
# IMPACT OF DIGITAL MARKETING AND SOCIAL FACTORS ON CUSTOMER BEHAVIOR TOWARDS RESIDENTIAL CONSTRUCTION IN SHANDONG, CHINA

**JUN ZHANG**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT**
**OF THE REQUIREMENTS FOR THE DEGREE OF**
**MASTER OF MANAGEMENT IN MANAGEMENT SCIENCE**
**INSTITUTE OF SCIENCE INNOVATION AND CULTURE**
**RAJAMANGALA UNIVERSITY OF TECHNOLOGY KRUNGTHEP**
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Rajamangala University of Technology Krungthep in Partial Fulfillment
of the Requirements for the Master's Degree

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Director of the Institute of Science Innovation and Culture
Date……Month……..Year…..…

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# ABSTRACT

This research aimed to 1) assess the demographic factors that affect customer behavior towards residential construction in Shandong, China, and 2) examine the influence of digital marketing and social factors on customer's behavior towards residential construction in Shandong, China. The conceptual framework is based on the CDJ model. The sample was 400 customers or expected to be the customers of the residential construction business in Shandong province, China. Statistics used to analyze data were descriptive statistics, including Frequencies, Mean, and Standard Deviation, and inferential statistics were Independent Samples t-test, One-way ANOVA, LSD, and Multiple Linear Regression. The analysis found that most customers expecting to be the customers of the residential construction business in Shandong province, China, are females aged 36-45, married, with a Bachelor's degree, with a monthly income of 10,000-20,000 yuan, and state-owned employees. The hypothesis results found that a significant difference in educational background affects customers' behavior differently. Digital marketing has influenced customer behavior, including SEM, display ads, influencers, and social factors, including family, reference groups, and roles and status. The recommendations to improve the residential construction business are provided in detail.

**Keywords: Digital Marketing, Social factors, Residential Construction, Housing Purchase**

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While completing this thesis on "The Impact of Digital Marketing and Social Factors on Customers' Behavior Towards Residential Construction in Shandong, China", I am filled with endless gratitude. I would like to thank my supervisor sincerely. Throughout the research period, you were like a bright lamp illuminating the path ahead for me. You provided me with professional and meticulous academic guidance and played a crucial role in every aspect, from determining the research direction to constructing the thesis framework. Your wisdom guided me all the way. Moreover, you constantly encouraged me to explore bravely. Whenever I encountered difficulties and setbacks, you patiently answered my questions and dispelled my doubts, giving me the courage and confidence to persevere. I would especially like to express my gratitude to the Director. His care for me was gentle, warm, and inspiring. He offered me a great deal of support and assistance. Whether it was the allocation of resources, valuable suggestions, or spiritual motivation, all of these provided a solid guarantee for me to complete my thesis smoothly. His concern made me aware that I grew up in an academic family full of love, inspiring me to strive for excellence constantly. In addition, I would like to give my heartfelt thanks to Dong. She provided tremendous support and assistance during the research stage of my thesis. She shared her experiences and insights with me. Whenever I was trapped in research difficulties, she listened patiently to my troubles and gave me inspiring suggestions. Her encouragement and trust allowed me to try new research methods and ideas. Her support was like a solid backstop, enabling me to complete my thesis smoothly. In my future academic and life journey, I will carry this gratitude with me and continue to move forward, striving to contribute to academic research and social development and living up to everyone's expectations and love for me.

Jun ZHANG

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# CHAPTER I
# INTRODUCTION

## 1.1 Background and Statement of the Problem

Digital marketing has changed the way firms communicate with their customers and how those customers behave in many different industries, including China's retail and real estate markets. In their research on the Chinese real estate industry, Li (2022) demonstrated how digital marketing increases real estate businesses' transaction volumes by increasing customers' intention to buy homes through tailored product and service offerings. In a similar vein, Wang (2023) looked at digital payment systems, an important part of digital marketing strategies, and how they affect customer behavior. He found that secure online environments designed for important customer groups, like women and college students, significantly contribute to economic growth. These studies highlight the impact of digital marketing on customer behavior, economic growth, and sectoral development in China's specific market.

Digital marketing has several advantages, like increasing customer involvement and changing purchasing habits (Jossy & Reena, 2024). However, there are still certain obstacles to overcome, especially when trying to tailor these methods to specific demographics and market segments in China, like the construction industry in Shandong. Research into these characteristics in regional settings is urgently needed so businesses like Shandong China Construction Sixth Engineering Bureau Corp., Ltd. may optimize their digital marketing tactics to impact customer behavior positively. Filling this void will have two purposes: first, it will add to what is already known about the effects of digital marketing on customer behavior, and second, it will provide practical advice to companies in China that are trying to improve their digital marketing campaigns for specific demographics.

To fill this knowledge vacuum, researchers in China's construction industry should analyze how digital marketing influences customer behavior. Specifically, they should look at how businesses like Shandong China Construction Sixth Engineering Bureau Corp., Ltd. use digital marketing to increase customer engagement, satisfaction, and loyalty. This research is essential for filling in the gaps in our knowledge about

how digital marketing impacts customer behavior in an industry that has historically used fewer digital platforms for communication. By filling this knowledge gap, companies in the construction industry would better understand how to use digital marketing in China to reach their target population and cater to their tastes and preferences.

## 1.2 Research Questions

(1) How do demographic factors affect customers' response to residential construction in Shandong, China?

(2) How does digital marketing influence the customer's behavior toward residential construction in Shandong, China? And in what way?

(3) How do social factors influence the customer's behavior toward residential construction in Shandong, China? And in what way?

## 1.3 Research Hypotheses

$H_1$: Different demographic factors, including gender, age, educational background, occupation, and monthly income, affect customer behavior toward residential construction in Shandong, China, differently.

$H_2$: Digital marketing influences customer behavior towards residential construction in Shandong, China.

$H_3$: The social factors influence customer behavior towards residential construction in Shandong, China.

## 1.4 Research Objectives

(1) To assess the demographic factors that affect customer behavior towards residential construction in Shandong, China.

(2) To examine the influence of digital marketing and social factors on customer's behavior toward residential construction in Shandong, China.

## 1.5 Scope of the Research Study

### 1.5.1 Content

With a focus on the China Construction Sixth Engineering Bureau Corp., Ltd., and in the light of the dynamic nature of the digital landscape, including website, display ads, search engine marketing (SEM), influencer marketing, and social media, this study aims to analyze how digital marketing influences customer's behavior towards the residential construction in the Shandong, China. Concerning customers' behavior towards residential construction in Shandong, where the residential construction business is in decline, digital marketing campaigns might be one of the ways to balance the business status. A better understanding of the dynamics of customer behavior in reaction to digital marketing campaigns will be helpful.

This study focuses on the impact of digital marketing and social factors on customers' behavior towards residential construction in Shandong, China. There are three independent variables: the demographic factor, digital marketing factor, and social factor. The dependent variable is customers' behavior.

### 1.5.2 Area of Study

This study focuses on the residential construction business in Shandong Province, China. China Construction Sixth Engineering Bureau Company is one of the world's top 500 enterprises and China's most internationally competitive investment, in addition to being a construction group.

### 1.5.3 Sample and Population

According to the official statistics website of China, the population of Shandong province in 2023 is 101,229,700 people. The target population for this study consists of current customers and those expected to become customers of the residential construction business in Shandong province, China. Therefore, the population for this study is considered infinite. The sample size was determined using Cochran's formula, resulting in 400 samples.

### 1.5.4 Sampling Method

The research employed a convenience sampling method. These methods were crucial for ensuring sample diversity and representation, thereby enhancing the credibility and universality of the study.

### 1.5.5 Duration

This study was conducted from February through May 2024.

## 1.6 Research Framework

The customers' behavior for this study developed from the Customer Decision Journey or CDJ proposed by Court et al. (2009), including awareness, consideration, decision, and post-experience.

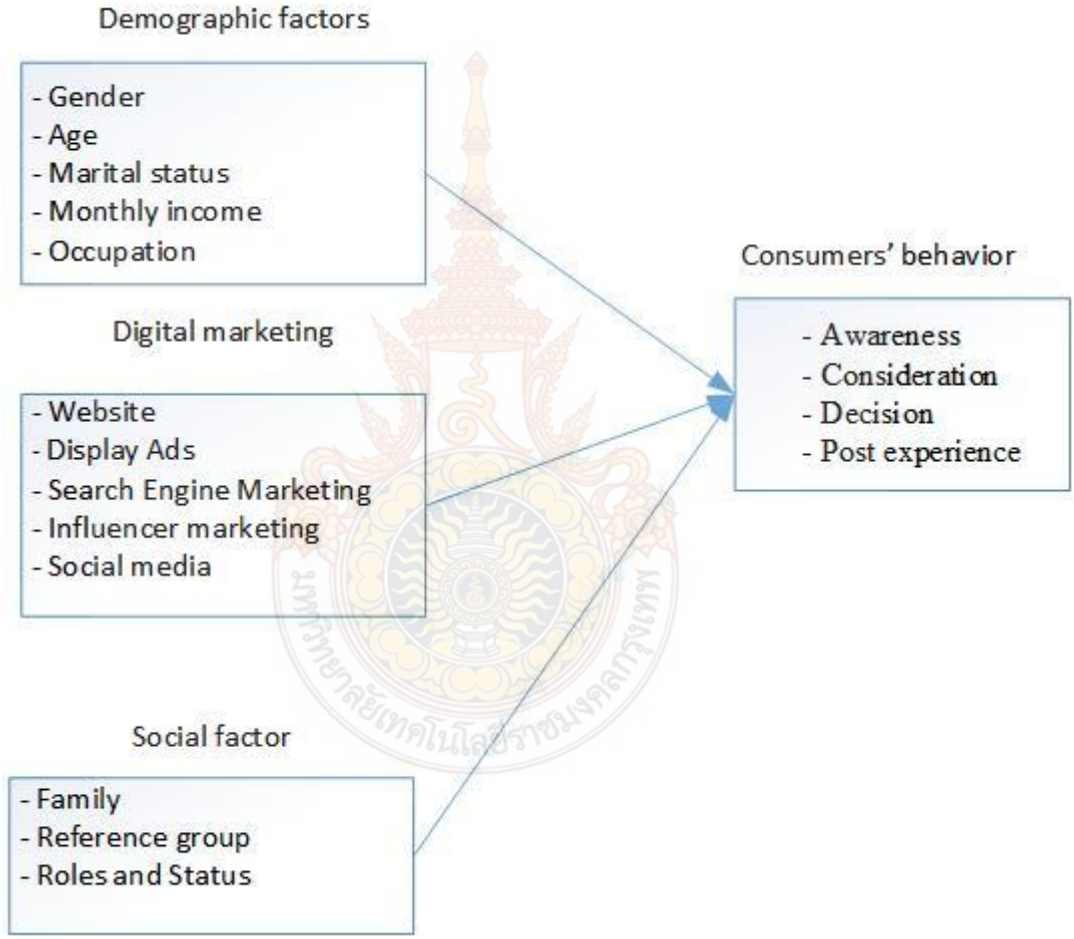


Figure 1 Research Framework

## 1.7 Definition of Key Terms

### 1.7.1 Digital Marketing

Digital marketing encompasses all marketing efforts that utilize digital channels, platforms, and technologies to connect with customers and promote products

or services. In this study, "***digital marketing***" describes the practice of advertising goods and services through online media channels such as websites, apps, and social media. It includes various digital marketing strategies to reach and influence specific demographics online.

**1.7.2 Media Channel**

A media channel is a platform or method to communicate information, messages, or content to an audience. Media channels can take various forms, including traditional channels like television, radio, newspapers, and magazines, as well as digital channels such as social media, websites, display Ads., search engine marketing (SEM), influencer marketing, and social media.

**1.7.3 Demographic**

A demographic factor is a quantitative description of a population's makeup based on gender, age, marital status, income, education, employment, and geography. For marketing and research reasons, these criteria are utilized to classify and divide customers and can significantly affect customer behavior.

**1.7.4 Customer Behavior**

Customer behavior is what customers do, think, and react to concerning a business's goods, services, and advertising campaigns. It covers everything from being aware of the product or service to purchasing and engaging in actions such as reviewing or recommending it afterward. In this study, customers are customers of the residential construction business.

**1.7.5 Social Factors**

Social factors are relevant in daily life and directly or indirectly related to consumer behavior, including family, reference groups, roles, and status of consumers.

**Family** refers to members whose attitudes or opinions are involved in purchasing decisions.

**A Reference Group** is a group whose members may have similar lifestyles, behaviors, attitudes, or concepts. The reference group opinions may affect purchasing decisions.

**Roles and Status in Society** refer to the positions individuals occupy within social structures and the expectations associated with those positions. A role defines the behaviors, responsibilities, and activities expected from someone in a

specific position, such as being a parent, employee, or community leader. Status represents the respect, importance, or prestige attached to a societal role, which can influence how others perceive and interact with the individual. Roles and status shape purchasing decisions by aligning with societal norms, peer influences, and the desire to reflect or enhance one's social identity.

## 1.8 Benefits of the Study

Academics and professionals in the residential construction business in Shandong, China, stand to gain a lot from the study that examines how digital marketing influences consumer behavior. First, it sheds light on the efficacy of digital marketing tactics inside a particular regional and business setting. Businesses in Shandong's residential construction can benefit from a deeper comprehension of the impact of digital marketing campaigns on consumer actions by honing their marketing strategies to reach and engage their ideal consumers more effectively.

The research also provides additional knowledge in the field of digital marketing. Research on the efficacy of various digital marketing approaches across industries and countries is urgently needed due to the ever-changing nature of the digital ecosystem. This research answers that need by offering data on how digital marketing has affected the construction sector in Shandong, China.

The study explores how demographic variables affect the customers' behavior towards the residential construction business. The results may better satisfy the demands and preferences of various consumer groups by determining which demographic categories react differently to digital marketing campaigns. Improved customer happiness and loyalty can result from more focused and efficient marketing campaigns made possible by this individualized strategy.

In addition, by drawing attention to the strategic integration of digital marketing initiatives with the more significant marketing mix components, the study provides industry practitioners with practical consequences. Companies can optimize their marketing strategies to create a consistent and seamless customer experience across all touchpoints by better understanding how the different elements of the marketing mix interact with digital marketing initiatives. This integrated approach

boosts customer engagement, brand perception, and competitiveness.

Both academics and professionals in the field can benefit from the study's findings and recommendations about the influence of digital marketing on consumer behavior towards residential construction in Shandong province, China. The findings from the research can help shape smarter, strategic marketing approaches for the digital era by expanding our knowledge of how digital marketing methods work and how they affect consumer behavior.

# CHAPTER II
# LITERATURE REVIEW

The research on the impact of digital marketing and social factors on customer behavior in residential construction in Shandong, China, has reviewed documents, textbooks, articles, and relevant research to formulate research concepts, and it is being carried out in the following sequence.

## 2.1 Related Theories

### 2.1.1 Digital Marketing

Digital marketing is a novel marketing approach that uses emerging media, such as digital technology and the Internet, as well as technical means, such as big data and Artificial Intelligence (AI), to promote products or services, enhance brand influence, and improve sales performance through targeted marketing strategies and activities (Deighton & Kornfeld, 2019). There are basic principles of digital marketing, including precise targeting, diversification of channels, and continuous innovation. In addition to the above basic principles, digital marketing also has some commonly used marketing models, including the following four: Search Engine Optimization (SEO) is the optimization of website structure and content, as well as a series of other technical means, to make a website rank highly in search engines, thereby attracting more traffic. Search Engine Marketing (SEM) refers to the promotion effect in search engines through advertising. Social Media Marketing (SMM) uses social media platforms for marketing campaigns. Content Marketing uses high-quality, engaging content to engage and connect with potential customers.

The term "digital marketing" is the practice of promoting goods, services, or brands to specific target audiences using digital platforms and technologies. In order to connect and interact with potential consumers, it uses a variety of online channels, including websites, social media, email, and search engines. Digital marketing techniques aim to increase brand recognition, improve website traffic, produce leads, and enhance company sales and profits. Key Components of Digital Marketing are as follows.

**1. Search Engine Optimization (SEO)**

SEO entails optimizing the content and structure of the website to increase a website's exposure in search engine results pages (SERPs). In order to improve search engine ranks, it relies on techniques including keyword research, on-page optimization, and link development. Chaffey et al. (2019) stated that SEO remains a crucial aspect of digital marketing, with 61% of marketers citing it as their top inbound marketing priority.

**2. Content Marketing**

Content marketing focuses on producing and disseminating worthwhile, pertinent material to attract and maintain target audiences. Many types of content exist, such as blog entries, articles, movies, and infographics. A study by Pulizzi and Barrett (2019) highlights the effectiveness of content marketing, with 84% of organizations using it to build brand awareness and generate leads.

**3. Social Media Marketing**

Social media marketing uses websites like Facebook, Instagram, Twitter, and LinkedIn to interact with potential customers, increase brand recognition, and increase website traffic. Social media is used by over 4.48 billion individuals globally, making it a valuable tool for marketers to engage with their audience and build relationships (Statista, 2021).

**4. Email Marketing**

Email marketing involves sending commercial messages to a group of recipients via email. It is still helpful for nurturing leads, keeping customers, and increasing conversions. According to Winter et al. (2020), personalized email marketing efforts can result in higher open rates, click-through rates, and income than generic email blasts.

**5. Pay-Per-Click (PPC) Advertising**

PPC advertising charges a fee each time a user clicks on an advertiser's ad, allowing firms to display ads on search engines and other online platforms. Rahman and Sikder (2021) stated that 45% of small firms use paid search advertising to increase their online exposure and draw in relevant traffic, demonstrating the importance of PPC in digital marketing.

With the development of technology and changes in customer behavior,

digital marketing is still evolving. Businesses may efficiently reach their target audience, drive engagement, and accomplish marketing goals using various digital platforms and methods. Scholarly investigations offer significant perspectives on the efficacy of various digital marketing strategies, enabling marketers to make well-informed choices that optimize their return on investment.

Due to the digital technology that blends into people's activities, digital marketing tools are essential for firms to efficiently develop, implement, and enhance their marketing initiatives. With the help of tools like Google Analytics, Hootsuite, Mailchimp, and SEMrush, marketers can increase the effectiveness of their digital initiatives, automate operations, and obtain insightful data.

1. **Google Analytics** is a powerful web analytics tool that offers data on user activity, website traffic, and conversion rates. It enables marketers to monitor the success of their digital marketing initiatives, examine the demographics of their target audience, and pinpoint areas in need of development. Google Analytics is widely used by businesses to measure website performance and optimize their marketing strategies based on data-driven insights (Panigrahi et al., 2020).

2. **With the assistance of the social media management tool, Hootsuite allows marketers to** schedule posts, monitor social media activity, and analyze campaign performance across multiple channels. Businesses may use it to measure important data like follower growth and engagement rates, interact with their audience in real time, and organize their social media activities. Fieseler et al. (2019) highlight the role of social media management tools like Hootsuite in facilitating efficient communication and engagement with stakeholders.

3. **Mailchimp** is an email marketing automation platform that allows businesses to create, send, and track email campaigns. It offers customizable templates, audience segmentation, A/B testing, and detailed analytics to optimize email performance. Winter et al. (2020) discuss the effectiveness of email marketing platforms like Mailchimp in delivering personalized, targeted messages to engage subscribers and drive conversions.

4. **SEMrush** is an all-in-one digital marketing toolkit that provides tools for SEO, PPC, content marketing, and competitive analysis. It helps marketers conduct keyword research, track rankings, audit websites, and analyze competitor strategies.

Panigrahi et al. (2020) described that SEMrush is widely used by digital marketers to gain insights into search trends, identify keyword opportunities, and improve their online visibility.

No matter how good an analytic tool is, without data to support the analysis, it cannot provide helpful information to support marketers. Therefore, obtaining information through media channels is of great importance. Through the proper media channels, marketers can attract many customers. This study concentrates on popular media channels: websites, display ads, search engine marketing (SEM), influencer marketing, and social media. These channels are described in detail below.

**1. Website**

For businesses, websites are their leading online presence; they offer details about their goods and services and brand messaging. A well-designed website is the center of online activity and improves the company's reputation. Evans et al.'s (2020) research emphasizes how website design and usability affect user engagement and conversion rates.

**2. Display Advertising or Display Ads**

In order to reach target audiences, display advertising entails posting graphical or multimedia advertisements on websites or platforms owned by other parties. These advertisements may appear as interactive rich media, banners, or movies. Li et al. (2019) claim that display advertising can raise brand awareness and improve website traffic when properly targeted and optimized.

**3. Search Engine Marketing (SEM)**

SEM encompasses paid search advertising, where advertisers bid on keywords to display ads in search engine results pages (SERPs). It includes pay-per-click (PPC) advertising on platforms like Google Ads and Bing Ads. Cho et al. (2020) examine the impact of SEM on consumer behavior and purchase intentions, emphasizing the importance of keyword relevance and ad quality in driving clicks and conversions.

**4. Influencer Marketing**

Influencer marketing involves collaborating with individuals with a significant following and influence in a particular niche or industry to promote products or services. Influencers create authentic content that resonates with their audience,

driving engagement and trust. De Veirman et al. (2019) explore the effectiveness of influencer marketing in enhancing brand credibility and purchase intentions among consumers.

**5. Social Media**

Social media platforms such as Facebook, Instagram, Twitter, LinkedIn, and TikTok allow businesses to engage with their target audience, build brand awareness, and drive conversions. Kaplan and Haenlein (2019) discuss the role of social media in shaping consumer behavior and fostering brand-consumer relationships through interactive communication and user-generated content.

**2.1.2 Consumer Behavior**

Understanding consumer behavior is crucial for businesses to develop effective marketing strategies and deliver products or services that meet consumer needs and preferences. Some of the well-known consumer behaviors are as follows.

**1. Theory of Planned Behavior (TPB)**

Ajzen (1991) proposed the Theory of Planned Behavior, which suggests that attitudes, subjective norms, and perceived behavioral control collectively shape an individual's intention to perform a particular behavior, which, in turn, influences their actual behavior. This theory has been widely applied to understanding and predicting consumer behavior across various contexts.

**2. Maslow's Hierarchy of Needs**

Maslow's Hierarchy of Needs is a psychological theory proposed by Maslow (1943), which suggests that human needs are hierarchical and must be satisfied in a specific order. There are five needs in the hierarchy: physiological needs, safety needs, love and belongingness needs, esthetics needs, and self-actualization needs. According to this theory, individuals are motivated to fulfill their unmet needs, and the level of need they are trying to satisfy at any given time influences their behavior. Understanding where consumers are positioned within this hierarchy can help marketers tailor their messaging and offerings.

**3. Social Identity Theory**

Tajfel and Turner (1986) proposed Social Identity Theory (SIT), and the key concepts of this theory are as follows:

1) Social categorization such as age, gender, ethnicity, religion, occupation,

or interest

2) Social identification involves adopting the norms, values, beliefs, and behaviors associated with the group, which contribute to a sense of belonging and social identity and

3) Social comparison influences the evaluation of self-concept and self-esteem. The comparison can be performed in-group with out-group.

SIT suggests that individuals' self-concept is influenced by their membership in social groups, and they strive to maintain a positive social identity by favoring their in-group over out-groups. This theory explains how their social identities and group memberships influence consumers' purchasing decisions, brand preferences, and behaviors. Marketers often leverage social identity to create brand communities and foster consumer loyalty.

SIT is applied to consumer behavior, intergroup relations, and organizational behavior. For consumer behavior, SIT is applied to understand consumer behavior and brand preferences. Consumers often identify with brands that reflect their social identity or group membership, leading to brand loyalty and engagement.

**4. Self-Determination Theory (SDT)**

Deci and Ryan (2000) proposed SDT, which describes three basic human psychological needs: autonomy, competence, and relatedness. According to SDT, individuals are motivated to engage in behaviors that satisfy these needs, leading to greater intrinsic motivation and well-being. This theory has implications for understanding consumer behavior, particularly in product choice, brand engagement, and satisfaction.

**5. Consumer Decision Journey (CDJ)**

Kotler and Keller (2016) offer a broader perspective on marketing principles, including the consumer decision-making process, which typically includes problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase evaluation. Solomon (2019) delineates the stages consumers traverse when making purchasing decisions, encompassing problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase evaluation. Schiffman (2019) elucidates various key concepts and models that underpin consumer behavior theory, one of which is the consumer decision-making process.

A paradigm created by McKinsey and Company, the Consumer Decision Journey or Customer Decision Journey, shows the several stages a consumer goes through when making a purchasing decision. The model has four primary stages: assessment, consideration, decision, and post-purchase experience.

**Assessment stage**

This stage happens when customers realize they want or need a specific good or service. Numerous factors, including advertising, word-of-mouth, social media, and first-hand experiences, can raise awareness of this issue.

**Consideration stage**

Customers actively evaluate and compare the options available by researching, reading reviews, seeking recommendations, and comparing the features, prices, and benefits of various products or services. Businesses need to pay close attention to this stage as customers evaluate the benefits and drawbacks of each option, reducing the number of options and selecting the one that best suits their needs, preferences, and budget.

**Decision stage**

After carefully weighing their options, customers are prepared to select the good or service that provides the best value and satisfies their needs.

**Post-purchase experience stage**

During this stage, consumers assess their satisfaction with the purchase based on their expectations and experience. Positive experiences make people happy and can encourage advocacy, loyalty, and repeat business. On the other hand, negative experiences could result in complaints, exchanged goods, or unfavorable word of mouth. This stage is crucial for businesses as it provides insights into customer satisfaction levels, identifies areas for improvement, and influences future buying decisions and brand loyalty.

Marketers employ the CDJ model to comprehend consumer behavior and adjust their marketing plans accordingly. A model called CDJ has been adjusted to fit the needs of the digital marketing landscape. These modifications reflect the realization that customer-company interactions are far more nuanced than those traditional linear models suggest.

Tan (2023) asserts that introducing digital technology has transformed the

CDJ into a dynamic and multi-touchpoint experience. This means customers are impacted by various digital channels at various phases of their trip. These aspects include the initial thought, the active evaluation, the moment of buying, and the experience after the purchase. When it comes to marketing, this entails the creation of an all-encompassing digital marketing plan that considers each component of the trip. Marketers can find critical touchpoints, refine their marketing messaging, and deliver tailored experiences that nudge customers toward purchasing by evaluating consumer activity data across various digital platforms. This calls for a combination of Search Engine Optimization (SEO), content marketing, engagement on social media, and targeted advertising to guarantee that brands remain at the forefront of consumers' minds throughout the decision-making process.

The Consumer Decision Journey (CDJ) is a theory that is relevant in the field of digital marketing. This theory defines customers' processes before, during, and after purchasing. The introduction of digital marketing has led to the development of this theory, which emphasizes the non-linear and ever-changing nature of interactions between consumers and brands across various digital channels for consumers. Tan's (2023) research highlights the importance of a solid understanding of the underlying logic, mechanism, and strategy to engage customers successfully. Through the utilization of digital technology and internet platforms, businesses can improve their brand recognition, influence the purchases of consumers, and eventually raise their sales. The research conducted by Tan offers significant insights into the strategic application of digital marketing technologies to improve and enhance performance.

**6. Theory of Reasoned Action (TRA)**

Comprehending the cognitive processes that influence an individual's decision to engage in a particular behavior, such as making a purchase online, is made possible through the Theory of Reasoned Action (TRA), which gives a framework for comprehending these processes. Gryshchenko and Shkoda (2023) bring this idea to light in digital marketing, where consumers' attitudes toward digital advertisements, social media content, or email marketing campaigns can substantially impact such consumers' behavior. According to TRA, for digital marketers to effectively impact consumer behavior, they need to understand and positively change consumers' attitudes toward their marketing activities and manage the subjective standards that govern these

views. Making use of social proof in the form of consumer reviews and testimonials, interacting with consumers on social media in order to establish a community centered on the brand, and producing content that is congruent with the values and expectations of the target audience are all examples of techniques that could be utilized. Digital marketers can develop tactics that grab attention and encourage favorable attitudes and intentions toward the brand, ultimately leading to conversion and loyalty. This is made possible by the application of the TRA system.

The Theory of Reasoned Action (TRA) proposes that their purpose drives a consumer's behavior to do the action, which is then impacted by their attitude toward the behavior and subjective norms. Concerning digital marketing, this theory contributes to the explanation of how the consumers' attitudes and digital advertisements, social media marketing, or email campaigns might affect the decisions that The investigation of digital marketing management frameworks that Gryshchenko and Shkoda (2023) conducted sheds light on the crucial function that knowing the requirements and anticipations of consumers in the digital sphere plays. According to their research findings, an effective digital marketing management strategy should center on creating additional value for products or services and developing competitive advantages by catering to the requirements of online consumers. Businesses can adjust their digital marketing tactics to more successfully affect the attitudes and behaviors of consumers by using the concepts of TRA (Gryshchenko & Shkoda, 2023). This results in increased engagement and loyalty from consumers.

The theories emphasize the significance of taking a strategic approach to digital marketing centered on the consumer's interests. For designing effective digital marketing strategies, it is essential to have a solid understanding of the complex decision-making process consumers go through in the digital age and the elements that influence consumer attitudes and intentions. For marketers who want to drive consumer engagement and corporate growth, it will be essential for them to remain knowledgeable about these theoretical frameworks and their practical applications as digital technologies continue to undergo further development. Therefore, the concentration of this study on the consumer’s behavior is on the decision process due to the nature of choosing a residential construction business involving a large amount of money, family opinion, and longtime commitment. Several issues must be

considered, such as location, construction business, and environment.

**2.1.3 Social Factors**

Social factors are relevant in daily life and directly or indirectly related to consumer behavior, including family, reference groups, roles, and status of consumers.

**Family**

Family members significantly influence attitudes, people's opinions, and values, influencing purchasing behavior and determining the purchasing roles of various people in the family. For instance, kids might help choose the snacks they want, but the mother will decide whether the child should buy them. Therefore, marketers must understand the different roles that families play in purchasing in order to formulate proper marketing strategies. When deciding on purchasing accommodation, family members should be very much involved in the purchasing decision, starting with developing criteria for selection, e.g., location, environment, and function, and ending with a financial purchase plan.

**Reference Group**

The reference group will be the group the person has to be involved with. This group will influence attitudes. The opinions and values of those who become members of the group. Reference groups can be divided into two types:

- **Primary groups** include family, close friends, and neighbors.

- **Secondary groups** include professional colleagues, fellow institutions, leading people in society, famous singers, or movie stars.

The reference group will affect the people in the group regarding lifestyle behavior, attitudes, and concepts. People want to be accepted by the group, so they tend to follow and accept different opinions from groups of influence; therefore, marketers should know which reference groups influence their target market and what influences are there to use? to determine the following marketing strategy.

**Roles and Status**

The fact that consumers must relate to different groups of people in society, whether in the family or at work, will create 'roles'. Each person will have many different roles. For example, a girl has the status ‘daughter’ in a family, and at the same time, she has a ‘role’ as a marketing manager at work. Therefore, a role refers to an activity that a close person must anticipate.

## 2.2 Related Studies

One area of research that is of interest in the field of consumer behavior is the model of consumer behavior as a foundation for managing the loyalty of consumers to a particular brand. Kasianova and But-Husaim (2022) discuss several models of consumer behavior, with the primary focus being on the formation of consumers' purchase responses and their long-term loyalty to a particular brand. The findings of their study draw attention to the significance of comprehending the reasons consumers act in a particular manner, the extent to which they are content with the things they purchase, and the potential avenues that might be pursued to influence consumer decisions. This understanding is essential for companies that want to establish, sustain, and keep their consumers loyal, resulting in increased market share and competitive advantage (Kasianova & But-Husaim, 2022).

In the context of the online world, Iyer and Soni (2023) highlight the ever-changing nature of customer interactions across various channels and media. This is another significant feature of consumer behavior. In order to provide the best possible experience for customers, it has become necessary to coordinate efforts among various internal departments and third-party vendors. This is because integrating social and internet channels has made it necessary. Their research implies that a more in-depth understanding of modern consumer behavior, driven by the digital landscape, can provide insights into developing a better customer journey and experience (Iyer & Soni, 2023).

Bilro, Loureiro, and Souto (2023), who provide a complete overview of the research, discuss research on customer behavior in business-to-business (B2B) markets in depth. Their comprehensive literature assessment identifies major topics in business-to-business (B2B) customer behavior research and suggests a research agenda for the future. Bilro, Loureiro, and Souto (2023) conducted a study highlighting the importance of synthesizing current knowledge on business-to-business (B2B) customer behavior to understand better how firms might engage with their customers more efficiently.

The predicting of demographic trends and the repercussions of those trends, as observed in Kazakhstan, is one area of research that falls under the category of demographics. According to Kangalakova et al. (2022), the demographic prediction of Kazakhstan from the year 2000 to the year 2020 is analyzed, and trends are projected

up to the year 2050. Based on their findings, there has been a steady growth in population every year, with the birth rate doubling throughout the study period. (Kangalakova et al., 2022). The research reveals considerable regional variations in demographic potential and anticipates a population of 26.5 million by 2050. This provides a basis for strategic planning in the economic and social policies of the state.

When it comes to addressing concerns in Europe, such as declining birth rates, aging populations, and the integration of migrants, demographic policies play a vital role in addressing these issues. An integrated strategy, improved coordination between the European Union and its member states, and enhanced participation from civil society are some of the ways that Stupariu (2023) proposes to improve the demographic policies of the European Union. According to Stupariu (2023), the purpose of these proposals is to strengthen demographic policies in order to meet the requirements and ambitions of society.

An examination of the history of demography science demonstrates the lengthy path it has taken to be developed and the contributions it has made to the knowledge of population dynamics. The authors Rostovskaya, Bedrina, and Khramova (2023) investigate the beginnings of demographic research and highlight its development from studying lifestyles and socioeconomic strata to the complicated models utilized today. This perspective highlights the value of demography research in assessing population dynamics and providing information that can be used to inform policy decisions (Rostovskaya et al., 2023).

The scope of demographic research encompasses the creation of standardized formats for modeling demographic data, as Gower et al. (2022) suggested with the Demes data model. The representation of populations and their qualities will be simplified with this model's help, making it easier to analyze demographic history and modeling efforts in the future. According to Gower et al. (2022), this uniformity is essential for advancing research in population genetics and other fields that rely specifically on demographic data.

Within the context of Egyptian travel agencies, Elgarhy and Mohamed (2022) investigated the influence that the seven characteristics of the services marketing mix (7Ps) have on client satisfaction, loyalty, intent, and profitability. According to their research findings, all aspects of the 7Ps substantially impact the level of

satisfaction experienced by tourists, both directly and indirectly. This finding also highlights the marketing mix's comprehensive role in developing long-term connections with customers and maintaining the profitability of businesses. According to Elgarhy and Mohamed (2022), the research highlights the importance of managers in the travel service business adopting an integrated services marketing mix approach to increase client loyalty and achieve sustained profitability.

In the field of healthcare, Mutia and Pujianto (2022) conducted research to investigate the impact of the 7Ps marketing mix on the level of pleasure experienced by patients in hospitals. Their literature review highlighted the marketing mix's significant effect on improving patient satisfaction. This highlights the importance of adopting a comprehensive marketing strategy that addresses all aspects of the 7Ps to maximize the quality of service delivery and patient care in healthcare institutions. Based on the findings of this study, it has been determined that a marketing mix that is effectively applied has the potential to considerably improve patient satisfaction, which in turn can result in improved healthcare outcomes and enhanced hospital profitability (Mutia & Pujianto, 2022).

Warganegara and Nurya (2023) investigated the marketing mix (7P) application to the decision to visit the Millennium Valley Tourism Village. Their findings indicated that the promotion component of the 7Ps should be prioritized to improve the decision to visit. Their study demonstrates the value of a well-structured marketing mix in raising the number of visitors to new tourism destinations. They place a special emphasis on successful promotion techniques that are designed to attract potential visitors. This study highlights the crucial significance that each component of the 7P framework plays in building a cohesive marketing plan to increase tourism (Warganegara & Nurya, 2023).

How companies communicate with their clients has been fundamentally altered because of the advent of digital marketing, which encompasses any marketing initiatives that use digital technologies, more specifically, the Internet. The techniques include various activities, including Search Engine Optimization (SEO), social media marketing, pay-per-click advertising, and more. The overarching goal of these strategies is to reach, engage, and convert a worldwide audience. According to Swami (2023), digital marketing tactics are essential for businesses of all sizes to improve their

exposure, attract more clients, and drive growth. This highlights the critical role that digital platforms play in today's competitive market scenario (Swami, 2023).

The strategic combination of different digital marketing approaches can significantly influence consumers' preferences and behaviors. The rapid improvement of technology and the proliferation of social media platforms are the primary factors driving the growing use of digital marketing strategies. The fact that this extensive adoption has occurred highlights the importance of marketers being able to effectively sell their products and services in a market that is both highly competitive and worldwide. According to a comprehensive study, digital marketing is not merely a fad but an indispensable instrument for marketers and customers, performing a crucial function in molding customers' purchase behaviors (Tan, 2023).

In addition, digital marketing is a paradigm for innovative marketing, which uses the advent and growth of the Internet and Web 1.0. It has been demonstrated that the implementation of digital marketing tactics, some examples of which include the exploitation of social media, search engine optimization, and the promotion of brands, can result in significant benefits. The transformative impact of digital marketing on brand promotion and consumer engagement is demonstrated by the fact that these strategies enable businesses to increase the value of their brand, meet the diverse needs of their customers flexibly, and significantly influence marketing outcomes through popular platforms such as short videos (Qian et al., 2023).

## 2.3 Business Profile

**China Construction Sixth Engineering Bureau Company** is one of the world's top 500 enterprises and China's most internationally competitive investment and construction group. China Construction Six has more than 11,000 employees, including more than 3,700 middle and senior engineers and technicians, more than 3,000 registered constructors (more than 2,300 first-class constructors), and 30 registered designers.

There are the following important departments in China Construction Sixth Engineering Bureau:

Board of Directors, Office, Human Resources Department, Corporate

Planning and Management Department, Finance and Capital Department, Project Management Department, Marketing Department, Audit Department, Science, Technology and Design Management Department, Safety Production Supervision and Management Department, Legal Affairs Department, Social Affairs Management Department.

In the field of real estate investment and development, based on the brand name "China Construction Real Estate", with the concept of expanding happy space, building warm homes, and creating high-quality residences for the public, China State Construction Sixth Bureau has successfully innovated a business model that combines real estate development and engineering contracting.

China Construction Sixth Engineering Bureau has provided professional and satisfactory services to its clients in architectural design. Its business scope covers all the major economic regions in China, and it is in the leading position in the region and the industry it is located in.

# CHAPTER III
# RESEARCH METHODOLOGY

This chapter begins with the research design, population, samples, data collection methods, research instrument, and data analysis used in this study, which is described in terms of statistical techniques and their interpretation.

## 3.1 Research Design

This study aims to assess the demographic factors that affect customers' behavior toward residential construction in Shandong, China, and to examine the influence of digital marketing and social factors on customer's behavior toward residential construction in Shandong, China. The conceptual framework was developed based on customers' behavior and decision-making process, which includes *consideration, assessment, decision, and post-experience.* Digital marketing concentrates on media channels, including websites, display ads, *SEM, influencer marketing, and social media*. The social factors include *family, reference group, and roles and status*. The demographic factors *include gender, age, marital status, monthly income, and occupation.*

## 3.2 Samples and Sample Size

### 3.2.1 Population

Due to the variety of time frames and locations of the residential construction projects in Shandong province, China, the target population for this study, which consists of the customers or those expecting to be the customers of the residential construction business in Shandong province, China, during April to July 2024.

### 3.2.2 Samples

The sample was collected from customers expected to be customers of residential construction businesses in Shandong province, China; because the number of customers cannot be determined or the infinite population, the sample size was calculated using Cochran's formula.

$$n = \frac{P(1-P)Z^2}{e^2}$$

$$= \frac{0.5*0.5*1.96\text{^}2}{(.05)\text{^}2}$$

$$= 384.16 \cong 385$$

An additional 15 samples were collected just in case of error and to ensure the integrity of the data. Therefore, the total sample size is 400 samples.

**3.2.3 Sampling Methods**

This study employed a convenience sampling method. These methods were crucial for ensuring sample diversity and representativity, thereby enhancing the credibility and universality of the study. By utilizing these approaches, the research aimed to minimize sampling bias and ensure that the findings more accurately portrayed the characteristics of the surveyed individuals.

## 3.3 Data Collection

Various data collection methods were employed to collect data on the impact of digital marketing and social factors on customers' behavior towards residential construction in Shandong, China. Firstly, a list of customers from Shandong residential construction will be acquired. Secondly, the structured questionnaire survey was designed and distributed online through www.wjx.cn. Thirdly, the questionnaire link from the online survey platform was sent to target samples by research assistants, including corporate employees who have different contact with customers. Finally, the link to the questionnaire on the online survey platform was sent to customers who agreed to share the link with their friends and family.

## 3.4 Research Instrument

A questionnaire was designed and used as a tool for collecting data. The tool has been developed with the following steps:

1. Study methods for developing questionnaires from related documents and textbooks.

2. Study-related concepts, theories, and research documents. By considering various details to cover the stated research objectives.

3. Draft the questionnaire following the conceptual framework and objectives of the research to be used to collect data from sample groups.

4. The developed questionnaire was evaluated by 3 experts in the field for content validity, e.g., checking language understanding and appropriateness of the content.

5. The adjusted questionnaire based on the experts' comments was used for a pretest by collecting data from 30 samples. The data were used to calculate the reliability test.

6. Take the wholly edited questionnaire and pass the reliability test to collect data from the next designated sample group.

An online questionnaire survey research was set up and used to collect relevant data for this study. The questionnaire was divided into four parts.

**Part 1: Demographic Information**

This section was developed to ask participants about their demographic information, including gender, age, marital status, monthly income, and occupation. The questions in this part are checklist-type questions.

**Part 2: Digital Marketing**

This section assesses digital marketing, including *website, display Ads., search engine marketing, influencer marketing,* and *social media,* that may influence the customers' behavior towards residential construction. The questionnaires are designed to collect the respondents' opinions using a 5-point Likert scale.

**Part 3: Social Factor**

This section assesses the social factors that may influence the customers' behavior towards residential construction, including family, reference group, and role and status. The questionnaires are designed to collect the respondents' opinions using a 5-point Likert scale.

**Part 4: Customers' Behavior**

This section assesses customers' behavior towards residential construction, including *consideration, assessment, decision,* and *post-experience.* The questionnaires are designed to collect the respondents' opinions using a 5-point Likert scale.

From parts 2 – 4, the respondents were asked to rate their level of opinion about the questions in terms of the degree of agreement or disagreement that the following numbers can indicate: 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; and 5: Strongly agree. The interpretation of the average values is shown in Table 3.1

The questionnaire has a paragraph dedicated to the nature and purpose of this study to get more responses. Respondents were informed that their contributions were important and valuable. The questionnaire takes only 5 minutes to complete.

Table 3.1. Score Level, Average Value, and Meaning

| Score Level | Average Value | Meaning |
|---|---|---|
| 5 | 4.50 – 5.00 | Completely agree |
| 4 | 3.50 – 4.49 | Agree |
| 3 | 2.50 – 3.49 | Neutral |
| 2 | 1.50 – 2.49 | Disagree |
| 1 | 1.00 – 1.49 | Completely disagree |

## 3.5 Content Validity and Reliability

The content validity test using Item Object Consistency (IOC) and the reliability test using Cronbach's alpha were performed in the following details.

### 3.5.1 Content Validity

Three experts who have expertise in creating research tools and those who manage the travel agency examined the content and the measurement of the questions to cover and complete the research issues. The experts are required to rate the questionnaires according to the following meaning.

+1 The question is consistent with the content of the measurement objective.

0 Not sure that the question is consistent with the content of the measurement objective.

-1 The question is not consistent with the content of the measurement objective.

The results from all expert's evaluations were used to calculate the IOC index according to the formulas of Rovinelli and Hambleton (1977) as follows:

IOC = ΣR /N

Where ΣR = total rating score from all experts for each question

N = number of experts

If the calculated IOC index is greater than or equal to 0.5, it is considered that the questionnaire is measured following the research objectives. Therefore, questions with an IOC index of 0.5 or higher were chosen. If any question has a value that does not reach the 0.5 criterion, but it is necessary to use that question to cover what needs to be measured, that question was revised again according to the advice of experts. For the questionnaires used in this study, the IOC index is more than 0.5; therefore, all the contents of the questionnaires passed the validity test.

**3.5.2 Reliability Test**

The questionnaire was pre-tested with a group of 30 qualified samples to test their understanding of the corresponding questions, and the internal consistency was measured using Cronbach's alpha coefficient (α) test method. A Cronbach's alpha score above 0.70 denotes satisfactory dependability, according to Hair et al. (2010). The reliability findings of the computation are shown in Table 3.2. All variables have Cronbach's alpha values greater than 0.70, indicating satisfactory reliability for the questionnaire.

Table 3.2 Cronbach's Alpha of All Variables

| Variables | Cronbach's Alpha Values | Number of Items |
|---|---|---|
| 1. Social factor | 0.906 | 5 |
| 2. Digital Marketing | 0.891 | 3 |
| 3. Customer's behavior | 0.959 | 4 |

## 3.6 Data Analysis

The statistics used to analyze data will be both descriptive statistics and inferential statistics.

### 3.6.1 Descriptive Statistics

Descriptive statistics were used to analyze the respondents' demographics, including gender, age, marital status, monthly income, and occupation. The frequency, percentage, and mean will be used to analyze data.

### 3.6.2 Inferential Statistics

The inferential statistics used to test hypotheses at the statistical significance level 0.05 are as follows.

$H_1$: Different demographic factors, including gender, age, educational background, occupation, and monthly income, affect customers' behavior toward residential construction in Shandong, China, differently.

Independent sample t-test and One-way ANOVA were used to analyze data.

$H_2$: Digital marketing influences customer's behavior towards residential construction in Shandong, China.

$H_3$: Social factors influence customers' behavior towards residential construction in Shandong, China.

The multiple linear regression analysis analyzed data for hypotheses 2 and 3.

# CHAPTER IV
# ANALYSIS RESULTS

The main objective of this study is to assess the demographic factors that affect customer behavior and to examine the influence of digital marketing and social factors on customers' behavior toward residential construction in Shandong, China. The independent variables used in this study were demographic factors, digital marketing, and social factors. The dependent variable was the customer's behaviors.

## 4.1 Descriptive Statistics

This part demonstrates the results based on the research objectives by splitting into 2 parts as follows.

Part I: the analysis results of respondent's demographic data.

Part II: the analysis results of the level of opinion on digital marketing, social factors, and customer satisfaction.

### 4.1.1 Demographic Factor

Demographic factors, including gender, age, marital status, educational background, monthly income, and occupation, were analyzed using frequency and percentage, as shown in Table 4.1.

Table 4.1. Descriptive Statistics of Demographic Factor

| Gender | Frequency | Percent |
|---|---|---|
| Male | 167 | 41.8 |
| Female | 233 | 58.3 |
| Total | 400 | 100 |
| Age | Frequency | Percent |
| 20 - 25 years old | 44 | 11.0 |
| 26 - 35 years old | 34 | 8.5 |
| 36 – 45 years old | 149 | 37.3 |
| 46 – 55 years old | 21 | 5.3 |
| 56 years old or older | 152 | 38.0 |
| Total | 400 | 100 |
| Marital Status | Frequency | Percent |
| Single | 142 | 35.5 |
| Married | 181 | 45.3 |
| Divorced | 77 | 19.3 |
| Total | 400 | 100 |
| Educational Background | Frequency | Percent |
| High School or Lower | 90 | 22.5 |
| Bachelor's Degree | 205 | 51.3 |
| Master’s Degree or Higher | 105 | 26.3 |
| Total | 400 | 100 |
| Monthly Income | Frequency | Percent |
| Lower than 10,000 yuan | 90 | 22.5 |
| 10,000-20,000 yuan | 160 | 40.0 |
| 20,000 - 25,000 yuan | 68 | 17.0 |
| 25,000 - 30,000 yuan | 82 | 20.5 |
| Higher than 30,000 yuan | - | - |
| Total | 400 | 100 |

Table 4.1.1 Descriptive Statistics of Demographic Factors (cont.)

| Occupation | Frequency | Percent |
|---|---|---|
| Government Employee | 55 | 13.7 |
| Private Company Employee | 70 | 17.5 |
| State-Own Employee | 117 | 29.3 |
| Freelancer | 50 | 12.5 |
| Unemployed | 89 | 22.3 |
| Government Employee | 19 | 4.7 |
| Total | 400 | 100 |

This table summarizes descriptive statistics for a given population based on some demographic and socioeconomic variables. The demographic profile of the sample shows a slight majority of female respondents (58.3%) compared to male respondents (41.8%). Age distribution is notably skewed towards older age groups, with 37.3% of respondents aged 36-45 and 38.0% aged 56. Shandong's residential construction market may primarily cater to middle-aged and older consumers.

Marital status data reveals that 45.3% of respondents are married, 35.5% are single, and 19.3% are divorced. This distribution indicates a diverse market in terms of household composition, which could influence housing preferences and decisions.

The educational background of the respondents is relatively high, with 51.3% holding a bachelor's degree and 26.3% having a master's degree or higher. Only 22.5% have a high school education or lower. This suggests a well-educated customer base for the residential construction industry in Shandong.

In terms of monthly income, the largest group (40%) earns between 10,000-20,000 yuan, followed by 22.5% earning less than 10,000 yuan. Notably, no respondents were in the highest income bracket (above 30,000 yuan), indicating a market primarily composed of low to middle-income consumers.

The occupational distribution shows a high proportion of state-owned employees respondents (29.3%), followed by unemployed (22.3%) and private company employees (17.5%). This high state-owned employee rate could significantly affect the housing market and consumer behavior.

Concerning digital marketing factors, Search Engine Marketing (SEM) emerged as the most influential factor, followed closely by display advertising. Social media marketing showed a moderate influence on consumer behavior. This suggests that residential construction companies in Shandong should prioritize their digital marketing efforts in these areas.

The analysis of social factors revealed that family, reference groups, and social roles all significantly shape consumer behavior toward residential construction. This underscores the importance of word-of-mouth marketing and community engagement strategies for companies in this sector.

The data also showed that educational background significantly impacted consumer behavior, particularly in the assessment and consideration stages of the decision-making process. Respondents with higher education levels demonstrated more awareness and consideration in their decision-making. Nevertheless, age, gender, monthly income, and occupation did not significantly affect consumer behavior toward residential construction. This suggests these demographic factors may be less important for market segmentation in this particular industry and region.

**4.1.2 Descriptives of Dependent and Independent Variables**

Descriptive results of digital marketing, social factors, and customer behaviors were analyzed using Mean and Standard deviation. The ranking level of each variable is provided in Table 4.2.

Table 4.2. The Descriptive Statistics of Digital Marketing

| Digital Marketing | 1 | 2 | 3 | 4 | 5 | Mean | SD | Meaning | Rank |
|---|---|---|---|---|---|---|---|---|---|
| Website | 6 | 75 | 222 | 97 | 0 | 3.03 | 0.700 | Neutral | 5 |
| Display Ad | 4 | 38 | 174 | 109 | 75 | 3.53 | 0.936 | Agree | 2 |
| SEM | 9 | 33 | 152 | 125 | 81 | 3.59 | 0.974 | Agree | 1 |
| Influencer | 3 | 52 | 232 | 113 | 0 | 3.14 | 0.652 | Neutral | 3 |
| Social media | 5 | 77 | 215 | 103 | 0 | 3.04 | 0.707 | Neutral | 4 |
| *Overview of digital marketing | 3 | 53 | 227 | 117 | 0 | 3.15 | 0.660 | Neutral | |

*Numbers in this row are not total frequencies of the responses from each variable

Table 4.2 provides insights into the effectiveness of digital marketing

channels in Shandong's residential construction industry. Search Engine Marketing (SEM) emerges as the most influential strategy, ranking first with a mean score of 3.59, categorized as "Agree". Display advertising follows closely, ranking second with a mean of 3.53, also in the "Agree" category. Influencer marketing, social media, and website marketing rank third, fourth, and fifth, respectively, falling into the "Neutral" category with means between 3.03 and 3.14. The overall mean for digital marketing is 3.15, indicating a neutral impact on consumer behavior. Standard deviations are relatively low, suggesting consistency in responses. These findings highlight the importance of prioritizing SEM and display advertising in digital marketing strategies for residential construction companies in Shandong while also indicating potential for improvement in other digital channels.

Table 4.3. The Descriptive Statistics of Social Factors

| Social Factors | 1 | 2 | 3 | 4 | 5 | Mean | SD | Meaning | Rank |
|---|---|---|---|---|---|---|---|---|---|
| Family | 6 | 75 | 222 | 97 | 0 | 3.02 | 0.700 | Neutral | 3 |
| Reference Group | 3 | 34 | 161 | 121 | 81 | 3.61 | 0.928 | Agree | 1 |
| Role and Status | 11 | 42 | 141 | 130 | 76 | 3.54 | 1.003 | Agree | 2 |
| *Overview of social factor | 3 | 45 | 171 | 111 | 70 | 3.50 | 0.660 | Agree | - |

*Numbers in this row are not total frequencies of the responses from each variable

Table 4.3 presents the descriptive statistics for social factors influencing consumer behavior in Shandong's residential construction industry. Reference groups emerge as the most influential social factor, with the highest mean score of 3.61. Role and status follow closely, ranking second with a mean of 3.54. Surprisingly, family influence has the lowest impact, with a mean of 3.02. The overall mean for social factors is 3.50, indicating a neutral agreement on the influence of consumer behavior. Standard deviations range from 0.660 to 1.003, suggesting some response variability, particularly for role and status. These findings highlight the significant influence of peer groups and social status on housing decisions in Shandong while suggesting that family influence may be less crucial than traditionally assumed. Residential

construction companies might benefit from marketing strategies that leverage social proof and status-oriented messaging.

Table 4.4. The Descriptive Statistics of Customers' Behavior

| Customer's Behavior | 1 | 2 | 3 | 4 | 5 | Mean | SD | Meaning | Rank |
|---|---|---|---|---|---|---|---|---|---|
| Assessment | 12 | 51 | 158 | 125 | 75 | 3.46 | 1.028 | Neutral | 4 |
| Consideration | 11 | 31 | 158 | 125 | 75 | 3.56 | 3.56 | Agree | 1 |
| Decision | 12 | 41 | 152 | 126 | 69 | 3.50 | 0.991 | Agree | 2 |
| Post Experience | 12 | 40 | 159 | 117 | 72 | 3.49 | 0.996 | Neutral | 3 |
| *Overview of customer's behavior | 10 | 34 | 152 | 133 | 71 | 3.55 | 0.962 | Agree | - |

*Numbers in this row are not total frequencies of the responses from each variable

Table 4.4 provides insights into customer behavior across different stages of the purchasing process in Shandong's residential construction industry. The 'Consideration' stage ranks highest, followed closely by the 'Decision' stage, with a mean of 3.56 and 3.50, respectively. Both stages are at the level of "Agree", suggesting that customers are actively engaged in evaluating options and a relatively smooth transition from consideration to purchase. The 'Post Experience' and 'Assessment' stages, while ranked lower, still show moderate levels of engagement with means of 3.49 and 3.46, respectively. The overall customer behavior score of 3.55 falls into the "Agree" category, suggesting a generally positive customer journey. However, the lower scores in the assessment and post-experience stages highlight potential areas for improvement. Companies might focus on enhancing initial engagement strategies and post-purchase follow-ups to create a more consistent customer experience across all stages of the buying process.

## 4.2 Inferential Statistics

This research categorized variables as follows: gender is a categorical variable that has two groups, and age, marital status, educational background, monthly

income, and occupation are the categorical variables that have more than two groups. Independent sample t-tests and one-way ANOVA were employed to assess potential differences in customers' behavior towards residential construction in Shandong, China.

Multiple linear regression analysis was employed to identify and quantify the influence of digital marketing and social factors on customer behaviors toward residential construction customers in Shandong, China.

This section presents the results based on the research objectives, divided into two parts as follows:

Part I: To assess the effect of gender on customer behaviors, an independent sample t-test was conducted. A one-way Analysis of Variance (ANOVA) was performed to evaluate the effect of age, marital status, educational background, monthly income, and occupation on customer behaviors.

Part II: Multiple linear regression analysis was employed to identify and quantify the influencing variables, *namely digital marketing* and *social factors*, on *customer behaviors* toward residential construction customers in Shandong, China.

**4.2.1 Factors Affecting Customer Behavior**

**$H_1$: The difference in demographic factors, including gender, age, educational background, occupation, and monthly income, affect customers' behavior toward residential construction in Shandong, China differently.**

This section's analysis uses hypothesis 1, which comprises five sub-hypotheses.

**$H_{1a}$: The difference in gender affects customer's behavior towards residential construction in Shandong, China, differently.**

An independent sample t-test was employed to evaluate the data to determine whether there was a difference in mean values between the two data groups at the statistically significant threshold of 0.05. Table 4.5 displays the outcomes of the analysis.

Table 4.5. Independent Sample t-test on Gender Difference between 2 Groups

| | Gender | N | Mean | Standard Deviation | t-value | *df* | sig |
|---|---|---|---|---|---|---|---|
| Assessment | Male | 167 | 3.54 | 1.080 | 1.302 | 398 | 0.194 |
| | Female | 233 | 3.40 | 0.987 | | | |
| Consideration | Male | 167 | 3.65 | 0.988 | 1.601 | 398 | 0.110 |
| | Female | 233 | 3.49 | 0.956 | | | |
| Decision | Male | 167 | 3.59 | 1.007 | 1.632 | 398 | 0.104 |
| | Female | 233 | 3.43 | 0.976 | | | |
| Post Experience | Male | 167 | 3.56 | 1.021 | 1.095 | 398 | 0.274 |
| | Female | 233 | 3.45 | 0.977 | | | |
| Customer's Behavior | Male | 167 | 3.62 | 0.998 | 1.132 | 398 | 0.258 |
| | Female | 233 | 3.51 | 0.934 | | | |

From Table 4.5, the analysis results show that gender differences affect consideration, decision, post-experience, and overview of customer behavior. In the overview of customer behavior, the results found that the t-value was 1.132, and the significant value was 0.258, greater than the statistically significant value of 0.05. It can be concluded that gender difference has no different effects on customer's behavior towards residential construction in Shandong, China.

In terms of assessment, consideration, decision, and post-experience, the results found that the t-values were 1.302, 1.601, 1.632, and 1.095, and the significant values were 0.194, 0.110, 0.104, and 0.274, which were greater than the statistically significant value of 0.05. It can be concluded that gender difference has no different effects on assessment, consideration, decision, and post-experience variables in residential construction in Shandong, China.

**$H_{1b}$: The difference in age affects customers' behavior towards residential construction in Shandong, China, differently.**

One-way ANOVA was used to analyze the data to evaluate the difference in mean values among more than two data groups at the statistically significant level of 0.05. Table 4.6 presents the findings of the analysis.

Table 4.6. The One-way ANOVA Results on the Difference in Age Affects Customer Behavior

| | | Sum of Squares | *df* | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assessment | Between Groups | 2.642 | 4 | 0.661 | 0.623 | 0.646 |
| | Within Groups | 418.718 | 395 | 1.060 | | |
| | Total | 421.360 | 399 | | | |
| Consideration | Between Groups | 2.546 | 4 | 0.637 | 0.672 | 0.612 |
| | Within Groups | 374.244 | 395 | 0.947 | | |
| | Total | 376.790 | 399 | | | |
| Decision | Between Groups | 1.775 | 4 | 0.444 | 0.449 | 0.773 |
| | Within Groups | 390.222 | 395 | 0.988 | | |
| | Total | 391.998 | 399 | | | |
| Post experience | Between Groups | 2.473 | 4 | 0.618 | 0.621 | 0.648 |
| | Within Groups | 393.505 | 395 | 0.996 | | |
| | Total | 395.978 | 399 | | | |
| Customer's behavior | Between Groups | 1.907 | 4 | 0.477 | 0.513 | 0.726 |
| | Within Groups | 366.991 | 395 | 0.929 | | |
| | Total | 368.898 | 399 | | | |

The one-way ANOVA analysis results in Table 4.6 indicate that the significant values of all variables are more than 0.05 for the age variable that affects consumer behaviors are 0.646, 0.612, 0.773, 0.648, and 0.726. It is therefore argued that the age difference has no statistically significant effect on the overview of consumer behaviors or any other relevant variables related to residential construction in Shandong, China.

**$H_{1C}$: The difference in marital status affects customers' behavior towards residential construction in Shandong, China, differently.**

One-way ANOVA was used to analyze the data to evaluate the difference in mean values among more than two data groups at the statistically significant level of 0.05. Table 4.7 presents the findings of the analysis.

Table 4.7. The One-way ANOVA Analysis Results on Marital Status Difference Affects Customer's Behaviors

| | | Sum of Squares | *df* | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assessment | Between Groups | 7.287 | 2 | 3.643 | 3.493 | 0.031* |
| | Within Groups | 414.073 | 397 | 1.043 | | |
| | Total | 421.360 | 399 | | | |
| Consideration | Between Groups | 4.576 | 2 | 2.288 | 2.440 | 0.088 |
| | Within Groups | 372.214 | 397 | 0.938 | | |
| | Total | 376.790 | 399 | | | |
| Decision | Between Groups | 5.395 | 2 | 2.697 | 2.770 | 0.064 |
| | Within Groups | 386.603 | 397 | 0.974 | | |
| | Total | 391.998 | 399 | | | |
| Post experience | Between Groups | 4.654 | 2 | 2.327 | 2.361 | 0.096 |
| | Within Groups | 391.324 | 397 | 0.986 | | |
| | Total | 395.977 | 399 | | | |
| Customer's behavior | Between Groups | 4.969 | 2 | 2.485 | 2.710 | 0.068 |
| | Within Groups | 363.928 | 397 | 0.917 | | |
| | Total | 368.898 | 399 | | | |

The one-way ANOVA analysis results in Table 4.7 indicate that the significant value of the marital status that affects consumer behaviors in the assessment variable is 0.031, which is less than 0.05. It is therefore concluded that the difference in marital status affects consumer behaviors in the assessment variable towards the residential construction in Shandong, China, differently. Consequently, a comparison of pairwise averages was conducted by using LSD and is demonstrated in Table 4.8.

Table 4.8. Comparison of Pairwise Averages Using LSD of the Difference of Marital Status Affects Customer's Behavior in Assessment

| | | Mean Difference (I-J) | | |
|---|---|---|---|---|
| Marital status | | Group J | | |
| Group (I) | | Single | Married | Divorced |
| | $\bar{X}$ | 3.45 | 3.57 | 3.21 |
| Single | 3.45 | - | -.124<br>(.280) | .243<br>(.094) |
| Married | 3.57 | | - | 0.367<br>(.009) * |
| Divorced | 3.21 | | | - |

* The mean difference is significant at the 0.05 level
*Depend Variable: Assessment*

Table 4.8 compares the pairwise average of the marital status group that affects the customer's behavior in assessment variable towards the residential construction in Shandong, China. The mean value of the married group is less than that of the divorced group, with a significant value of 0.009. It demonstrates that customers in the married group are more aware of the assessment than those in the divorced group.

**$H_{1d}$: The difference in educational background affects customers' behavior towards residential construction in Shandong, China, differently.**

One-way ANOVA was used to analyze the data to evaluate the difference in mean values among more than two data groups at the statistically significant level of 0.05. Table 4.9 presents the findings of the analysis.

Table 4.9. The One-way ANOVA Analysis Results on Educational Background Differences Affect Customer Behavior

| | | Sum of Squares | *df* | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assessment | Between Groups | 8.598 | 2 | 4.299 | 4.135 | 0.017* |
| | Within Groups | 412.762 | 397 | 1.040 | | |
| | Total | 421.360 | 399 | | | |
| Consideration | Between Groups | 7.330 | 2 | 3.665 | 3.938 | 0.020* |
| | Within Groups | 369.460 | 397 | 0.931 | | |
| | Total | 376.790 | 399 | | | |
| Decision | Between Groups | 6.161 | 2 | 3.081 | 3.170 | 0.043* |
| | Within Groups | 385.836 | 397 | 0.972 | | |
| | Total | 391.997 | 399 | | | |
| Post experience | Between Groups | 4.896 | 2 | 2.448 | 2.485 | 0.085 |
| | Within Groups | 391.082 | 397 | 0.985 | | |
| | Total | 395.977 | 399 | | | |
| Customer's behavior | Between Groups | 7.321 | 2 | 3.660 | 4.019 | 0.019* |
| | Within Groups | 361.577 | 397 | 0.911 | | |
| | Total | 368.897 | 399 | | | |

The one-way ANOVA analysis results in Table 4.9 indicate that the significant values of the educational background that affect consumer behaviors in the assessment, consideration, decision, and overview of customer's behavior factors are 0.017, 0.020, 0.043, and 0.019, respectively, which are less than 0.05. It is therefore concluded that the difference in educational background affects consumer behavior factors in the assessment, consideration, decision variables, and overview of customer behavior towards the residential construction in Shandong, China, differently. Consequently, a comparison analysis was conducted by using LSD and is demonstrated in Table 4.10-4.12.

Table 4.10. Comparison of Pairwise Averages Using LSD of the Difference of Educational Background Affects Customer's Behavior in *Assessment*

| | | Mean Difference (I-J) | | |
|---|---|---|---|---|
| Marital status | | Group J | | |
| Group I | | High School or lower | Bachelor's Degree | Master Degree or higher |
| | $\bar{X}$ | 3.28 | 3.42 | 3.69 |
| High School or lower | 3.28 | - | -.147 (.256) | -.408 (.006) * |
| Bachelor's Degree | 3.42 | | - | -.261 (.033) * |
| Master's Degree or higher | 3.69 | | | - |

* The mean difference is significant at the 0.05 level
*Depend Variable: Assessment*

Table 4.9 shows the pair-mean comparison of the educational background group that affects the customer's behavior in assessment variable towards the residential construction in Shandong, China. The mean of the Master's degree or higher group is greater than the high school or lower group and the Bachelor's degree group with a significant value of 0.006 and 0.033. It demonstrates that customers with an educational background in Master's Degree or higher are aware of the assessment more than the other groups.

Table 4.11. Comparison of Pairwise Averages Using LSD of the Difference of Educational Background Affects Customer's Behavior in *Consideration*

| | | Mean Difference (I-J) | | |
|---|---|---|---|---|
| Marital status | | Group J | | |
| Group I | | High School or lower | Bachelor's Degree | Master Degree or higher |
| | $\bar{X}$ | 3.34 | 3.56 | 3.73 |
| High School or lower | 3.34 | - | -.212 (.084) | -.389 (.005) * |
| Bachelor's Degree | 3.56 | | - | -.177 (.127) |
| Master's Degree or higher | 3.73 | | | - |

* The mean difference is significant at the 0.05 level
*Depend Variable: Consideration*

Table 4.10 shows the pair-mean comparison of the educational background group that affects the customer's behavior regarding the variable towards residential construction in Shandong, China. The mean of the Master's degree or higher group is greater than the high school or lower group with a significant value of 0.005. It demonstrates that customers with an educational background in Master's Degree or higher are aware of the consideration more than the other groups.

Table 4.12. Comparison of Pairwise Averages Using LSD of the Difference in Educational Background Affects Customer's Behavior in *Decision*

| Marital status | | Mean Difference (I-J) | | |
|---|---|---|---|---|
| Group I | | Group J | | |
| | | High School or lower | Bachelor's Degree | Master Degree or higher |
| | $\bar{X}$ | 3.32 | 3.48 | 3.68 |
| High School or lower | 3.32 | - | -.161 (.198) | -.354 (.013) * |
| Bachelor's Degree | 3.48 | | - | -.193 (.103) |
| Master's Degree or higher | 3.68 | | | - |

* The mean difference is significant at the 0.05 level
*Dependent Variable: Decision*

Table 4.12 compares pairwise averages of the educational background group that affect the customer's behavior in decision variables towards the residential construction in Shandong, China. The mean of the Master's degree or higher group is greater than the High School or Lower group with a significant value of 0.013. It demonstrates that customers with an educational background in Master's Degree or higher are aware of the decision more than those in high school or lower group.

Table 4.13. Comparison of Pairwise Averages Using LSD of the Difference of Educational Background Affects *Overview of Customer's Behavior*

| Educational Background | | Mean Difference (I-J) Group J | | |
|---|---|---|---|---|
| Group I | $\bar{X}$ | High School or lower 3.36 | Bachelor's Degree 3.54 | Master Degree or higher 3.74 |
| High School or lower | 3.36 | - | -.186 (.124) | -.387 (.005) * |
| Bachelor's Degree | 3.54 | | - | -.201 (.079) |
| Master's Degree or higher | 3.74 | | | - |

* The mean difference is significant at the 0.05 level
*Dependent variable: Overview of customer's behavior*

Table 4.13 compares pairwise averages of the educational background group that affects the overview of customers' behavior towards residential construction in Shandong, China. The mean of the Master's degree or higher group is greater than the High School or Lower group with a significant value of 0.005. It demonstrates that customers with a Master's Degree or higher know the customer's behavior more than the high school or lower group.

**$H_{1e}$: The difference in monthly income affects customers' behavior toward residential construction in Shandong, China, differently.**

One-way ANOVA was used to analyze the data to evaluate the difference in mean values among more than two data groups at the statistically significant level of 0.05. Table 4.14 presents the findings of the analysis.

Table 4.14. The One-way ANOVA Analysis Results on Monthly Income Difference Affect Customer Behavior

| | | Sum of Squares | *df* | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assessment | Between Groups | 4.018 | 3 | 1.339 | 1.271 | 0.284 |
| | Within Groups | 417.342 | 396 | 1.054 | | |
| | Total | 421.360 | 399 | | | |
| Consideration | Between Groups | 2.887 | 3 | 0.962 | 1.019 | 0.384 |
| | Within Groups | 373.903 | 396 | 0.944 | | |
| | Total | 376.790 | 399 | | | |
| Decision | Between Groups | 3.124 | 3 | 1.041 | 1.061 | 0.366 |
| | Within Groups | 388.873 | 396 | 0.992 | | |
| | Total | 391.997 | 399 | | | |
| Post experience | Between Groups | 3.071 | 3 | 1.024 | 1.032 | 0.378 |
| | Within Groups | 392.906 | 396 | 0.992 | | |
| | Total | 395.977 | 399 | | | |
| Customer's behavior | Between Groups | 3.079 | 3 | 1.026 | 1.111 | 0.344 |
| | Within Groups | 365.819 | 396 | 0.924 | | |
| | Total | 368.898 | 399 | | | |

The one-way ANOVA analysis results in Table 4.13 indicate that the significant values of all variables are more than 0.05, and the monthly income that affects consumer behaviors are 0.284, 0.384, 0.366, 0.378, and 0.344. It is therefore argued that the difference in monthly income has no statistically significant effect on the overview of consumer behaviors or any other relevant variables regarding residential construction in Shandong, China.

**$H_{1f}$: The difference in occupation affects customers' behavior towards residential construction in Shandong, China, differently.**

One-way ANOVA was used to analyze the data to evaluate the difference in mean values among more than two data groups at the statistically significant level of 0.05. Table 4.15 presents the findings of the analysis.

Table 4.15. The One-way ANOVA Analysis Results on Occupation Differences Affect Customer Behavior

| | | Sum of Squares | *df* | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assessment | Between Groups | 5.316 | 5 | 1.063 | 1.007 | 0.413 |
| | Within Groups | 416.044 | 394 | 1.056 | | |
| | Total | 421.360 | 399 | | | |
| Consideration | Between Groups | 7.301 | 5 | 1.460 | 1.557 | 0.171 |
| | Within Groups | 369.489 | 394 | 0.938 | | |
| | Total | 376.790 | 399 | | | |
| Decision | Between Groups | 7.357 | 5 | 1.471 | 1.507 | 0.186 |
| | Within Groups | 384.640 | 394 | 0.976 | | |
| | Total | 391.998 | 399 | | | |
| Post experience | Between Groups | 9.712 | 5 | 1.942 | 1.981 | 0.080 |
| | Within Groups | 386.265 | 394 | 0.980 | | |
| | Total | 395.978 | 399 | | | |
| Customer's behavior | Between Groups | 6.851 | 5 | 1.370 | 1.491 | 0.192 |
| | Within Groups | 362.047 | 394 | 0.919 | | |
| | Total | 368.897 | 399 | | | |

The one-way ANOVA analysis results in Table 4.15 indicate that the significant values of all variables are more than 0.05 for the occupations that affect consumer behaviors are 0.413, 0.171, 0.186, 0.080, and 0.192. It is therefore argued that the difference in occupation has no statistically significant effects on the overview of consumer behaviors or any other relevant variables towards the residential construction in Shandong, China.

**4.2.2 Factors Influence Customer's Behavior**

**$H_2$: Digital marketing influences customer's behavior towards residential construction in Shandong, China.**

This section's analysis used hypothesis 2, which comprises the five sub-hypotheses. Multiple linear regression was used to evaluate the influence of five independent variables, Website, Display Ad., SEM, Influencer, and Social Media, on five dependent variables*: Assessment, Consideration, Decision, Post Experience, and Customer Behavior*.

The forms of the estimating equations were as follows:

$\hat{Y}_T = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

$\hat{Y}_1 = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

$\hat{Y}_2 = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

$\hat{Y}_3 = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

$\hat{Y}_4 = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

Where dependent variables were:

$\hat{Y}_T$ = Customer Behavior

$\hat{Y}_1$ = Assessment

$\hat{Y}_2$ = Consideration

$\hat{Y}_3$ = Decision

$\hat{Y}_4$ = Post Experience

Independent variables were:

$X_1$ = Website

$X_2$ = Display Ads.

$X_3$ = SEM

$X_4$ = Influencer

$X_5$ = Social media

**$H_{2a}$: Digital marketing influences customer's behavior towards residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.16-4.17.

Table 4.16. Summarize the Model for Factors that Influence Customer Behavior

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 3 | 0.874[a] | 0.765 | 0.763 | 0.468 | 2.015 |

*Predictors: (Constant), SEM, Display Ad., Influencer*
*Dependent Variable: customer behavior*

From tables 4.16-4.17, the analysis results show that SEM, Display Ads, and Influencers have a positive relationship with customer behavior, with a multiple

correlation (R) of 0.847 and able to predict the value of the analysis equation equal to 76.30 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.17. The Multiple Linear Regression Coefficients for the Digital Marketing Factor Influence Customer Behaviors

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .130 | 0.116 | | 1.125 | .261 | | |
| SEM | .539 | 0.051 | .546 | 10.513 | .000 | .220 | 4.546 |
| Display Ad | .267 | 0.055 | .260 | 4.843 | .000 | .206 | 4.847 |
| Influencer | .173 | 0.054 | .117 | 3.216 | .001 | .447 | 2.239 |

*Dependent Variable: Customer Behavior*

Table 4.17 consists of three predictor variables, which are SEM, Display Ad, and Influencer; therefore, the prediction equation was developed as follows:

$$\hat{Y}_T = 0.130 + .539X_3 + .267X_2 + .173X_4$$
$$(.000^*) \quad (.000^*) \quad (.001^*)$$

The equation can be explained by the fact that the coefficient of customer behavior R square equals 0.874, and the independent variables are unrelated. The analysis results show that if SEM, Display Ads, and Influencers increase, customer behavior will be increased. However, SEM was the most influential variable, followed by Display Ad. and Influencer.

In summary, the analysis results indicate that SEM, Display Ads, and Influencers influence customer behavior with a significant value of 0.000, 0.000, and 0.001.

**$H_{2b}$: Digital marketing influences customer behavior in the assessment of residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.18-4.19.

Table 4.18. Summary of the Model for Factors that Influence Customer Behavior in the Assessment

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.890 | 0.793 | 0.791 | 0.470 | 1.905 |

*Predictors: (Constant), SEM, Display Ad., Influencer*
*Dependent Variable: Assessment*

From tables 4.18-4.19, the analysis results show that SEM, Display Ad, and Influencer have a positive relationship with customer's behavior in assessment, with a multiple correlation (R) of 0.890 and able to predict the value of the analysis equation equal to 79.10 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.19. The Multiple Linear Regression Coefficients for the Digital Marketing Factor Influence Customer Behavior in the Assessment

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | -.245 | 0.116 | | -2.109 | .036 | | |
| SEM | .570 | 0.051 | .540 | 11.071 | .000 | .220 | 4.546 |
| Display Ad | .322 | 0.055 | .293 | 5.822 | .000 | .206 | 4.847 |
| Influencer | .167 | 0.054 | .106 | 3.086 | .002 | .447 | 2.239 |

*Dependent Variable: Assessment*

Table 4.19 consists of three predictor variables, which are SEM, Display Ad, and Influencer; therefore, the prediction equation was developed as follows:

$$\hat{Y}_1 = -0.245 + .570X_3 + .322X_2 + .167X_4$$
$$(.000^*) \quad (.000^*) \quad (.002^*)$$

The equation can be explained by the fact that the coefficient of the customer's behavior in assessment R square equals 0.890, and the independent variables are unrelated. The analysis results show that if SEM, Display Ads, and Influencers increase, customer behavior in the assessment will be increased. However, SEM was the most influential variable, followed by Display Ad. and Influencer.

In summary, the analysis results indicate that SEM, display ads, and influencers influence customers' behavior in assessment with significant values of 0.000, 0.000, and 0.002.

**$H_{2c}$: Digital marketing influences customer behavior regarding residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.20-4.21.

Table 4.20. Summary of the Model for Factors that Influence Customer Behavior in Consideration

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.863 | 0.744 | 0.742 | 0.494 | 1.914 |

*Predictors: (Constant), SEM, Display Ad., Influencer*
*Dependent Variable: Consideration*

From tables 4.20-4.21, the analysis results show that SEM, Display Ad, and Influencer have a positive relationship with customer's behavior in consideration, with a multiple correlation (R) of 0.863 and able to predict the value of the analysis equation equal to 74.20 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.21. The Multiple Linear Regression Coefficients for the Digital Marketing Factor Influence Customer Behavior in Consideration

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .135 | 0.122 | | 1.110 | .268 | | |
| SEM | .420 | .054 | .421 | 7.7644 | .000 | .220 | 4.546 |
| Display Ad | .397 | 0.058 | .383 | 6.835 | .000 | .206 | 4.847 |
| Influencer | .162 | 0.057 | .109 | 2.859 | .004 | .447 | 2.239 |

*Dependent Variable: Consideration*

Table 4.21 consists of three predictor variables, which are SEM, Display Ad, and Influencer; therefore, the prediction equation was developed as follows:

$$\hat{Y}_2 = 0.135 + .420X_3 + .397X_2 + .162X_4$$
$$(.000^*) \quad (.000^*) \quad (.004^*)$$

The equation can be explained by the fact that the coefficient of the customer's behavior considering R square equals 0.863, and the independent variables are unrelated. The analysis results show that if SEM, Display Ads, and Influencers increase, customer behavior in consideration will be increased. However, SEM was the most influential variable, followed closely by Display Ad. and Influencer.

In summary, the analysis results indicate that SEM, Display Ads, and Influencers influence customer behavior consideration with significant values of 0.000, 0.000, and 0.004.

**$H_{2d}$: Digitalketing influences cost customer behavior in residential construction decisions**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.22-4.23.

Table 4.22. Summary of the Model for Factors that Influence Customer's Behavior in Decision

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.852 | 0.726 | 0.725 | 0.520 | 2.056 |

*Predictors: (Constant), SEM, Display Ad., Influencer*
*Dependent Variable: Decision*

From tables 4.22-4.23, the analysis results show that SEM, Display Ad, and Influencer have a positive relationship with customer's behavior in the decision, with multiple correlations (R) of 0.852 and able to predict the value of the analysis equation equal to 72.60 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.23. The Multiple Linear Regression Coefficients for the Digital Marketing Factor Influence Customer Behavior in Decision

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .253 | 0.104 | | 4.439 | .015 | | |
| SEM | .503 | .056 | .494 | 9.025 | .000 | .230 | 4.351 |
| Display Ad | .408 | 0.058 | .385 | 7.027 | .000 | .230 | 4.351 |

*Dependent Variable: Decision*

Table 4.23 consists of two predictor variables, which are SEM, Display Ad, and Influencer; therefore, the prediction equation was developed as follows:

$$\hat{Y}_3 = .253 + .503X_3 + .408X_2$$
$$(.000^*) \quad (.000^*)$$

The equation can be explained by the fact that the coefficient of the customer's behavior considering R square equals 0.852, and the independent variables are unrelated. The analysis shows customers' decision-making behavior will increase if

SEM and Display Ads increase. However, SEM was the most influential variable, followed by Display Ads.

In summary, the analysis results indicate that SEM and Display Ad influences customers' behavior in decisions with significant values of 0.000 and 0.000.

**$H_{2e}$: Digital marketing influences customer's behavior in post-experience towards the residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.24-4.25.

Table 4.24. Summary of the model for Factors that Influence Customer Behavior in Post-experience

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.828 | 0.685 | 0.683 | 0.561 | 2.043 |

*Predictors: (Constant), SEM, Display Ad., Influencer*
*Dependent Variable: Post Experience*

From tables 4.24-4.25, the analysis results show that SEM, Display Ad, and Influencer have a positive relationship with customer's behavior in post-experience, with a multiple correlation (R) of 0.828 and able to predict the value of the analysis equation equal to 68.50 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.25. The Multiple Linear Regression Coefficients for the Digital Marketing Factor Influence Customer Behavior in Post-experience

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .142 | 0.139 | | 1.025 | .306 | | |
| SEM | .539 | .061 | .527 | 8.765 | .000 | .220 | 4.546 |
| Display Ad | .253 | 0.066 | .238 | 3.830 | .000 | .206 | 4.847 |
| Influencer | .166 | .064 | .109 | 2.580 | .010 | .447 | 2.239 |

*Dependent Variable: Post Experience*

Table 4.25 consists of three predictor variables, which are SEM, Display Ad, and Influencer; therefore, the prediction equation was developed as follows:

$$\hat{Y}_4 = .142 + .539X_3 + .253X_2 + .166X_4$$
$$(.000^*) \quad (.000^*) \quad (.010^*)$$

The equation can be explained by the fact that the coefficient of customer's behavior in post-experience R square equals 0.828, and the independent variables are unrelated. The analysis results show that if SEM, Display Ads, and influencer increase, the customer's post-experience behavior will also increase. However, SEM was the most influential variable, followed by Display Ad. and Influencer.

In summary, the analysis results indicate that SEM, Display Ads, and Influencers influence customers' behavior in post experience with a significant value of 0.000, 0.000, and 0.010.

**$H_3$: Social factors influence customers' behavior towards residential construction in Shandong, China.**

This section's analysis uses hypothesis 3, which comprises the three sub-hypotheses. Multiple linear regression was used to evaluate the influence of three independent variables, *Family, Reference Group,* and *Roles and Status*, on five dependent variables: *Assessment, Consideration, Decision, Post Experience, and*

*Customer Behavior*.

The forms of the estimating equations are as follows:

$\hat{Y}_T = b_0 + b_1X_1 + b_2X_2 + b_3X_3$

$\hat{Y}_1 = b_0 + b_1X_1 + b_2X_2 + b_3X_3$

$\hat{Y}_2 = b_0 + b_1X_1 + b_2X_2 + b_3X_3$

$\hat{Y}_3 = b_0 + b_1X_1 + b_2X_2 + b_3X_3$

$\hat{Y}_4 = b_0 + b_1X_1 + b_2X_2 + b_3X_3$

Where dependent variables are:

$\hat{Y}_T$ = Customer Behavior

$\hat{Y}_1$ = Assessment

$\hat{Y}_2$ = Consideration

$\hat{Y}_3$ = Decision

$\hat{Y}_4$ = Post Experience

Independent variables are:

$X_1$ = Family

$X_2$ = Reference Group

$X_3$ = Roles and Status

**$H_{3a}$: The social factors influence customer behavior towards residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.26-4.27.

Table 4.26. Summary of the Model for Social Factors that Influence Customer Behavior

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.876 | 0.767 | 0.766 | 0.466 | 2.070 |

*Predictors: (Constant), Role and Status, Family, Reference Group*
*Dependent Variable: Customer Behaviour*

From tables 4.26-4.27, the analysis results show that Family, Reference Group, and Role and Status have a positive relationship with customer behavior, with a multiple correlation (R) of 0.876 and able to predict the value of the analysis equation

equal to 76.70 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.27. The Multiple Linear Regression Coefficients for the Social Factor Influence Customer's Behavior in Post-experience

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .333 | .106 | | 3.126 | .002 | | |
| Family | .030 | .050 | .022 | .611 | .541 | .452 | 2.215 |
| Reference Group | .352 | .055 | .339 | 6.401 | .001 | .209 | 4.782 |
| Role and Status | .525 | .049 | .547 | 10.743 | .001 | .227 | 4.414 |

*Dependent Variable: Customer Behavior*

Table 4.27 consists of three predictor variables, which are Family, Reference Group, and Role and Status; therefore, the prediction equation was developed as follows:

$$\hat{Y}_T = .333 + .030X_1 + .352X_2 + .525X_3$$
$$(.541) \quad (.001^*) \quad (.001^*)$$

The equation can be explained by the fact that the coefficient of customer behavior R square equals 0.876, and the independent variables are unrelated. The analysis results show that if *family, reference group, and role and status* increase, *customer behavior* will be increased. However, *role and status* were the most influential variables, followed by *reference group* and *family*.

In summary, the analysis results indicate that social factors in terms of *family, reference group, role, and status influence customer behavior,* with a significant value of 0.541, 0.000, and 0.000.

**$H_{3b}$: Social factors influence customers' behavior in the assessment of residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the

forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.28-4.29.

Table 4.28. Summary of the Model for Social Factors Influence Customer Behavior in the Assessment

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.908 | 0.824 | 0.823 | 0.432 | 1.973 |

*Predictors: (Constant), Role and Status, Family, Reference Group*
*Dependent Variable: Assessment*

From tables 4.28-4.29, the analysis results show that Family, Reference Group, and Role and Status have a positive relationship with customer behavior in assessment, with a multiple correlation (R) of 0.908 and the ability to predict the value of the analysis equation equal to 82.40 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.29. The Multiple Linear Regression Coefficients for the Social Factor Influence Customer Behavior in the Assessment

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | -.083 | .099 | | -.841 | .401 | | |
| Family | .047 | .046 | .032 | 1.024 | .307 | .452 | 2.215 |
| Reference Group | .303 | .051 | .274 | 5.949 | .001 | .209 | 4.782 |
| Role and Status | .651 | .045 | .635 | 14.350 | .001 | .227 | 4.414 |

*Dependent Variable: Assessment*

Table 4.29 consists of three predictor variables, which are *family, reference group, and role and status*; therefore, the prediction equation was developed as follows:

$$\hat{Y}_1 = -.083 + .047X_1 + .303X_2 + .651X_3$$
$$(.307) \quad (.001^*) \quad (.001^*$$

The equation can be explained by the fact that the coefficient of customer behavior in assessment R square equals 0.908, and the independent variables are unrelated. The analysis results show that if *family, reference group, role, and status increase, customer behavior in assessment will increase*. However, *role and status* were the most influential variables, followed by *family* and *reference group*.

In summary, the analysis results indicate that social factors in terms of *family, reference group, and role and status* influence *customer behavior* with a significant value of .307, .001, and .001.

**$H_{3c}$: Social factors influence customers' behavior when considering residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.30-4.31.

Table 4.30. Summary of the Model for Social Factors Influence Customer Behavior in Consideration

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.863 | 0.744 | 0.742 | 0.493 | 1.943 |

*Predictors: (Constant), Role and Status, Family, Reference Group*
*Dependent Variable: Consideration*

From tables 4.30-4.31, the analysis results show that Family, Reference Group, and Role and Status have a positive relationship with customer's behavior in consideration, with a multiple correlation (R) of 0.863 and able to predict the value of the analysis equation equal to 74.20 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.31. The Multiple Linear Regression Coefficients for the Social Factor Influences Customer's Behaviors in Consideration

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .251 | .113 | | 2.222 | .027 | | |
| Family | .100 | 052 | .072 | 1.902 | .058 | .452 | 2.215 |
| Reference Group | .411 | .058 | .392 | 7.060 | .001 | .209 | 4.782 |
| Role and Status | .429 | .052 | .442 | 8.283 | .001 | .227 | 4.414 |

*Dependent Variable: Consideration*

Table 4.31 consists of three predictor variables, which are Family, Reference Group, and Role and Status; therefore, the prediction equation was developed as follows:

$$\hat{Y}_2 = .251 + .100X_1 + .411X_2 + .429X_3$$
$$(.058) \quad (.001^*) \quad (.001^*)$$

The equation can be explained by the fact that the coefficient of the customer's behavior considering R square equals 0.863, and the independent variables are unrelated. The analysis results show that if *family, reference group, and role and status* increase, *customer behavior* in consideration will be increased. However, *role and status* were the most influential variables, followed by *reference group* and *family.*

In summary, the analysis results indicate that *family, reference group, role, and status influence customer behavior,* with a significant value of .058, .001, and .001.

**$H_{3d}$: Social factors influence customer behavior in decisions regarding residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.32-4.33.

Table 4.32. Summary of the Model for Social Factors Influence Customer Behavior in Decision

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.865 | 0.749 | 0.747 | 0.499 | 2.062 |

*Predictors: (Constant), Role and Status, Family, Reference Group*
*Dependent Variable: Decision*

From tables 4.32-4.33, the analysis results show that Family, Reference Group, and Role and Status have a positive relationship with customer's behavior in consideration, with a multiple correlation (R) of 0.865 and able to predict the value of the analysis equation equal to 74.90 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.33. The Multiple Linear Regression Coefficients for the Social Factor Influence Customer Behavior in Decision

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .204 | .114 | | 1.786 | .075 | | |
| Family | .046 | .053 | .033 | .874 | .383 | .452 | 2.215 |
| Reference Group | .352 | .059 | .330 | 5.984 | .001 | .209 | 4.782 |
| Role and Status | .531 | .052 | .537 | 10.157 | .001 | .227 | 4.414 |

*Dependent Variable: Decision*

Table 4.33 consists of three predictor variables, which are *family, reference group, and role and status*; therefore, the prediction equation was developed as follows:

$$\hat{Y}_3 = .204 + .046X_1 + .352X_2 + .531X_3$$
$$(.383) \quad (.001^*) \quad (.001^*)$$

The equation can be explained by the fact that the coefficient of the customer's behavior in decision R square equals 0.865, and the independent variables are unrelated. The analysis results show customer decision behavior will increase if family, reference group, role, and status *increase*. However, *role and status* were the most influential variables, followed by *reference group* and *family*.

In summary, the analysis results indicate that social factors regarding *family, reference group, and role and status* influence customer's behavior in decisions with significant values of .383, .001, and .001.

**$H_{3e}$: Social factors influence the customer's behavior in the post-experience stage regarding residential construction in Shandong, China.**

Multiple linear regression is used to analyze the data and develop the forecasting equation at a confidence level of 95%. The analysis results are shown in Tables 4.34-4.35.

Table 4.34. Summary of the Model for Social Factors that Influence Customer Behavior in Post-experience

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| | 0.830 | .688 | .686 | .558 | 2.026 |

*Predictors: (Constant), Role and Status, Family, Reference Group*
*Dependent Variable: Post Experience*

From tables 4.34-4.35, the analysis results show that Family, Reference Group, and Role and Status have a positive relationship with customer behavior in post-experience, with multiple correlations (R) of 0.830 and able to predict the value of the analysis equation equal to 68.80 percent with statistical significance at the 0.05 level. All tolerance values are not less than 0.2, indicating no correlation among the independent variables.

Table 4.35. The Multiple Linear Regression Coefficients for the Social Factor Influence Customer Behavior in Post-experience

| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | .282 | .128 | | 2.212 | .028 | | |
| Family | .055 | .059 | .039 | .928 | .354 | .452 | 2.215 |
| Reference Group | .402 | .066 | .374 | 6.099 | .001 | .209 | 4.782 |
| Role and Status | .450 | .059 | .453 | 7.677 | .001 | .227 | 4.414 |

*Dependent Variable: Post Experience*

Table 4.35 consists of three predictor variables, which are Family, Reference Group, and Role and Status; therefore, the prediction equation was developed as follows:

$$\hat{Y}_4 = .282 + .055X_1 + .402X_2 + .450X_3$$
$$(.354) \quad (.001^*) \quad (.001^*)$$

The equation can be explained by the fact that the coefficient of customer's behavior in post-experience R square equals 0.830, and the independent variables are unrelated. The analysis results show that the customer's post-experience behavior will also increase if the family, reference group, role, and status increase. However, *role and status* were the most influential variables, followed by *reference group* and *family.*

In summary, the analysis results indicate that *family, reference group, and role and status* influence *customer behavior* in post-experience with a significant value of .354, .001, and .001.

## 4.3 Summary

Table 4.36 shows the summary results of the differences in demographic factors that affect customers' behavior toward residential construction in Shandong, China.

Table 4.36. Analysis Results on the Effects of Demographic Factors

| Demographic Factors | Purchase Decision | Analysis Results |
|---|---|---|
| Gender | - | t(398) = 1.132, p = 0.258 |
| Age | - | F(4,395) = 0.513, p = 0.726 |
| Marital Status | - | F(2,397) = 2.710, p = 0.068 |
| Educational Background | √ | F(2,397) = 4.019, p = 0.019* |
| Monthly Income | - | F(3,396) = 1.111, p = 0.344 |
| Occupation | - | F(5,394) = 0.992, p = 0.422 |

- *No different effects at the statistically significant of 0.05*
- √ *having different effects at the statistically significant of 0.05*

According to the results in Table 4.36, the differences in gender, age, marital status, monthly income, and occupation have no significant effect on customer's behavior towards residential construction in Shandong, China. However, the difference in educational background significantly affects customers' behaviors toward residential construction in Shandong, China. In this study, the statistical significance was 0.05.

Table 4.37 shows the summary results of the influence of digital marketing and social factors on customer's behavior towards residential construction in Shandong, China.

Table 4.37. Summary of Digital Marketing and Social Factors Influencing Customer Behavior

| Hypotheses | Forecasting Equations |
|---|---|
| H2: Digital marketing influences customer's behavior towards residential construction in Shandong, China.<br>$\hat{Y}_T$ = Customer behavior<br>$\hat{Y}_1$ = Assessment<br>$\hat{Y}_2$ = Consideration<br>$\hat{Y}_3$ = Decision<br>$\hat{Y}_4$ = Post Experience<br><br>$X_3$ = SEM<br>$X_2$ = Display Ads.<br>$X_4$ = Influencer | $\hat{Y}_T = 0.130 + .539X_3 + .267X_2 + .173X_4$ (.000*) (.000*) (.001*)<br>$\hat{Y}_1 = -0.245 + .570X_3 + .322X_2 + .167X_4$ (.000*) (.000*) (.002*)<br>$\hat{Y}_2 = 0.135 + .420X_3 + .397X_2 + .162X_4$ (.000*) (.000*) (.004*)<br>$\hat{Y}_3 = .253 + .503X_3 + .408X_2$ (.000*) (.000*)<br>$\hat{Y}_4 = .142 + .539X_3 + .253X_2 + .166X_4$ (.000*) (.000*) (.010*) |

Table 4.37. Summary of Digital Marketing and Social Factors Influencing Customer Behavior (continued)

| Hypotheses | Forecasting Equations |
|---|---|
| H3: The social factors influence customer's behavior towards residential construction in Shandong, China<br>$\hat{Y}_T$ = Customer behavior<br>$\hat{Y}_1$ = Assessment<br>$\hat{Y}_2$ = Consideration<br>$\hat{Y}_3$ = Decision<br>$\hat{Y}_4$ = Post Experience<br><br>$X_1$ = Family<br>$X_2$ = Reference Group<br>$X_3$ = Roles and Status | $\hat{Y}_T = 0.333 + 0.030X_1 + 0.352X_2 + 0.525X_3$<br>(.541) (.000*) (.000*)<br><br>$\hat{Y}_1 = -.083 + .047X_1 + .303X_2 + .651X_3$<br>(.307) (.001*) (.001*)<br><br>$\hat{Y}_2 = .251 + .100X_1 + .411X_2 + .429X_3$<br>(.058) (.001*) (.001*)<br><br>$\hat{Y}_3 = .204 + .046X_1 + .352X_2 + .531X_3$<br>(.383) (.001*) (.001*)<br><br>$\hat{Y}_4 = .282 + .055X_1 + .402X_2 + .450X_3$<br>(.354) (.001*) (.001*) |

The results indicate that *SEM, display ads., and influencers* significantly influenced the overview of customers' behavior and all stages involved, except at the decision stage, where *SEM* had no influence. For social factors, *family, reference group,* and *roles and status* influenced the overview of the customer's behavior and all stages involved; however, the *family* influenced with no statistical significance at the significant level of 0.05.

# CHAPTER V
# CONCLUSION AND RECOMMENDATIONS

This chapter provides a summary of the results, discussions, and recommendations. Firstly, this section presents the research conclusion and discusses the findings and limitations. Finally, suggestions for future research and recommendations based on the findings are provided.

## 5.1 Conclusion

This research examined the influence of digital marketing and social factors on customer's behavior toward residential construction in Shandong, China. The research framework was developed from digital marketing (Deighton & Kornfeld, 2019; Evans et al., 2020; Cho et al., 2020), social factors (Castronovo and Huang, 2012), and consumer behavior (Kotler &Keller, 2016; Solomon, 2019; Schiffman 2019). The research framework consists of three independent variables, including demographic factors (*gender, age, marital status, monthly income, and occupation*), digital marketing (*website, display advertisements, search engine marketing (SEM), influencer marketing, and social media*), and social factors (family, reference group, and roles and status). The dependent variable is customer behavior (*awareness, consideration, decision,* and *post-experience*).

The population in this research were customers or expected to be customers of the residential construction business in Shandong Province, China. The sample was based on the Yamane table at a confidence level of 95%**,** and the sample size was 400. Research is quantitative research.

The research tool is a questionnaire divided into 4 parts: demographics, digital marketing, social factors, and customer behavior in decision-making. The questions have multiple choice and 5-point Likert scales. The content validity of the questionnaire was based on the Index of Congruence (IOC) for each question from 3 experts in the field with the criteria of 0.5. If any question is lower than the specified criteria, it is considered not to follow the objectives by amending or deleting it. The questionnaire that passed the IOC test was used to collect data from 30 samples for the

reliability test using Cronbach's alpha coefficient (α) with values of 0.891- 0.959. The data analysis statistics were descriptive statistics, including frequency, percentage, mean, and standard deviation; inferential statistics, including an independent sample t-test, a one-way ANOVA, post hoc analysis using LSD, and multiple linear regression.

The analysis results demonstrate that most customers expecting to be the customers of the residential construction business in Shandong province, China, are females aged 36-45, married, with Bachelor's degrees, with a monthly income of 10,000-20,000 yuan, and state-owned employees. The opinion level on the overview of digital marketing in media channels towards residential construction, China Construction Sixth Engineering Bureau, was neutral. Regarding other variables related to digital marketing, the highest ranking was *search engine marketing (SEM),* and the lowest ranking was *website.* The opinion level on the overview of social factors towards residential construction, China Construction Sixth Engineering Bureau, was at the agreed level. Regarding other variables related to social factors, the highest ranking was *reference group,* and the lowest ranking was *family*. The opinion level on the overview of customers' behavior in decision-making towards residential construction, China Construction Sixth Engineering Bureau, was at the agreed level with the highest ranking of the consideration stage, followed closely by the decision stage.

The analysis showed that the significant difference in educational background affects customers' decision-making behavior differently. SEM, display ads, and influencers significantly influence customers' decision-making for digital marketing. According to the China Construction Sixth Sixth Engineering Bureau, social factors, reference groups, roles, and status significantly influence customers' decision-making in residential construction.

## 5.2 Discussion

The results of the study on demographic, digital marketing, and social factors influencing consumer behavior can be discussed as follows:

1. Demographic Factor

Demographic factors are crucial in dividing the market, especially in the residential construction market, due to differences in demands from various personal

profiles, needs, and habits. Home purchasing decisions involve a long-term commitment to both financial and environmental aspects. It requires a careful review of various concerns from trusted sources of information. However, several studies from various regions and nations report on the significance of demographic factors affecting customers' house-purchasing behavior (Forsythe, 2016; Lei, 2017; Tan & Goh, 2018; Kabir et al., 2023). This study found that the differences in demographic factors, including gender, age, marital status, monthly income, and occupation, had no significant effect on the customer's behavior, which complies with Ariyawansa (2007). However, in detail consideration, this study found that the differences in marital status affect customers' decision-making behavior in the *assessment* stage, which can be elaborated by the fact that married status was the largest sample group (45.3%) in this study, providing a high volume of reviewed information to support *assessment* stage. The considerations may include house spacing designs, environment, facilities, eco-friendly designs with high-tech conveniences, and posh amenities. The marketer should consider providing rich information to support purchasing decision-making. Residential construction companies can target distinct market segments using gender-specific, age-group, or occupation-group preferences in marketing tactics and product offers. Homes that are more technologically advanced, have more adaptable floor plans, have a green touch, and incorporate eco-friendly elements may appeal more to younger generations like Millennials and Generation Z (Kumar et al., 2024).

On the other hand, the Baby Boomer generation may value accessibility features, a one-story design, and being close to healthcare facilities and other amenities. In addition, companies should tailor pricing strategies, financing choices, and home designs to different customer segments' financial capabilities and lifestyle preferences by segmenting. Housing price level and growth decrease the household’s enthusiasm for purchasing a new house (Dong et al., 2022). Understanding the different needs of each preferred group will help them better focus their marketing to suit the customers’ demands.

The significant finding of this research was that differences in educational background significantly affect customers' behavior in the decision-making process of house purchasing. Customer’s behavior in the home construction business is heavily influenced by educational background. Customers with a high educational background

may be pickier about the house details, such as eco-friendly designs with high-tech conveniences and posh amenities. Customers with lesser educational backgrounds may value practicality, affordability, and community facilities more. However, perceived behavioral control and willingness to pay were found to have insignificant effects on customers' intention to purchase eco-friendly houses (Chanda et al., 2023). Companies should consider pricing strategies, financing choices, and home designs to match customers' financial capabilities and lifestyle preferences by segmenting the target market based on demographic criteria.

2. Digital Marketing Factor

The study of digital marketing concerning purchase decisions has been conducted in a variety of scenarios, products, and nations (Cherukur & Priya, 2020; Liem, 2023; Solikhah et al., 2024) due to the nature of digital marketing in cost-effectiveness and a tremendous commercial impact on the business. Bala and Verma (2018) also argued that knowing which social media sites a company's target market utilizes is another key factor in guaranteeing that online marketing will be successful. This study demonstrated that search engine marketing (SEM), display ads, and influencers significantly influenced customers' decision-making when purchasing houses. Residential construction in Shandong province, China, can use these results in marketing channels, including SEM and display ads. Influencer promote their marketing strategies, increase market share, boost brand visibility, create leads, and drive conversion. Although SEM encompasses paid search advertising, advertisers must bid on keywords to display ads in search engine results pages and the importance of keywords, relevance, and ads. Quality is still driving clicks and conversations (Cho et al., 2020) and is still shining and able to reach the target group in a wide area. However, the results from this study demonstrated that SEM does not influence customers' behavior in the decision stage. It is another point of view that might be useful in considering business strategies for a residential construction company.

Digital marketing, including SEM, display ads, and influencers, can significantly benefit residential construction companies in Shandong, China, by engaging with their target audience, showcasing their work, and building brand awareness. Companies may make their business more relatable and build relationships with potential customers by making eye-catching visual content, posting updates on

ongoing projects, and interacting with followers through comments and messages. From the results of this study, using the influencer will benefit the business by expediting customers' purchasing decisions. A marketing influencer is an individual who has a significant following and creates authentic content, mostly video content and live stream, that resonates with the audience to drive engagement and earn trust. Due to easy access to various information online, wrong content can quickly destroy individuals' or businesses' reputations. A positive reputation built through interpersonal interactions and positive recommendations is the key to supporting business continuity (Bareweng et al., 2024). Building trust with potential customers in residential construction in Shandong province, China, is essential, and influencers can be one of the good choices for digital marketing.

3. Social Factors

Customer behavior in Shandong, China's home construction business, is heavily impacted by social factors. Social factors, such as peer recommendations and community perceptions, significantly impact customer preferences, buying decisions, and brand perceptions. A business's reliability, trustworthiness, and reputation can be significantly affected by positive reviews, testimonials, and recommendations from friends, family, and colleagues. Residential construction companies in Shandong, China, can use social proof to entice new clients and promote brand loyalty by cultivating positive relationships with existing ones and encouraging them to share their experiences with others.

This study found that social factors, including *family*, *reference groups*, and *roles and status*, influenced the overview of customer behavior and all stages involved, including *assessment, consideration, decision, and post-experience stage*. However, the family's influence is not statistically significant.

## 5.3 Recommendation

**Due to advanced technology and the ability to find information for the residential construction business**, it is easy and convenient for everyone. Providing rich and intense information will help support the long-term continuity of the business. Clever usage of digital marketing is necessary to promote business through online

platforms such as SEM, display ads, and influencers.

**For future research**, longitudinal studies could better understand customer behavior patterns in China's home construction sector. In order to evaluate the efficacy of marketing strategies and initiatives, researchers can detect long-term trends by monitoring changes in customer preferences, purchasing patterns, and market trends over time. Longitudinal research would be ideal for studying the interplay and evolution of demographic factors, digital marketing initiatives, and social effects.

To gain a more in-depth knowledge of customer attitudes, motivations, and decision-making processes in the residential construction sector of Shandong, China, qualitative research methods like focus groups, interviews, and ethnographic studies can complement quantitative analysis, which offers valuable statistical insights. Compared to quantitative surveys, qualitative research allows researchers to delve deeper into the motivations behind customer behavior, potentially revealing previously unknown insights. Researchers can learn more about the complex elements affecting homebuyers' decisions, contentment, and brand impressions by talking to experts in the field, homebuyers themselves, and other interested parties.

Customer behavior varies among regions, provinces, or cities in China. It would be helpful to perform cross-cultural studies to understand better these variances and the cultural influences on housing preferences and purchasing behavior. Researchers can learn more about the cultural norms, social expectations, and market dynamics that impact Shandong's housing decisions and market trends by comparing customer attitudes, beliefs, and behaviors with those in other parts of China or worldwide. Companies could benefit from cross-cultural research by learning more about the specific elements influencing customer behavior in Shandong, China, and then adapting their marketing tactics and product lines to appeal to a broader range of customers.

Researchers in China's Shandong province could find niches in the home building industry by applying sophisticated market segmentation methods like cluster or latent class analysis. Segmenting the market according to demographics, psychographics, or behavioral patterns allows researchers to find untapped niches with specific wants, needs, and buying habits. Companies can gain a competitive edge and deeper market penetration by understanding the market's heterogeneity and using that

knowledge to create segment-specific marketing strategies, products, and customer experiences.

The home construction industry in Shandong, China, is ripe for digital marketing optimization. Therefore, studying how different strategies and techniques affect customer behavior in this space would be wise. Digital marketing channels, campaigns, and engagement methods can be evaluated for their impact on customer engagement and conversion results by examining key performance indicators (KPIs) such as website traffic, conversion rates, and return on investment (ROI). Another way to find the best digital marketing techniques and get the most out of one's marketing budget is to run A/B tests and multivariate analysis.

Our understanding of the social dynamics at work in housing decisions could be enhanced if we investigated how social factors, including community involvement, social proof, and peer recommendations, impact customer behavior in the residential building industry of Shandong, China. The social networks of homebuyers, industry experts, and community stakeholders can be mapped out using social network analysis tools. These techniques reveal the interpersonal linkages, communication channels, and patterns of information flow within these networks. Companies can benefit from social impacts to increase brand recognition, trust, and customer loyalty in the region if they have a good grasp of information dispersion, social contagion effects, and network architecture.

To keep ahead of market changes and take advantage of new opportunities, enterprises in the residential construction industry of Shandong, China, should investigate emerging trends and technologies influencing customer behavior. Sustainable building techniques, modular construction methods, innovative house technology, and VR/AR experiences during home buying are potential areas for further research. Researchers can help businesses in the highly competitive home construction industry innovate and stand out by keeping an eye on technology developments, market disruptors, and shifting customer tastes.

It would be fascinating to study how green building methods and sustainable design elements affect customer behavior in the residential construction industry of Shandong, China, in light of the increasing focus on sustainability and environmental responsibility. Studies may examine how people feel about eco-friendly

houses, what appliances they like, and how much they want to spend on green certifications like LEED or China's Green Building Evaluation Label. Marketers, product designers, and policymakers can benefit from a better understanding of the factors driving demand for sustainable housing and how customers view environmental responsibility.

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# APPENDICES

## APPENDIX A

## QUESTIONNAIRE

### IMPACT OF DIGITAL MARKETING AND SOCIAL FACTORS ON CUSTOMER'S BEHAVIOR TOWARDS THE RESIDENTIAL CONSTRUCTION IN SHANDONG, CHINA

Dear respondents,

I am conducting a study to understand the impact of digital marketing and social factors on customers' behavior toward residential construction in Shandong province. I cordially welcome you to take this survey. Your participation in this survey will contribute significantly to understanding the current status of digital marketing and social factors. Please answer the questions honestly based on your circumstances and viewpoint. The questionnaire should take approximately 15-20 minutes to complete. No personal data was collected in this questionnaire; it is intended only for academic research. Your responses will be treated in absolute confidence.

I greatly appreciate your valuable time and insights. Thank you for participating in this study.

Sincerely,

Mr. Jun ZHANG
Master of Management Science Student
Institute of Science Innovation and Culture, Rajamangala University of Technology Krungthep, 10120 Bangkok, Thailand

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**PARTI: Demographic Information**

Please answer the questions by checking the appropriate box.

1. What is your gender?

□ 1. Male □ 2. Female

2. What is your age?

□ 20-25 years old □ 26-35 years old

□ 36-45 years old □ 46-55 years old

□ 56 years old or older

3. What is your marital status?

□ 1. Single □ 2. Married □ 3. Divorced

4. What is your educational background?

□ 1. High School or lower □ 2. Bachelor's degree

□ 3. Master's degree or higher

5. What is your monthly income?

□ 1. Lower than 10,000-yuan □ 2. 10,000-20,000 yuan

□ 3. 20,000 - 30,000 yuan □ 4. Higher than 30,000 yuan

6. What is your occupation?

□ 1. Government employee □ 2. Private company employee

□ 3. State-own employee □ 4. Freelancer

□ 5. Unemployed

**PART II: Digital Marketing**

Please read the following questions carefully and tick √ in the boxes according to your opinion on digital marketing in media channels towards residential construction, China Construction Sixth Engineering Bureau.

1= Completely disagree; 2= Disagree; 3 = Neutral, 4 = Agree; 5 = Completely agree.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Website** | | | | | |
| 1. The residential construction website is categorized for ease of use and support finding information. | | | | | |
| 2. Information found on the residential construction website is clear, accurate, reliable, and constantly updated. | | | | | |
| 3. Publicizing content and images on the residential construction website is appropriate and engaging. | | | | | |
| **Display Ads**. | **1** | **2** | **3** | **4** | **5** |
| 4. Display advertising on online media channels can raise brand awareness in the residential construction sector. | | | | | |
| 5. Display advertising about residential construction on online media channels is valuable and helps people find information quickly. | | | | | |
| 6. Customized "Display Ads." on online media channels can reach properly targeted customers for residential construction. | | | | | |

| **Search Engine Marketing (SEM)** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| 7. Using keywords about residential construction helps to find relevant information quickly and easily. | | | | | |
| 8. The ability to compare features, prices, and reviews in the context of residential construction makes purchasing decision-making easier. | | | | | |
| 9. At the proper time, offering product promotions, such as free decoration, furniture, and parking space, can expedite purchasing decision-making. | | | | | |
| **Influencer Marketing** | **1** | **2** | **3** | **4** | **5** |
| 10. Exclusive offers or discounts promoted by influencers influence my purchasing decisions. | | | | | |
| 11. Seeing influencer marketing use or endorse products involve accommodation makes me more likely to trust those products. | | | | | |
| 12. Influencer marketing provides valuable insights and information about accommodation and can help me make informed purchasing decisions. | | | | | |
| **Social Media** | **1** | **2** | **3** | **4** | **5** |
| 13. Social media interactions with brands involve accommodation, making me feel more connected and engaged with them. | | | | | |
| 14. Social media provide the ability to share content from experienced customers with residential construction. | | | | | |
| 15. Social media provide interactive communication, which benefits from sharing updated information and promotion concerning residential construction. | | | | | |

**Part III: Social Factors**

Please read the following questions carefully and tick √ in the boxes according to your opinion on social factors towards residential construction, China Construction Sixth Engineering Bureau.

1= Completely disagree; 2= Disagree; 3 = Neutral, 4 = Agree; 5=completely agree.

| | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **Family** | | | | | |
| 16. I always discuss getting a new house with my family. | | | | | |
| 17. Family opinion is critical when choosing a residential area. | | | | | |
| 18. My family and I always search for residential construction company information and discuss it together. | | | | | |

| **Reference groups such as communities, clubs, or organizations** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| 19. Information from the communities influences decision-making about buying a house in the communities. | | | | | |
| 20. The clubhouse inside the residential project is a center of various activities. | | | | | |
| 21. I tend to believe information about residential construction companies from involved organizations such as the National Housing Authority. | | | | | |
| 22. I trust recommendations and reviews from online communities when considering a purchase. | | | | | |
| **Roles and status** | **1** | **2** | **3** | **4** | **5** |
| 23. I consider how my purchases reflect my social identity and peer status. | | | | | |
| 24. I feel pressured to adhere to social norms and expectations when purchasing. | | | | | |
| 25. Technology, sustainability, and home design trends might affect consumers' buying decisions. | | | | | |

**Part IV: Customers' behavior**

Please read the following questions carefully and tick the boxes according to your opinion on customers' behavior towards residential construction, China Construction Sixth Engineering Bureau.

1= Completely disagree; 2= Disagree; 3 = Unsure, 4 = Agree; 5=completely agree.

| | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **Assessment** | | | | | |
| 26. I was aware of a need for a new house. | | | | | |
| 27. I prefer to gather all the information about residential construction in advance. | | | | | |
| 28. When I encounter problems, I actively seek information about potential solutions. | | | | | |
| **Consideration** | **1** | **2** | **3** | **4** | **5** |
| 29. When the decision to buy a house occurs, I will identify all options that comply with the limitation. | | | | | |
| 30. I always weigh the pros and cons of each solution option. | | | | | |
| 31. I determine the best choice that aligns with my needs, preferences, and budget. | | | | | |
| **Decision** | **1** | **2** | **3** | **4** | **5** |
| 32. I consider discounts or promotions offered by businesses before making a decision. | | | | | |
| 33. I seriously consider warranties that are offered by businesses before making a decision. | | | | | |
| 34. I consider residential construction profiles before making a decision. | | | | | |

| **Post experience** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| 35. I assess my satisfaction with purchasing based on my expectations and experience. | | | | | |
| 36. Customers' negative experiences identify areas of improvement in the residential construction business. | | | | | |
| 37. Customers' negative experiences can be used to support targeted marketing strategies. | | | | | |

# BIOGRAPHY

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|---|---|
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