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Building a hyper-personalized maturity model: A strategic path for businesses in the data ERA

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Abstract: In the era of big data and artificial intelligence, businesses face increasing demands for personalized customer experiences. This study introduces the Hyper-Personalization Maturity Model (HPMM), a strategic framework designed to assess and enhance an organization's personalization capabilities. The model is structured around three foundational pillars—data, technology, and business strategy—collectively supporting the evolution of hyper-personalization efforts. It delineates five progressive maturity levels: Basic, Standardized, Integrated, Automated, and Optimized, each characterized by specific criteria that guide businesses in evaluating their current status and identifying areas for improvement. The development of HPMM followed a mixed-methods approach, integrating insights from a comprehensive literature review and expert interviews. An empirical assessment was conducted on 50 businesses operating in Vietnam's trade and service sectors to validate the model. The findings reveal that 50% of the surveyed businesses remain at the Basic level, relying primarily on demographic data to deliver uniform customer experiences. In contrast, higher maturity-level businesses leverage multi-channel data integration and AI-driven decision-making to achieve more sophisticated personalization. The study underscores the critical role of data-driven strategies and advanced technologies in enhancing customer engagement and competitive advantage.

Keywords: *Artificial intelligence, Competitive advantage, Customer experience, Data analytics, Hyper-personalization, Maturity model.*

1. Introduction

Personalization plays a key role in improving customer experience and business performance by providing solutions, products, and services tailored to each customer's specific needs, preferences, and behaviors. Improving the Customer Experience has become a core strategy for businesses in today's competitive environment. Personalization is key in enhancing customer engagement and satisfaction by providing product or service suggestions tailored to individual preferences. For example, Amazon and Netflix have applied personalization algorithms to optimize recommendations, significantly improving satisfaction. At the same time, timely and contextual interactions, such as sending personalized messages via email or app notifications, contribute to creating a positive impression. In addition, modern support solutions such as customized chatbots improve the shopping journey and build long-term loyalty, helping businesses maintain a sustainable competitive advantage. Personalization has proven to significantly improve business performance by increasing revenue, reducing marketing costs, and improving operational efficiency. By optimizing advertising content and suggesting suitable products, businesses can increase conversion rates and average order values through effective upselling and cross-selling strategies. At the same time, personalization helps optimize marketing costs by focusing on high-potential customer groups, thereby improving marketing campaigns' Return on Investment, especially on digital platforms. In addition, AI technology and data analysis are applied to

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automate customer relationship management or demand forecasting processes, helping reduce operating costs and optimize inventory management. Overall, personalization increases business efficiency and creates sustainable competitive advantages for businesses through differentiation and rapid adaptation to customer preferences.

With the explosion of technology, personalization has expanded into hyper-personalization. Hyper-personalization is becoming an essential strategy in Big Data and AI, opening opportunities to optimize products, services, and communications to suit each customer's needs. Businesses today exploit data from diverse sources, including social networks, transaction history, IoT sensors, and online interactions, to better understand consumer behavior and preferences. The combination of quantitative and computational helps builds comprehensive customer profiles, creating the basis for deeper personalization strategies. Moreover, Big Data enables real-time behavioral analysis, assisting businesses in expecting accuracy in consumer needs and behavior. Decisions made based on the database are not quick but are in line with changes in the market. AI-enabled technology complements this by automating the analysis process and optimizing personalization in a larger module. These trends enhance customer experience and increase business efficiency and competitiveness. In the context of globalization and digital transformation, hyper-personalization of Big Data and AI information will continue to be the decisive factors for business success.

In an increasingly competitive environment, hyper-personalization has become an important strategy. However, many businesses still struggle due to lacking a standard framework to measure and improve this capability. Currently, there is no widely applied standard model to evaluate the effectiveness of hyper-personalization strategies. This leads to inconsistencies in approach and implementation, making identifying factors that need improvement difficult. In addition, integrating data from multiple sources and applying advanced technologies such as AI and Big Data requires a clear and systematic roadmap. Therefore, it is necessary to build a specific model that allows businesses to evaluate current capabilities and support step-by-step improvement of hyper-personalization capabilities. This model should include measurement criteria, implementation guidelines, and optimization standards to ensure effectiveness. Establishing such a framework helps businesses improve customer experience and increases business performance and competitive advantage. From here, further research on the hyper-personalization model will provide the necessary theoretical and practical foundations for sustainable business development.

2. Literature Review

Personalization and hyper-personalization are becoming crucial strategies in the rapidly evolving digital landscape. Leveraging customer data and advanced technologies enhances customer experience and optimizes business performance. Personalization Maturity Models (PMMs) have been developed to assess a company's capability to implement these strategies. However, existing models still have limitations in capturing emotional and contextual data, highlighting the need for a more advanced framework.

2.1. Personalization and Hyper-Personalization

According to Sunikka and Bragge [1] personalization delivers customers the right products and services at the right time and place. With the explosive growth of technology, this concept has been expanded and considered as designing a relevant, personalized interaction to enhance the customer experience [2, 3]. Personalization is an important strategy, using insights based on individual customer data and behavior to provide superior and relevant experiences. According to Lim, et al. [4] this process often requires active cooperation from customers to co-create personalized experiences. This cooperation can be done by collecting and analyzing data sources such as customer reviews, shopping information, and social media interactions. These data provide information about needs and preferences and support the adjustment of products and services to suit each customer in each specific context.

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Personalization, therefore, plays an important role in improving customer experience quality and optimizing business strategies' effectiveness.

The concept of personalization is being expanded into hyper-personalization. Essential personalization focuses on adjusting products or services based on general information about customers, such as name, geographic location, or shopping history. Meanwhile, hyper-personalization uses advanced technologies such as artificial intelligence (AI) and real-time data analysis better to understand customer behavior, emotions, and context. Hyper-personalization goes beyond meeting needs to anticipating customer desires and creating superior and unique experiences. The key difference lies in the depth of data used and the ability to react instantly to changes in consumer behavior [5].

2.2. Key Components of Hyper-Personalization

Hyper-personalization, an advanced strategy to optimize customer experience, is built on three main components: customer data, supporting technology, and business strategy. First, customer data provides the information needed to analyze individual behavior, preferences, and context [6]. Diverse data sources, including purchase history, social media interactions, and real-time data, allow businesses to build comprehensive customer profiles and predict future needs [7]. Data analytics help personalize products and services and increase customer engagement and satisfaction. Among the key components of hyper-personalization, the data platform serves as the starting point, as the ability to respond quickly and accurately to customers is a prerequisite for building deeply personalized experiences. The remaining components all depend on input data to ensure effectiveness. The synchronous combination of these components creates a unique experience and optimizes customer engagement and satisfaction. Therefore, the data platform is a core component in successfully implementing a hyper-personalization strategy.

The second component, supporting technology, is the factor that drives the effectiveness of hyper-personalization. Customer relationship management platforms, AI, and predictive analytics tools play an important role in processing large volumes of data and generating appropriate recommendations [4]. AI technology, in particular, enables real-time analysis of customer behavior, thereby improving the timeliness and accuracy of personalization strategies. Furthermore, automation tools such as chatbots and virtual assistants help businesses engage with customers continuously and personalize experiences according to specific contexts.

Finally, business strategy is the guiding factor, ensuring that hyper-personalization is integrated into the business's overall goals [7]. Personalization is used as a marketing tool and becomes part of a long-term strategy to increase customer lifetime value and optimize profits. Businesses that are successful in hyper-personalization have clearly defined business goals, such as increasing conversion rates, improving loyalty, and building brands through unique customer experiences.

Combining customer data, supporting technology, and business strategy creates a comprehensive hyper-personalization ecosystem. These components operate independently and interact with each other, ensuring the synchronization and effectiveness of the strategy. In today's competitive environment, how well a business can exploit the potential of these factors will determine its ability to succeed in building loyalty and enhancing customer value [8, 9].

2.3. Personalized Maturity Models

Maturity models are conceptual frameworks that define progressive stages of development within organizational processes, systems, or competencies, providing a basis for evaluation and improvement. They play a vital role in strategic planning by enabling organizations to assess current capabilities, identify performance gaps, and implement targeted development initiatives. Maturity models offer several benefits, including enhanced process efficiency, risk reduction, and alignment with industry best practices. Recent research trends focus on adapting maturity models to emerging fields such as digital transformation, data governance, and sustainability, highlighting their relevance in dynamic

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environments. These models are increasingly applied across various sectors to support continuous improvement and drive evidence-based management [10].

PMM provide a framework for assessing a business's ability to implement personalization strategies to improve customer experience. These models help measure the maturity level of a business in collecting and analyzing customer data and creating personalized interactions. Most of these models are used by businesses that specialize in researching or implementing consulting solutions for applying technology in personalizing products and services.

Forrester, one of the world's leading research and consulting organizations, provides information, analysis, and strategic consulting in business and technology. Forrester introduced a model for measuring and evaluating personalization maturity by assessing a business's capabilities through five levels: Initiate, Experiment, Scale, Optimize, and Transform [11]. These levels measure a company's ability to use data and technology to understand customers and improve experiences. The model emphasizes transitioning from essential personalization solutions to integrating data and AI to optimize processes. This approach is particularly suitable for large enterprises aiming to gain a competitive edge through personalization strategies.

Accenture, another leading global professional services company, provides strategy, consulting, technology, and operations solutions. Accenture proposes a maturity model with four levels: Foundational, Integrated, Adaptive, and Predictive [12]. This model leverages AI and advanced data analytics to build intelligent personalization strategies. Its standout feature encourages businesses to integrate customer data into their processes and adopt automation technologies to enhance personalization.

The third is Gartner's personalization measurement framework. As a world-leading company specializing in research, consulting, and conference services focused on IT, business, and organizational strategy, Gartner introduced a model dividing personalization capabilities into three main stages: Reactive, Proactive, and Predictive [2]. The Reactive stage focuses on responding to customer needs, the Proactive stage on anticipating needs, and the Predictive stage on using AI and machine learning to deliver hyper-personalized experiences. This model is ideal for businesses adopting advanced technologies to optimize customer interactions. Adobe Inc. is one of the world's leading businesses in creative software, digital marketing, and document management. Adobe is known for its groundbreaking creative products and solutions that help individuals, organizations, and businesses optimize workflows and enhance customer experiences. Adobe also proposes a personalization maturity model divided into five levels: Crawl, Walk, Run, Fly, and Soar [11]. These levels measure a company's ability to leverage data and technology to implement effective personalization strategies. The model emphasizes the role of multi-channel data and advanced analytics, which is especially relevant for e-commerce and digital services businesses.

PricewaterhouseCoopers (PwC), one of the world's four largest auditing firms (Big Four), provides auditing, consulting, and tax services. With its strengths in strategy consulting, risk management, information technology, business transformation, and operational optimization solutions, PwC has introduced a personalization maturity model. This model focuses on three main elements: customer data, supporting technology, and business strategy [13]. By assessing a business's ability to integrate data, optimize technology, and adjust strategies to meet customer needs, PwC's model provides a comprehensive framework. It is particularly suited for medium and large-sized businesses aiming to enhance their personalization capabilities comprehensively.

McKinsey & Company, one of the world's leading management consulting firms, offers strategic consulting services to organizations, businesses, and governments. With expertise in applying technology to foster growth and innovation, McKinsey has introduced the Omnichannel Personalization Maturity Model, which includes four levels: Basic, Developing, Advanced, and Leading [14]. This model emphasizes integrating communication channels and digital platforms to deliver personalized experiences throughout the customer journey. McKinsey also advocates using AI and big data to predict customer needs and optimize each touchpoint in the journey.

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Deloitte, another of the world's four largest auditing firms, provides diverse services, including auditing, consulting, tax, and financial solutions. Deloitte has introduced the Customer-Centric Personalization Maturity Model because of its expertise in strategy, organizational transformation, operational optimization, information technology, digital transformation, and advanced technology solutions. This model guides businesses toward customer-focused strategies through four levels of maturity: Fragmented, Connected, Intelligent, and Unified [15]. It emphasizes the importance of leveraging customer data and adopting customer-oriented strategies in implementing personalization. Deloitte also provides a specific roadmap to help businesses enhance their personalization capabilities and align them with broader organizational goals.

Current personalization maturity models are all designed to address the challenges of collecting, analyzing data, and optimizing customer experiences, but their approaches reflect different priorities. Forrester and Accenture emphasize the role of AI and data analytics in driving intelligent personalization, which is suitable for large, advanced enterprises. Gartner and McKinsey focus on predicting customer behavior through AI and machine learning, opening up opportunities for hyper-personalized experiences. Adobe's model focuses on omnichannel data mining and advanced analytics, especially useful for e-commerce businesses. PwC proposes a more comprehensive approach that combines data, technology, and business strategy, which suits the needs of mid-sized and large enterprises. Deloitte emphasizes the importance of a customer-centric strategy and provides a clear roadmap to achieving sustainable customer engagement. Although all models have the same goal, the gap between data analysis and creating a comprehensive hyper-personalized experience has not been fully addressed, especially regarding context and emotional behavior.

Currently, PMM models focus mainly on the ability to collect and analyze quantitative data but have not intensely exploited qualitative factors such as customer emotions, cultural context, and immediate responses during the experience journey. This important gap needs to be filled to move towards true hyper-personalization. Therefore, the Hyper-Personalization Maturity Model (HPMM) is proposed with the following development levels: Basic (static personalization), Contextual (contextual personalization), Emotional (emotional personalization), and Real-Time Adaptive (real-time personalization). HPMM will combine behavioral data with sentiment analysis and real-time demand prediction, using advanced AI and IoT technology to optimize interactions at each touchpoint. This model meets current customer needs and anticipates and adapts to future requirements, creating a sustainable competitive advantage for businesses.

Hyper-personalization goes beyond merely meeting customer needs-it aims to predict and adapt to their desires in real time. While current personalization maturity models provide a solid foundation, they still lack integration of emotional and contextual factors. The proposed HPMM addresses this gap by combining behavioral analysis, sentiment evaluation, and real-time demand prediction. This approach enhances customer experiences and creates a sustainable competitive advantage for businesses in the digital era. This study aims to develop a HPMM that serves as a framework for businesses to assess and improve their hyper-personalization capabilities at each stage of development. The model identifies maturity levels and provides detailed measurement criteria for businesses to understand their current position and the goals they need to achieve. At the same time, the study proposes a clear roadmap to help enterprises implement hyper-personalization strategies effectively and consistently gradually. This roadmap will be built on practical analysis and technology trends, ensuring high applicability in different industries. In addition, supporting tools, such as data analytics systems, hyper-personalized chatbots, and AI platforms, will be introduced to enhance implementation capabilities. The expected result is that businesses will improve customer experience, optimize resources, and increase business performance. The research will provide a scientific and practical basis, contributing to shaping hyper-personalization strategy in the era of big data and digital transformation.

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3. Research Methods

The HPMM research methodology is comprehensive and includes literature analysis, expert interviews, and field testing. First, the study focused on analyzing academic documents, industry reports, and existing personalization maturity models to identify the core components of hyper-personalization, including data integration, AI technology application, and real-time feedback. This phase helps form a solid theoretical basis for model design. Next, the study conducted in-depth interviews with 10–15 marketing, information technology, and customer management experts. The experts were selected based on their practical experience and ability to contribute diverse opinions on the maturity levels and evaluation criteria in hyper-personalization. The information collected from interviews helps supplement qualitative aspects such as the role of emotion and context in customer experience.

Based on these results, the study designs a theoretical model of hyper-personalization maturity levels, from basic to advanced. The levels are classified with detailed evaluation criteria, including data analysis capabilities, personalization automation, and customer experience optimization. At the same time, the study proposes tools and methods to support businesses in effective implementation at each level, such as using AI platforms, multi-channel integration, and customer behavior analysis.

Finally, the model is tested in practice at 10–15 retail, finance, and service businesses. Quantitative data such as customer satisfaction, revenue growth, and cost efficiency are collected to evaluate the impact of the model. In addition, the study also recorded feedback from business leaders to identify benefits and challenges during the implementation process. The combination of quantitative and qualitative data ensures the model's accuracy and provides a basis for improvement and adjustment in accordance with practice. The HPMM model is expected to be helpful in orienting hyper-personalization strategies, helping businesses improve customer experience and achieve sustainable competitive advantage.

4. Research Results

The maturity model is an important tool for measuring the level of development of an organization, process, or technology based on standardized criteria. This model provides a comprehensive view of the current state, thereby identifying gaps that need to be improved and orienting development to reach the optimal state. The core elements in the maturity model include development levels, assessment factors, and improvement roadmap. Levels are usually divided from essential to optimal, representing stages of development with different requirements and characteristics. Assessment factors focus on processes, technology, organizational capabilities, and data management. The improvement roadmap, an indispensable component, helps the organization identify the steps to take and the resources needed to move to a higher level. The applications of maturity models are diverse, from building improvement strategies and measuring the effectiveness of investments in new technologies and processes to guiding long-term development to achieve strategic goals.

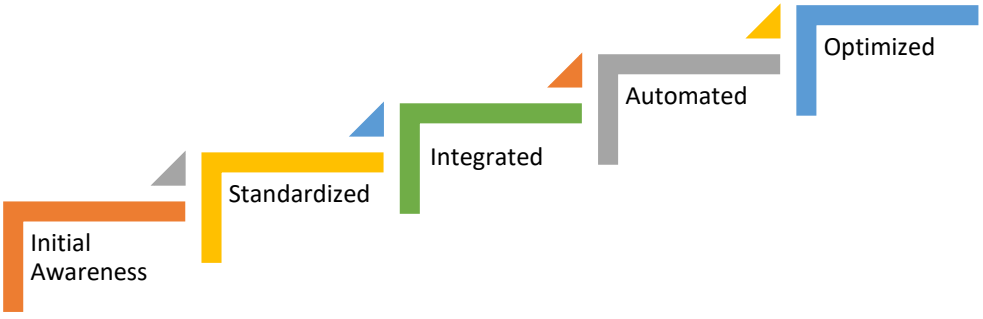

Figure 1. Hyperpersonalized Maturity Model

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Table 1.
Levels of the hyperponalization marturity model.

Level	Components	Content
Level 1: Initial	Identification	- The organization does not have a specific hyper-personalization strategy. - Collect simple demographic data (age, gender, geographic location). Customer experience is uniform, not customized to individual needs.
	Target	- Build a basic customer data collection system. - Meet the basic needs of customers.
	Act	- Collect demographic data from online and traditional channels. - Segment customers based on simple criteria such as age and gender. - Implement essential marketing campaigns for each group.
	KPI	- Customer data collection rate: 20-40%. - Number of segmented customers: Only about 10-20% of total customers. - Average engagement rate: 1-2% on essential marketing campaigns. Signs of reaching level 1 and moving to level 2: - Businesses can collect essential data from at least 30% of target customers. - Customer segmentation becomes more effective, even at a simple level. - The customer engagement rate reaches the minimum threshold of 2%, showing that essential campaigns are starting to get attention.
	References	For businesses new to personalization, refer to documents such as authors in [2, 14]
Level 2: Standardized	Identification	- Organizations begin integrating customer behavioral data from websites and social networks. - Implement customer segmentation based on shopping and interaction behavior. - Use essential customer management tools like CRM.
	Target	- Standardize the process of collecting and storing customer data. - Increase customer interaction rate on online channels.
	Act	- Integrate data from websites, social networks, and email marketing. - Use data analytics tools to look for trends in customer behavior. - Deploy marketing content suitable for typical customer groups.
	KPI	- Data integration rate from channels: 40-60%. - Interaction increase rate on online channels: 3-5%. - Conversion rate of marketing campaign: 2-4%. Signs of reaching level 2 and moving to level 3: - Data from at least 50% of customers is integrated and used in marketing campaigns. - Marketing campaigns achieve stable interaction growth (over 4%). - Analyze customer behavior across multiple channels and initially provide appropriate content for each customer group.
	References	[1]
Level 3: Integrated	Identification	- Data is synchronized between online and offline channels. - Automate part of the process of personalizing content and offers. - Use basic AI in analyzing customer trends.
	Target	- Ensure consistency of customer data. - Increase the effectiveness of marketing campaigns.
	Act	- Integrate data channels on the same platform. - Deploy custom content based on behavioral data. - Automate A/B testing to optimize campaigns.
	KPI	- Data synchronization level across channels: 60-80%. - Number of fully automated campaigns: At least 30% of campaigns. - Success rate of customized marketing campaigns: 5-8%. Signs of reaching level 3 and moving to level 4: - Businesses successfully synchronize customer data from at least 70% of communication channels. - Automate at least 40% of campaigns, ensuring cost reduction and speed of implementation.

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		- The success rate of personalized marketing campaigns exceeds 7%, demonstrating the ability to meet customer needs well.
	References	Integrate Customer Data Platform in [5, 16]
Level 4: Automated	Identification	- Deploy AI to predict customer needs. - Deliver hyper-personalized experiences in real-time. - Automate all communication processes.
	Target	- Increase automation and accurate predictions. - Maximize conversion rate.
	Act	- Deploy smart chatbot for 24/7 support. - Provide real-time content and offers. - Real-time KPI analysis to improve campaigns.
	KPI	- Conversion rate based on real-time data: 8-12%. - Number of interactions via chatbot or AI: At least 50% of total customer interactions. - Average time for automated campaigns to reach desired KPI: Under 24 hours. Signs of reaching level 4 and moving to level 5: - Automated campaigns based on real-time data achieve conversion rates exceeding 10%. - Over 50% of customers interact through automated chatbots or virtual assistants. - Businesses achieve optimization in response time and improve customer experience at scale.
	References	Use platforms like AWS Personalize and Google AI: [17-19]
Level 5: Optimized	Identification	- The organization reaches the highest level of maturity in hyper-personalization, integrating advanced technology into every aspect of business. - Use artificial intelligence (AI) and deep learning to optimize the customer journey. - The ability to accurately anticipate and respond to customer needs, even before they arise. -Fully personalized and consistent customer experience across all communication channels.
	Target	- Build a continuous, unique, and optimized customer journey. - Improve customer loyalty and satisfaction. - Increase customer lifetime value.. - Ensure deep and lasting customer engagement.
	Act	- Integrate AI and deep learning systems to analyze and predict real-time customer behavior. - Deploy fully personalized content and offers based on context, history, and real-time data. - Automatically improve models based on customer feedback and performance measurements. - Build continuous measurement and feedback systems to optimize customer experience across every touchpoint.
	KPI	- Customer satisfaction rate: 90% or higher. - Customer Retention Rate: At least 85%. - Customer lifetime value index: Increase by at least 30% compared to previous level. - Customer Journey Success Rate: 90% or more. Signs of reaching level 5: - The business achieved a customer retention rate exceeding 85%, demonstrating sustainable customer engagement. - Customer journey is optimized with a success rate of over 90%. - Significant increase in customer lifetime value, demonstrating the effectiveness of hyper-personalization at its best
	References	[20-23]

5. Discuss Research Results

The Hyper-Personalization Maturity Model test was conducted to assess the maturity level of 50 businesses in Vietnam's trade and service sector. The main objective of the test was to determine the

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businesses' current level in the personalization journey and propose strategic actions to improve efficiency. The test period lasted six months, from August 2024 to December 2024, with evaluation criteria based on KPI thresholds corresponding to each model level. The implementation method included data collection through observation, business surveys, and analysis of marketing reports. The evaluation results were compared with KPI indicators to determine the business's level and what actions were necessary to advance to the next level.

Understanding a business's strengths and limitations in its personalization strategy and providing a clear roadmap to optimize the customer experience is an essential first step in applying personalization strategies effectively. Such groundwork is crucial to enhancing competitive advantage in the modern business environment.

The hyper-personalization maturity model test results are summarized in the following table:

Table 2.
Results of testing the hyper-personalization model in Vietnamese enterprises

Grant degree	Percentage of businesses achieving	Identification indicators	KPI measurement indicators
Level 1: Initial	25 businesses (50%)	Primarily collects demographic data, with customer experience still uniform.	- Data collection rate: 30%. - Percentage of segmented customers: 15%. - Average interaction rate: 2%. Indicator for transitioning to Level 2: Improved segmentation capability based on age and gender.
Level 2: Standardized	15 businesses (30%)	Integrates data from multiple channels such as websites and social media.	- Data integration rate: 50%. - Interaction growth rate: 4%. - Conversion rate: 3%. Indicator for transitioning to Level 3: Customer segmentation based on shopping behavior.
Level 3: Integrated	8 businesses (16%)	Data is synchronized across channels; basic AI is used for trend analysis.	- Data synchronization rate: 70%. - Marketing campaign success rate: 7%. - Automated campaign rate: 40%. Indicator for transitioning to Level 4: Partial automation of campaigns and delivery of customized content.
Level 4: Automated	2 businesses (4%)	Uses AI to deliver real-time personalized experiences	- Real-time conversion rate: 10%. - Interaction rate via chatbot: 50%. - Average time to achieve KPI targets: Under 24 hours. Indicator for transitioning to Level 5: Fully personalized customer experience with positive feedback.
Level 5: Optimized	0 businesses (0%)	Integrates AI and deep learning throughout the entire process.	- Customer Satisfaction Score: 90%. - Customer retention rate: 85%. - Customer Lifetime Value (CLV) growth: At least 30%. No businesses reached Level 5 during the testing period.

The test results show that most businesses (50%) are at Level 1 in the hyper-personalization maturity model, with clear potential to advance to Level 2 if provided with proper guidance and support. Many businesses have begun integrating data from multiple channels and applying AI, reaching Levels 2 or 3, but they require further optimization for sustainable development.

To drive the transition process, businesses at Level 1 should focus on enhancing data collection and integration from various sources, ensuring a solid foundation for personalization strategies. Investing in

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modern AI platforms is essential for businesses at Levels 2 and 3 to automate and optimize marketing campaigns. Additionally, organizing training sessions and workshops on AI integration and personalization can raise awareness, equip practical skills, and accelerate digital transformation across the entire business ecosystem.

These recommendations will help improve business performance, create exceptional customer experiences, and enhance competitive advantage for businesses in the future.

6. Conclusions

The study on the HPMM has demonstrated significant practical value in helping businesses enhance performance through personalization. The model provides a clear theoretical framework and a detailed roadmap. It enables businesses to identify their current position in the maturity journey and strategically plan the steps needed to optimize customer experiences. Optimizing customer experience is particularly critical in an increasingly competitive market where it is decisive in building loyalty and increasing Customer Lifetime Value.

The study also raises awareness among businesses about the importance of data and technology, encouraging investment in AI, deep learning, and marketing process automation. Through trials conducted with 50 businesses in Vietnam's trade and service sectors, the study revealed that most businesses are at the basic level (Level 1) but exhibit significant potential for advancement. Some businesses at Levels 2 and 3 have begun integrating data and utilizing AI, demonstrating the benefits of modern technologies in personalization.

However, the study also has limitations. The trial scope was confined to a specific industry and market, which cannot establish broad representativeness. Additionally, risks related to data privacy were not fully assessed, particularly given the large volumes of sensitive information required for personalization. Future studies need to address these limitations to ensure the model can be applied on a larger scale while adhering to security and privacy regulations.

Future research should expand trials to other industries, such as finance, healthcare, education, and international markets, to validate the model's applicability and effectiveness in different contexts. Moreover, exploring the integration of advanced technologies such as Blockchain to ensure transparency and data security, or IoT to collect real-time data from smart devices, could unlock new potential for personalization.

This study has significantly contributed to developing and implementing hyper-personalization in businesses while paving the way for numerous future research and application opportunities. The HPMM is an evaluation tool and a roadmap for businesses to build sustainable competitive advantages in the digital age.

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Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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