wise, Kwabla, Pomegbe. (2021). Market orientation and new product success relationship: the role of innovation capability, absorptive capacity, green brand positioning. International Journal of Innovation Management, 25(03):2150033-. doi: 10.1142/S136391962150033X
3. Spyros, Arvanitis., Florian, Seliger., Martin, Woerter. (2020). Knowledge Spillovers, Competition, and Innovation Success. Oxford Bulletin of Economics and Statistics, 82(5):1017-1041. doi: 10.1111/OBES.12365
4. Dariusz, Dabrowski. (2019). Market knowledge and new product performance: the mediating effects of new product creativity. Journal of Business Economics and Management, 20(6):1168-1188. doi: 10.3846/JBEM.2019.10788
5. Shalom, Levy., Itzhak, Tabatchnik., Sagi, Akron. (2019). Product success implications of distant innovative knowledge. Eurasian Business Review, 9(1):69-88. doi: 10.1007/S40821-018-0108-X
6. Vigory, Gloriman, Manalu., Siti, Nurhayati., Refius, Pradipta, Setyanto. (2023). The moderating effect of competitive intensity on foresight capability and product innovation of SMEs in Indonesia. Problems and perspectives in management, 21(1):219-229. doi: 10.21511/ppm.21(1).2023.19

7. Daragh, O'Leary., Justin, Doran., Bernadette, Power. (2022). Intensity of competition and firm innovative behavior. Economics and Business Letters, 11(2):53-69. doi: 10.17811/ebl.11.2.2022.53-69

8. Alix, J., Boucher. (2022). Competitive intensity and new product development outcomes: The roles of knowledge integration and organizational unlearning. Journal of business research, 139:121-133. doi: 10.1016/j.jbusres.2021.09.049

9. Mengdi, Zhang., Mohd, Haniff, bin, Haniff, Jedin. (2022). Firm innovation and technical capabilities for enhanced export performance: the moderating role of competitive intensity. Review of international business and strategy, doi: 10.1108/ribs-01-2022-0015

10. Ari, Riswanto. (2021). Competitive Intensity, Innovation Capability, and Dynamic Marketing Capabilities. 1(1):7-15. doi: 10.54518/RH.1.1.2021.7-15