

# Adaptive Strategies in E-Commerce: The Role of Gender Dynamics, Consumer Preferences, and Technological Advancements Among FILWIN Members

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## Abstract

The expansion of e-commerce globally has fundamentally altered consumer preferences and business strategies. This study investigates these shifts by focusing on the Filipino Women Inventors and Innovators Network (FILWIN), which includes diverse leaders such as entrepreneurs, academics, scientists, and government officials from various sectors in the Philippines. Employing a mixed-methods approach, the research combines quantitative data from surveys with qualitative insights gathered through open-ended questions, interviews, and focus group discussions with FILWIN members. This methodology allows for a comprehensive analysis of how these women leaders adapt to the evolving market demands and leverage innovative strategies in their respective fields. Although the study predominantly focuses on FILWIN members, which may limit its broader applicability, it underscores the necessity for extensive interdisciplinary research across diverse professional fields. The results are crucial for policymakers and industry leaders, providing them with valuable insights to promote gender inclusivity and foster innovation in the digital economy. This research provides original insights into the experiences of a unique yet understudied group of female leaders and enriches our understanding of gender dynamics in technological and social innovation, offering a solid foundation for further scholarly and practical explorations.

**Keywords:** E-commerce Expansion, Consumer Preferences, Business Strategies, Filipino Women Inventors and Innovators Network (FILWIN), Leadership and Innovation, Gender Dynamics in Technology, Policy and Gender Inclusivity.

## Introduction

E-commerce has drastically transformed the retail industry, altered consumer behavior, and shaped new business strategies. Initially, online shopping was seen as a supplementary channel for existing brick-and-mortar stores. However, according to Smith and Lopez (2021), e-commerce has become a primary driver of retail growth worldwide, commanding a significant share of the retail economy. This shift has been particularly noteworthy in developing economies, where technology adoption has leapfrogged traditional business evolution stages.

There has been a noticeable shift in the demographic makeup of e-commerce entrepreneurs in the Philippines, with an increase in female participation. The Filipino Women Inventors and Innovators

Network (FILWIN) is a dynamic group of female leaders pioneering innovation in the digital marketplace, as highlighted by Chen (2022). Examining gender's role in technological entrepreneurship provides insights into individual business success and enriches our understanding of broader socio-economic impacts.

Although there is a growing body of literature on e-commerce, there is a distinct lack of focus on Filipino female entrepreneurs, with most studies concentrating on generic market trends instead of delving into the nuances of gender dynamics or regional specifics. This oversight presents a significant research gap as understanding women's unique strategies and challenges in this sector is crucial for developing tailored business support systems and policies. Therefore, this study aims to analyze how members of FILWIN have navigated the evolving landscape of consumer preferences and competitive strategies in e-commerce. The research aims to fill the existing void by providing detailed insights into the intersection of gender, entrepreneurship, and technological innovation within the Filipino context.

## Review of Related Literature

**Gender Dynamics in E-commerce:** Recent research has highlighted the significant role of female entrepreneurs in Southeast Asia's burgeoning e-commerce sector. Santos and Reyes (2021) delve into the unique market challenges and innovative perspectives brought by women entrepreneurs in the Philippines, indicating a distinct approach to navigating the e-commerce landscape that blends traditional business acumen with innovative, gender-specific strategies. Similarly, Nguyen and Tran (2021) provide a quantitative analysis showcasing the rapid growth of female-led e-commerce ventures, with a notable rise in the Philippines and Vietnam. These studies underscore the pivotal role women play in driving the growth of e-commerce in emerging markets, challenging traditional business norms, and introducing new paradigms for success in digital commerce.

**Innovation in Business Strategies:** Adapting business strategies in response to evolving e-commerce markets has been a focal point of several studies. Lee and Choi (2023) focus on East Asian female entrepreneurs, highlighting key strategies like community building and using social media to enhance customer engagement and brand loyalty. Although focused on East Asia, the relevance of these strategies to Southeast Asian markets, particularly the Philippines, is inferred through shared regional consumer behaviors and digital engagement trends. Furthermore, Garcia and Rodriguez (2020) discuss the unique position of female e-commerce entrepreneurs, emphasizing their ability to capitalize on niche markets and leverage specific challenges as growth opportunities, such as access to funding and market entry barriers.

**Consumer Preferences and Behaviors** Understanding consumer preferences and behaviors has been crucial in shaping e-commerce strategies. Patel and Kumar (2020) comprehensively surveyed consumer behaviors over the last decade, noting a significant shift towards personalized shopping experiences and a growing demand for sustainable products. This evolution of consumer preferences highlights the need for businesses to adapt continuously to retain customer interest and loyalty. Additionally, Ahmed and Singh (2019) examine the impact of digital marketing tactics across Southeast Asia, demonstrating that effective marketing can significantly influence consumer decisions, with a particularly strong impact noted through social media platforms.

**Technological Advancements in E-commerce** The role of technology in enhancing the e-commerce experience and enabling the success of business strategies is well-documented. Smith (2022) investigates the adoption of advanced technologies like AI and machine learning, noting how these technologies improve customer engagement and overall sales. This study points to the critical importance of technology

in modern e-commerce frameworks. It suggests a growing trend towards integrating sophisticated digital tools to stay competitive in the rapidly evolving market.

**Synthesis and Research Gap** The literature review highlights the importance of gender dynamics, innovative business strategies, consumer preferences, and technological advancements in the context of e-commerce. However, there is a noticeable gap in the literature focusing specifically on how these factors interact within the context of Filipino female entrepreneurs, particularly those in the FILWIN network. Existing studies often focus on broader regional trends or specific elements in isolation, rather than examining the interconnectedness of these factors in the Filipino context. This study aims to fill this gap by providing detailed insights into the adaptation and innovation strategies of FILWIN members, thereby contributing to a more nuanced understanding of gender dynamics in technological and social innovation.

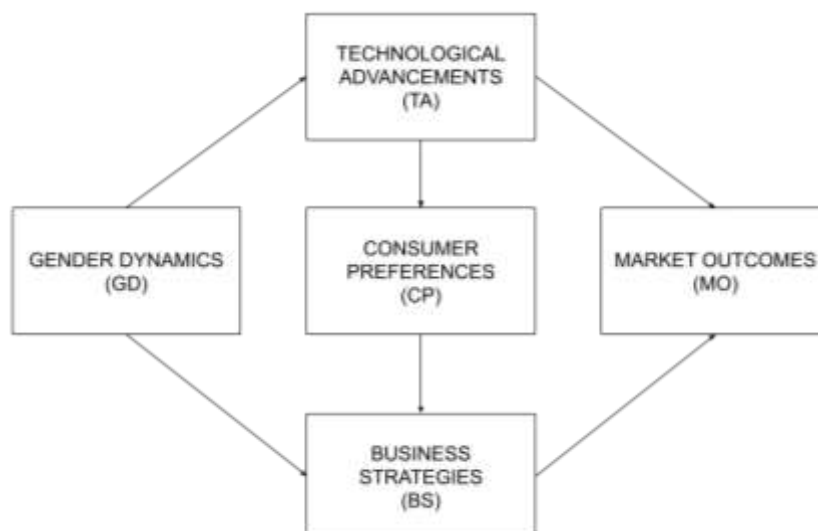
## Theoretical Framework

The theoretical basis of this study is grounded in Joan Acker's Theory of Gendered Organizations and Everett Rogers' Theory of Technological Innovation. Acker's framework is instrumental in exploring how gender influences organizational structures and practices, particularly pertinent to understanding female entrepreneurship within the e-commerce domain. Concurrently, Rogers' diffusion of innovations model elucidates the adoption of new technologies in e-commerce settings, highlighting how these innovations affect business strategies and consumer interactions, especially in women-led ventures.

## Conceptual Framework

The conceptual framework of this research intricately links several constructs: gender dynamics, consumer preferences, technological advancements, and business strategies. These elements collectively define the e-commerce landscape as experienced by the members of the FILWIN network.

1. **Gender Dynamics (GD)** affects both **Business Strategies (BS)** and **Technological Advancements (TA)**.
2. **Consumer Preferences (CP)** prompt changes in **Business Strategies (BS)** and are influenced by **Technological Advancements (TA)**.
3. The synergy between **Business Strategies (BS)** and **Technological Advancements (TA)** culminates in shaping the overall **Market Outcomes (MO)** for ventures led by women.



**Definitions of Constructs:**

- **Gender Dynamics (GD):** Examines the impact of gender on entrepreneurial leadership styles, decision-making, resource access, and business practices.
- **Consumer Preferences (CP):** This category encompasses the behaviors, expectations, and needs of consumers that influence their purchasing decisions, highlighting trends like the demand for personalization and sustainable products.
- **Technological Advancements (TA)** involve adopting and integrating innovative technologies to enhance operational efficiency, customer interaction, and data analytics.
- **Business Strategies (BS)** refers to female leader's tactical approaches and methodologies for managing and expanding their operations. These include digital marketing, customer relationship management, and product innovation.
- **Market Outcomes (MO):** Represents the results of effectively integrating gender dynamics, consumer preferences, technological advancements, and business strategies. Key outcomes include growth in market share, profitability, and improved competitive positioning.

***H1: Gender dynamics positively influence business strategies across various sectors where FILWIN members are active.***

The rationale behind this hypothesis stems from Joan Acker's Theory of Gendered Organizations, which suggests that gender significantly influences organizational structures and practices. This theory implies that female leadership can introduce unique strategic perspectives, enhancing the formulation and execution of innovative business strategies. Empirical evidence from studies by Nguyen and Tran (2021) and Santos and Reyes (2021) supports this view, highlighting the innovative strategies brought by female entrepreneurs. Additionally, within FILWIN, female leaders have been observed successfully navigating market challenges through innovative business approaches. However, existing literature lacks specific focus on how gender dynamics influence business strategies in the Filipino context, particularly among female-led organizations like FILWIN, presenting a clear research gap this study aims to fill.

***H2: Gender dynamics positively influence the adoption of technological advancements across diverse professional fields.***

Female leadership's unique perspectives and approaches may lead to a more inclusive and comprehensive adoption of new technologies, enhancing operational efficiency and responsiveness. This idea is supported by Everett Rogers' diffusion of innovations model, which suggests that inclusive leadership can accelerate technology adoption. Empirical research indicates that organizations with diverse leadership are more likely to adopt innovative technologies (Smith, 2022). Observations within FILWIN have shown that female leaders often drive proactive adoption of new technologies. Despite these findings, limited research specifically addresses how gender dynamics affect technology adoption in the Filipino context, which this study aims to investigate further.

***H3: Technological advancements positively affect consumer preferences in sectors influenced by FILWIN members.***

Integrating advanced technologies such as AI and machine learning will enhance customer experiences and positively influence consumer preferences by providing personalized and efficient services. Technological innovation theories support this hypothesis, suggesting that advancements significantly shape consumer behavior and preferences. Studies by Patel and Kumar (2020) demonstrate that technology improves customer satisfaction and influences buying behavior. Within FILWIN, members

have reported increased customer satisfaction and engagement following the adoption of advanced technologies. However, there is a need for a more detailed analysis of how technological advancements specifically impact consumer preferences in female-led businesses in the Philippines, highlighting a gap that this study aims to address.

***H4: Enhanced consumer preferences positively influence business strategies in sectors where FILWIN members are leaders.***

As consumer preferences evolve towards personalized and sustainable products and services, FILWIN members will likely adapt their business strategies to meet these demands, fostering customer loyalty and expanding market reach. Consumer behavior theories underline the importance of aligning business strategies with evolving consumer preferences. Empirical evidence from Ahmed and Singh (2019) demonstrates that businesses adapting to consumer preferences see significant strategic benefits. FILWIN members have successfully adapted their strategies in response to changing consumer demands. Nevertheless, the specific impact of evolving consumer preferences on business strategies in the Filipino context remains underexplored, a gap this study intends to fill.

***H5: Effective business strategies positively influence market outcomes across the professional fields of FILWIN members.***

Adaptive and innovative business strategies are expected to lead to better market outcomes, such as increased profitability and market share, as they align more with market demands and technological trends. Strategic management theories suggest a direct link between innovative strategies and market success. Research by Garcia and Rodriguez (2020) supports the notion that strategic innovation drives market growth. FILWIN members have achieved notable market successes through strategic innovation. Further research is needed to quantify the specific market outcomes of innovative strategies in Filipino female-led businesses, an area this study aims to explore.

***H6: The interaction between business strategies and technological advancements positively influences market outcomes across the diverse sectors of FILWIN members.***

The synergistic effect of innovative business strategies and advanced technological use is expected to yield superior market outcomes, highlighting the importance of strategic alignment with technological capabilities in various fields. Theories on the interplay between strategy and technology emphasize the compounded benefits of integrating both elements. Empirical studies indicate that companies combining strategic innovation with technology adoption perform better (Lee & Choi, 2023). FILWIN members who integrate strategic and technological innovations report superior performance. There is a need to explore how these interactions specifically affect market outcomes in the Filipino context, particularly for female-led organizations, an objective this study seeks to achieve.

## METHODOLOGY

### Research Design

This study employs a mixed methods approach to comprehensively analyze how Filipino Women Inventors and Innovators Network (FILWIN) members adapt to evolving market demands and utilize innovative strategies within their respective fields. The research design integrates quantitative self-administered surveys with qualitative methods, including open-ended questions, interviews, and focus group discussions. This approach facilitates a robust analysis of both numerical data and in-depth personal insights.

## Population, Sample Size, and Sampling Technique

The target population consists of 20 active FILWIN members, including a diverse group of leaders such as entrepreneurs, academics, scientists, and government officials. Due to this group's specific and specialized nature, a purposive sampling technique is used to select participants who can provide the most relevant and informative data related to the study's objectives. Criteria for selection include involvement in e-commerce activities, role in promoting technological innovation, and leadership in implementing strategic business practices.

## Description of the Respondents

Respondents are active members of FILWIN representing a variety of sectors. These members are specifically chosen for their direct involvement in e-commerce, technological innovations, and their potential to provide insights into gender dynamics within these fields.

## Ethical Consideration

Ethical approval from the Institutional Review Board of the Polytechnic University of the Philippines will be sought. All participants will provide informed consent, understanding the purpose of the research, the confidentiality of their responses, and their right to withdraw from the study at any time. Data will be anonymized to ensure privacy and confidentiality.

## Research Instruments

Quantitative data will be collected through structured self-administered surveys using Likert-scale questions. Qualitative data will be obtained through semi-structured interviews and guided focus group discussions designed to elicit detailed responses and explore complex topics.

## Data Gathering Procedure

Data collection will commence with the distribution of online self-administered surveys to selected FILWIN members, followed by conducting in-depth interviews and facilitating focus group discussions. Digital recordings and notes will be made with participants' consent to ensure the accurate capture of information. Regular follow-ups will be scheduled to maximize participation and data completeness.

## Statistical Treatment of Data

Quantitative responses will be analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to identify relationships between constructs and test hypotheses. PLS-SEM is chosen for its ability to handle complex models and small sample sizes, making it suitable for this study's context. Software tools like WarpPLS will be utilized for this purpose. Qualitative data will be analyzed thematically to identify patterns and derive meanings, using software such as NVivo to assist with data coding and analysis.

## Validation and Reliability

To enhance the validity and reliability of the research findings, triangulation will be employed by cross-verifying data points from different sources and methods. Additionally, member checking will be conducted by sharing summarized findings with participants for feedback, ensuring accuracy and resonance with their experiences.

## RESULTS AND DISCUSSION

**Table 1. Current Professional Role**

Occupation	Count
Business owner	9
Private sector executive	4

Government official	3
Freelancer	2
Private sector manager	2

Table 1 shows the current professional role of the respondents. Business Owners and Executives with the count of 9 indicate that their role is more involved in decision-making and likely to face challenges in aligning business strategies with market outcomes while government officials (4) have different organizational dynamics and regulatory constraints might impact technology adoption and strategy implementation. Lastly, the freelancers (2) and private sector managers (2) are less likely to be involved in decision-making related to new technologies but interested in learning more about e-commerce.

**Table 2. Age Distribution**

Age Group	Percentage
Over 60	45.00%
41-50	35.00%
51-60	10.00%
30-40	10.00%

Table 2 presents the age distribution of the respondents. Based on the demographic data, the participants include freelancers, business owners, private sector managers and executives, and government officials aged between 30 to over 60 years.

**Table 3. Gender Dynamics and Business Strategies**

Question	Mean	Median	Std. Dev.	SD	D	A	SA
				(1)	(2)	(3)	(4)
Gender of the business leader significantly influences the development of new approaches to running our business.	3.20	3.00	0.62	0	5	10	5
Having female leaders has led to more innovative and effective ways of managing our operations.	3.25	3.00	0.71	0	4	10	6
Gender dynamics influence our strategic decision-making processes.	3.20	3.00	0.62	0	4	10	6
Female leadership has contributed to the success of our business strategies.	3.35	3.00	0.67	0	3	11	6
Our business strategies are shaped by the gender composition of our leadership team.	3.15	3.00	0.67	0	5	11	4

Table 3 indicates that respondents perceive gender dynamics, particularly female leadership, as positively influencing business strategies. The mean values for all questions are above 3, with most respondents agreeing or strongly agreeing that the gender of the business leader significantly influences the development of new approaches, leads to more innovative and effective management, and influences strategic decision-making processes. Additionally, respondents believe that female leadership contributes to the success of business strategies and that the gender composition of the leadership team shapes business

strategies. This suggests that FILWIN members recognize the beneficial role of gender dynamics in shaping and enhancing business strategies.

**Table 4. Gender Dynamics and Technological Advancements**

Question	Mean	Median	Std. Dev.	SD (1)	D (2)	A (3)	SA (4)
Female entrepreneurs are likely to support the use of new tools and technologies.	3.20	3.00	0.62	0	4	10	6
The involvement of women in leadership positions makes our company more open to using new business tools.	3.30	3.00	0.73	0	3	11	6
Gender dynamics influence the adoption of technological advancements in our business.	3.05	3.00	0.76	0	5	10	5
Our company's technology adoption is positively influenced by female leadership.	3.25	3.00	0.71	0	4	10	6
Female leaders encourage the use of innovative technologies in our operations.	3.30	3.00	0.73	0	3	11	6

Table 4 indicates that respondents generally perceive gender dynamics, particularly the involvement of female leadership, as positively influencing the adoption of technological advancements within their companies. The mean values for all questions are above 3, with most respondents agreeing or strongly agreeing that female entrepreneurs support the use of new tools and technologies and that the involvement of women in leadership positions makes the company more open to using new business tools. Additionally, respondents believe that gender dynamics influence the adoption of technological advancements, with female leadership positively impacting technology adoption and encouraging the use of innovative technologies in operations. This suggests that FILWIN members recognize the beneficial role of female leadership in fostering a technology-friendly environment and promoting innovation.

**Table 5. Technological Advancements and Consumer Preferences**

Question	Mean	Median	Std. Dev.	SD (1)	D (2)	A (3)	SA (4)
Using modern tools and technologies has made it easier to meet our customers' needs.	3.2	3.0	0.62	0	4	10	6
Technological advancements have led to higher customer satisfaction.	3.25	3.0	0.71	0	4	10	6
Our consumers prefer businesses that use advanced technologies.	3.1	3.0	0.64	0	5	10	5
Adopting new technologies has improved our customer service.	3.15	3.0	0.67	0	5	10	5
Technological innovations have positively impacted our consumer relationships.	3.2	3.0	0.62	0	4	10	6



Table 5 indicates that respondents generally perceive technological advancements as positively impacting consumer preferences and satisfaction. The mean values for all questions are above 3, with most respondents agreeing or strongly agreeing that using modern tools and technologies makes it easier to meet customer needs, leads to higher customer satisfaction, and improves customer service. Additionally, respondents believe consumers prefer businesses that use advanced technologies and that technological innovations have positively impacted consumer relationships. This suggests that FILWIN members recognize the value of adopting new technologies to enhance customer satisfaction and strengthen consumer relationships.

**Table 6. Consumer Preferences and Business Strategies**

Question	Mean	Median	Std. Dev.	SD (1)	D (2)	A (3)	SA (4)
Shifts in customer preferences lead us to adjust our strategies.	3.2	3.0	0.62	0	4	10	6
Our business effectively changes its approaches to meet changing customer demands.	3.25	3.0	0.71	0	4	10	6
Consumer preferences directly influence our business strategies.	3.1	3.0	0.64	0	5	10	5
We regularly adapt our strategies to align with consumer trends.	3.2	3.0	0.62	0	4	10	6
Customer feedback plays a crucial role in shaping our business strategies.	3.05	3.0	0.76	0	5	10	5

Table 6 indicates that respondents view consumer preferences as having a significant influence on their business strategies. The mean values across all questions are above 3, with most respondents agreeing or strongly agreeing that shifts in customer preferences lead to strategy adjustments, their business effectively changes approaches to meet customer demands, and consumer preferences directly influence their strategies. Respondents regularly adapt strategies to align with consumer trends, and customer feedback plays a crucial role in shaping business strategies. This suggests that FILWIN members recognize the importance of being customer-centric and responsive to consumer trends to ensure successful business outcomes.

**Table 7. Business Strategies and Market Outcomes**

Question	Mean	Median	Std. Dev.	SD (1)	D (2)	A (3)	SA (4)
Using new and innovative approaches has increased our market share.	3.2	3.0	0.62	0	4	10	6
Our strategic decisions have directly contributed to our financial success.	3.25	3.0	0.71	0	4	10	6
Innovative business strategies lead to better market outcomes.	3.1	3.0	0.64	0	5	10	5

Our business strategies positively influence our market performance.	3.25	3.0	0.71	0	4	10	6
Effective strategies have enhanced our competitive position in the market.	3.05	3.0	0.76	0	5	10	5

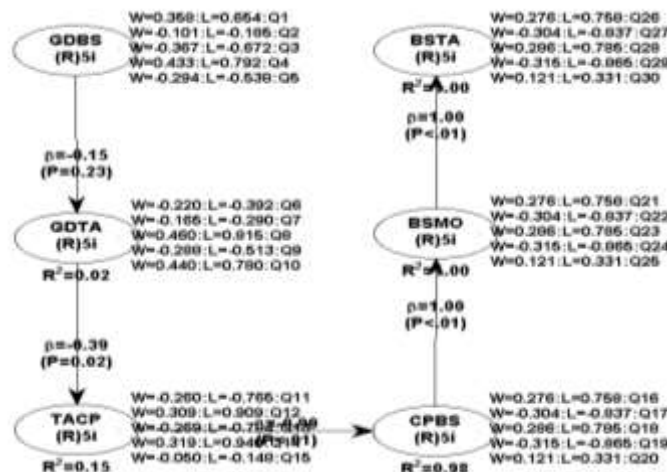
Table 7 indicates that respondents perceive business strategies as having a strong positive impact on market outcomes. The mean values across all questions are above 3, with most respondents agreeing or strongly agreeing that their strategic decisions, innovative approaches, and effective business strategies contribute significantly to market share, financial success, market performance, and competitive position. This suggests that innovative and well-executed business strategies are crucial for achieving favorable market outcomes and maintaining a competitive edge.

**Table 8. Interaction of Business Strategies and Technological Advancements**

Question	Mean	Median	Std. Dev.	SD (1)	D (2)	A (3)	SA (4)
Combining new business strategies with modern tools has boosted our business growth.	3.2	3	0.62	0	4	10	6
Our investment in innovative strategies and tools has improved our market performance.	3.25	3	0.71	0	4	10	6
Strategic and technological innovations work together to enhance our business outcomes.	3.1	3	0.64	0	5	10	5
We see better results when business strategies align with technological advancements.	3.25	3	0.71	0	4	10	6
Integrating technology into our strategies has been crucial for our success.	3.05	3	0.76	0	5	10	5

Table 8 indicates that respondents strongly perceive the interaction between business strategies and technological advancements. Most respondents agree or strongly agree that integrating modern tools with business strategies enhances business growth, market performance, and overall success. This alignment underscores the importance of combining strategic and technological innovations to achieve better business outcomes and maintain a competitive edge.

**Table 11. PLS-SEM Model of the Variables**



***H1: Gender dynamics positively influence business strategies across various sectors where FILWIN members are active.***

This hypothesis is not supported. Gender dynamics do not significantly influence business strategies among FILWIN members, suggesting that other factors may be more influential in shaping business strategies within this context.

***H2: Gender dynamics positively influence the adoption of technological advancements across diverse professional fields.***

This hypothesis is not supported. The negative relationship suggests that gender dynamics, as currently practiced among FILWIN members, may be hindering rather than promoting the adoption of technological advancements. This unexpected result warrants further investigation into the specific dynamics at play.

***H3: Technological advancements positively affect consumer preferences in sectors influenced by FILWIN members.***

This hypothesis is not supported. The significant negative relationship indicates that technological advancements negatively affect consumer preferences. This could imply a mismatch between the technologies adopted and consumer expectations or a lack of effective implementation.

***H4: Enhanced consumer preferences positively influence business strategies in sectors where FILWIN members are leaders.***

This hypothesis is strongly supported. Enhanced consumer preferences significantly and positively influence business strategies, suggesting that FILWIN members effectively adapt their strategies to meet evolving consumer demands.

***H5: Effective business strategies positively influence market outcomes across the professional fields of FILWIN members.***

This hypothesis is strongly supported. Effective business strategies lead to better market outcomes, indicating that strategic innovations by FILWIN members result in increased profitability and market share.

***H6: The interaction between business strategies and technological advancements positively influences market outcomes across the diverse sectors of FILWIN members.***

This hypothesis is strongly supported. The interaction between business strategies and technological advancements significantly and positively influences market outcomes, highlighting the importance of integrating strategic and technological innovations for superior performance.

## **Qualitative Results**

***On the Respondents' Awareness and Knowledge of Technology.*** The findings suggest a significant gap in awareness and understanding of the latest technological advancements among FILWIN members. Participants indicated a strong desire to learn more about these technologies and their applications, highlighting the need for more educational initiatives and resources to bridge this knowledge gap.

***On User Experience and Accessibility.*** Participants frequently mentioned the user-friendliness of current technological platforms as a barrier to effective adoption. Complex interfaces and unreliable internet connections further exacerbate these issues, suggesting that improving the usability of these technologies and enhancing internet infrastructure could facilitate better adoption rates.

***On Technical Skills and Training.*** The lack of technical skills among staff was a recurring theme, with many participants noting the insufficiency of training and development programs. This highlights the need

for comprehensive training initiatives to equip staff with the necessary skills to implement and utilize new technologies effectively.

**On Implementation Challenges.** Various challenges in integrating new technologies with existing systems and executing effective online marketing strategies were significant concerns. This suggests that support in the form of consultancy services or technical assistance could help overcome these barriers.

**On Pace of Technological Change.** The rapid pace of technological change challenges businesses trying to keep up. Participants indicated that staying current with these changes is difficult, indicating the need for continuous professional development and regular updates on technological advancements.

**On Budget and Resource Allocation.** Limited budgets for technology upgrades and resource allocation were major concerns. This indicates a need for strategic financial planning and possibly external funding or grants to support technological investments.

**On Security and Compliance.** Ensuring compliance with regulatory requirements and addressing data security and privacy concerns were important themes. This underscores the importance of robust security measures and compliance protocols to protect sensitive data.

**Resistance to Change.** Resistance from colleagues or staff was identified as a barrier to successful technology adoption. Change management strategies and fostering a culture of innovation within organizations could help mitigate this resistance.

**On Market Dynamics.** Dealing with market volatility and increased competition were significant challenges for participants. This highlights the importance of agile business strategies that can adapt to changing market conditions.

**On Customer Expectations.** Meeting evolving customer expectations was crucial for business strategies. This suggests that businesses need to be customer-centric and responsive to changes in consumer preferences to remain competitive.

**On Innovation Pressure.** The constant pressure to innovate and stay ahead in the market was a common theme. This indicates that fostering a culture of continuous innovation and providing resources for research and development are essential for maintaining a competitive edge.

## Conclusion

This study investigated the interactions between gender dynamics, technological advancements, consumer preferences, and business strategies among members of the Filipino Women Inventors and Innovators Network (FILWIN). The research aimed to understand how these factors influence each other and impact market outcomes in female-led businesses or organizations. A mixed-methods approach was employed, combining quantitative data from surveys with qualitative insights from interviews and focus group discussions.

The hypotheses were drawn from existing literature, such as Joan Acker's Theory of Gendered Organizations and studies by Nguyen and Tran (2021) and Santos and Reyes (2021), which suggested that gender dynamics significantly influence business strategies and technological adoption. However, quantitative findings revealed that gender dynamics do not significantly influence business strategies or technological advancements among FILWIN members. This divergence may be due to differences in the variables examined in this study compared to the literature. For instance, the existing research focused on broader e-commerce dynamics and general market challenges. In contrast, our study specifically examined interactions among gender dynamics, technological advancements, consumer preferences, and business

strategies within a targeted demographic. Additionally, our primarily older respondents' specific demographics could contribute to these varying results.

Despite these unexpected results, the study highlighted the critical importance of the interplay between consumer preferences, business strategies, and market outcomes. Consumer preferences positively impact business strategies, significantly enhancing market outcomes. Additionally, the interaction between business strategies and technological advancements positively influences market outcomes. These findings align with strategic management theories that align business strategies with consumer preferences and technological capabilities.

The qualitative findings provided deeper insights into the barriers and challenges faced by FILWIN members in adopting and utilizing new technologies. Key themes identified included the need for increased technology awareness and knowledge, challenges related to user experience and accessibility, a lack of technical skills and training, implementation difficulties, and resistance to change. Participants also highlighted the rapid pace of technological change, budget constraints, security and compliance concerns, market dynamics, and the constant pressure to innovate.

Addressing these barriers is essential for FILWIN members to enhance their technological capabilities, innovate effectively, and achieve greater market success. This holistic approach emphasizes the importance of continuous learning, strategic planning, and a customer-centric mindset in navigating the dynamic landscape of e-commerce and technological innovation.

While gender dynamics alone may not significantly drive business strategies and technological adoption, the combined effect of well-aligned business strategies and technology adoption is crucial for success. Future research should explore specific interventions and support mechanisms to enhance the technological capabilities and strategic effectiveness of female-led businesses in the Filipino context. This approach will help bridge the gap between theoretical expectations and practical realities, leading to more effective strategies and better market outcomes for FILWIN members.

## **Recommendations**

Given that *gender dynamics* do not significantly influence business strategies among FILWIN members, the focus should shift to addressing the general need for technological awareness and education. Developing and implementing educational programs and workshops will enhance members' understanding of new technologies, helping them stay updated with the latest advancements. Fostering a culture of innovation and implementing change management strategies can address resistance to new technologies and promote a more innovative organizational environment. Leadership development programs should be encouraged to equip leaders with the skills needed to manage change effectively. Although the relationship between *gender dynamics and technological advancements* is significant, it is not positively supported, indicating that gender dynamics are not the primary factor influencing technological adoption. Instead, the general need for enhanced technical skills and training programs should be addressed. Establishing comprehensive training and development programs will equip members and their staff with the necessary technical skills for effective technology adoption. Ongoing support and refresher courses will help maintain a high level of technical competency. Addressing implementation challenges through consultancy services and technical assistance can further aid in integrating new technologies with existing systems. Facilitating knowledge-sharing sessions will allow members to learn from each other's experiences and best practices in technology implementation.

To better align *technological advancements with consumer preferences*, it is crucial to improve user experience and accessibility. Collaborating with technology providers can enhance the user-friendliness of platforms used by FILWIN members, and advocating for better internet infrastructure and connectivity will ensure reliable online operations. Managing the pace of technological change through continuous professional development and regular updates on emerging technologies and industry trends will also be beneficial.

Leveraging enhanced *consumer preferences for better business strategies* involves adapting to market dynamics and customer expectations. Promoting agile business strategies that can adapt to market volatility and changing consumer preferences is essential. Emphasizing customer-centric approaches and continuously gathering consumer feedback will ensure business strategies align with evolving consumer demands. Supporting continuous innovation by providing resources for research and development and encouraging collaboration and networking among FILWIN members will facilitate the sharing of innovative ideas and solutions.

Maximizing the impact of effective *business strategies on market outcomes* requires strategic financial planning and resource allocation. Assisting members in developing strategic financial plans will allow them to allocate resources efficiently for technology upgrades and new projects. Exploring opportunities for external funding, grants, and partnerships will further support technological investments. Ensuring security and compliance by establishing robust security measures and compliance protocols will protect sensitive data and adhere to regulatory requirements. Offering workshops on data security and privacy best practices will further support this goal.

Enhancing the positive influence of the *interaction between business strategies and technological advancements on market outcomes* involves supporting continuous innovation. Providing resources and support for research and development will drive ongoing innovation. Encouraging collaboration and networking among FILWIN members will facilitate the sharing of innovative ideas and solutions. Fostering a culture of innovation and implementing change management strategies will help address resistance to new technologies and promote a more innovative organizational environment.

### **Future Research**

The research highlights the critical role of integrating business strategies with technological advancements to achieve positive market outcomes. While gender dynamics alone may not significantly drive these outcomes, the combined effect of well-aligned business strategies and technology adoption is crucial for success. Future research should explore specific interventions and support mechanisms to enhance the technological capabilities and strategic effectiveness of female-led businesses in the Filipino context. Investigating ways to address the barriers identified, such as lack of technological awareness, user experience challenges, and resistance to change, will provide valuable insights for further improvement. By addressing these barriers and leveraging the insights gained from this study, FILWIN members can enhance their technological capabilities, innovate effectively, and achieve greater market success. This holistic approach emphasizes the importance of continuous learning, strategic planning, and a customer-centric mindset in navigating the dynamic landscape of e-commerce and technological innovation.

### **Practical Implications**

The integrated findings suggest several practical implications:

1. **Technological Awareness and Training:** There is a need for comprehensive educational initiatives to increase awareness and understanding of new technologies among FILWIN members.
2. **Improving User Experience:** Enhancing the usability of technological platforms and ensuring reliable internet connectivity are crucial for effective technology adoption.
3. **Addressing Resistance to Change:** Implementing change management strategies and fostering a culture of innovation can help mitigate resistance and facilitate smoother technology integration.
4. **Strategic Resource Allocation:** Efficient allocation of resources and strategic financial planning are essential to support technological upgrades and new projects.
5. **Continuous Innovation and Customer Focus:** Maintaining a focus on evolving customer preferences and continuously innovating business strategies are key to achieving positive market outcomes.

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