Digital Platforms and Real Estate Industry during COVID-19

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Real estate is one of the industries that have been most affected by COVID-19. The purpose of this study is to investigate the factors that affect customer use of New Zealand's real estate digital platforms. Trade Me and realestate.co.nz are the two most popular real estate digital platforms with the most significant number of homebuyers in New Zealand. This study uses the reviews on the two platforms from 2018 to 2021. There are a total of 1349 customer reviews on the two platforms, which represent the total population. A sample of 113 reviews from the realestate.co.nz platform and 113 reviews from the Trade Me platform are used for analysis. The findings show that perceived ease of use and usefulness, and information and system quality are the four main factors that affect the willingness of customers to use real estate digital platforms. After the spread of the pandemic, the impact of these factors on customer adoption of the platforms has been reduced. Therefore, the results of this study will be helpful in formulating and developing a digital marketing strategy for the New Zealand real estate industry in the post-pandemic era.

Keywords

Digital Marketing platform, Trade Me, realestate.co.nz, Real estate industry, *COVID*-19, New Zealand.

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1.   Introduction

The real estate industry is one of the industries that has been most affected by COVID-19. Potential buyers are not able to visit properties as before. COVID-19 has forced reluctant potential home buyers into the digital market, compelling them to become familiar with digital platforms, and this trend will continue in the post-COVID era; therefore, the impact of COVID-19 on the real estate industry has formed a powerful stimulus for the development of digital marketing (Giordani and Rullani, 2020).

New Zealand has implemented lockdown measures of several weeks. The lockdown requires people to stay at home 24/7 for several weeks, and residents can only go out for limited and essential purposes. With most economic activity suspended across the country, the boundaries among work, life and leisure have become distorted as never before (Carson et al., 2020). The negative impact on the economy has become an enormous social debt. The real estate sector has made significant contributions to social employment, lending, investment, retail and industries (Li et al., 2019). Lockdown policies affect the regular trading of real estate. Social distancing reduces the access of buyers to properties, which is an essential part of the housing transaction process, so both buyers and sellers have had to rethink their plans. Therefore, the importance of a more meaningful, high-quality information and digital marketing platform for the real estate industry has increased (Sulaiman et al., 2020). The real estate industry is an information-intensive industry that greatly relies on the collection and distribution of information. At the same time, properties are regarded as high-value and high-risk products. Buyers need a lot of information for their final decision before buying. Before COVID-19, consumers would physically investigate housing before purchasing a house. The emergence of digital technology has created more opportunities for buyers to view the target house in advance (Richardson and Zumpano, 2012).

The real estate industry plays a significant role in the economy of New Zealand and has made enormous contributions to social employment, economic development, gross domestic product (GDP) and taxation. Therefore, improving the production efficiency of the industry brings many benefits to the whole country. According to Delmendo (2022), the real estate industry in New Zealand has benefited from the continuous improvement of productivity since 2012. Every 1% increase in labour productivity increases the GDP by NZD139 million[1]. Hence, all of this means more profit opportunities and technology development for the industry. For consumers, it means receiving higher quality housing, reducing the costs of both sellers and buyers, and challenging the current situation of the real estate industry (Aytekin and Demírlí, 2017; Keillor, 2007).

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[1] NZD 139 million = USD 82 million

As in other industries, the emergence of information and digital technology has disrupted the mode of operation of New Zealand real estate. Yet the consistency of information has also improved the efficiency of the entire process. Information and digital technology has also changed most of the value propositions of the real estate market. Internet use positively affects the search efficiency and intensity (Bereşewicz, 2015; Cherif and Grant, 2014; Koch and Maeir, 2015; Ren, 2015; Richardson and Zumpano, 2012; Seiler et al., 2012; Zhu and Yang, 2020). Real estate merchants and agents use digital devices to take photos and videos of real estate so that buyers can access real estate information in the form of a virtual tour through the Internet without being present in person (Brenner, 2017; Felli et al., 2018; Goodwin et al., 2014; Oh et al., 2018; Ozacar et al., 2017; Yu et al., 2021). Virtual tours are perceived to be useful by both agents and buyers when lockdown policies inhibit face-to-face inspection of buyers and impose travel restrictions (Ullah and Sepasgozar, 2020). They are vital for customer satisfaction, and help buyers to quickly determine their preferred real estate; therefore, the sales price is indirectly affected (Fowler et al., 2018; Ullah and Siddiqui, 2017). Although technology can offer so many opportunities, the real estate industry does not easily accept changes. The main reason is that real estate belongs to a relatively large asset class in what is primarily a private transaction market. Therefore, in the transaction process, sellers are not willing to bear any risks.

The competitiveness of the real estate industry is rising (Babatunde and Ajayi, 2018). Internet marketing has brought about two significant effects: reducing the search costs of buyers and the information asymmetry between the buyer and the seller, thus promoting the adoption of new marketing strategies (Kaur, 2019). Internet use accelerates transaction time, reduces transaction costs, leads to a decrease in commission, and has transformed the real estate market to one that is consumer driven. The efficiency of information sharing is significantly improved. Buyers can search specific houses in their price range and area scope so that they become information-acquired buyers and make more informed decisions (Yuan et al., 2013; Dumpe, 2015). Buyers search the Internet first before visiting the house on the ground. The Internet may reduce search costs but not search time (Genesove and Han, 2012). Digital marketing provides owners with more choices to sell their house, and the selling price is higher than those of the homes sold by agents, but the time and rate of sales are shorter and slower respectively than when sold through agents. The increase in the degree of information sharing has a positive impact on housing sales possibility, listing time and transaction price (Beracha and Wintoki, 2013; Saull et al., 2020).

The sustainable development of digital marketing has been widely discussed in all walks of life all over the world. The industry has also identified digitization as one of the major trends that will change social business in the near and long term (Tihinen et al., 2016). Digitization or digital transformation refers to the shift in digital technology in the lives of people and businesses. Digitization is digital or computer technology used by an organization, department or country (Parviainen et al., 2017; Henriette et al., 2015). Even before COVID-19, the

development of the Internet and e-commerce was rapid (Jones and Livingstone, 2018). However, the pandemic has brought a new normal of demand for online commerce. This demand has created unprecedented opportunities for digital and information technology (Barnes, 2020). The pace of digital technology development will completely change the field of communication and commerce. According to statistics from the International Data Corporation (a provider of information on global trends), the global expenditure for digital transformation reached NZD1.25 trillion[2] in 2019, and the gross domestic product (GDP) rose by 1.7 percent in the June 2022 quarter (StatsNZ, 2022) which indicates that the estimated GDP increase in 2021 has been achieved. It is also said that global production and sales realized through digital means will account for more than 60% of the worldwide GDP (Geodezie, 2020). Digital marketing is changing and shaping industry structure and customer behaviour and becoming more complex, dynamic, and global. Many industries regard smart digital marketing as a component of sustainable marketing because smart marketing plays an essential role in understanding customer behaviour and needs and in effective communication (Chaffey and Ellis-Chadwick, 2019). Smart digital marketing can bring customers an immersive experience and help them to make smarter decisions (Royle and Laing, 2014). Under the influence of COVID-19 and lockdowns, more and more organizations are starting to advocate for the importance of business sustainability. Saura et al. (2020) point out that highly sustainable marketing systems represent the future of business. Therefore, enterprises should explore new business models based on the Internet. To achieve a sustainable business world of automated information processing and service delivery, adaptive governance and digitalization should be used as sustainability strategies (Linkov et al., 2018). Developing a digital marketing development strategy helps real estate organizations to understand digital transformation by linking the behaviour and attitudes of users with use of digital technology to indicators that point to the digital development strategy of companies (Ambrosini and Bowman, 2009; Cabiddu et al., 2014; Järvinen, and Karjaluoto, 2015; Low et al., 2020).

Real estate digital marketing platforms have become one of the leading marketing channels in New Zealand and a significant component of the marketing strategy of sellers. Among the online real estate digital platforms in New Zealand, Trade Me and realestate.co.nz are the two most frequently used and therefore representative platforms. Trade Me is the most trusted and popular online shopping platform in New Zealand. It is an online market for mass consumption of commodities and the preferred platform for real estate consumers, sellers, and agents. Trade Me provides a unique trading experience for the real estate industry in New Zealand. According to Trade Me (2018), the number of active users of their property related platform has reached 685,753, and the daily click volume is close to 2.6 million. The platform with the longest history in New Zealand is realestate.co.nz. A group of real estate enthusiasts founded this website in 1996. The site can help sellers and buyers to quickly

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[2] 1.25 trillion NZD = 740 billion USD

purchase or rent commercial offices or residential and suburban properties. To date, the platform has 1.1 million users and has a high degree of cooperation among all real estate businesses and agents (realestate.co.nz, 2021).

This study aims to explore the factors that influence potential buyers in New Zealand to use a digital marketing platform to buy property under the influence of COVID-19. The more specific objectives are:
• To explore the factors that influence buyers to use digital marketing platforms to find a house in New Zealand
• To investigate the changes in the factors during the pandemic event
• To identify the best digital marketing platform in the New Zealand real estate industry

The following are the research questions for this study:

RQ1: What factors influence the use of a digital marketing platform by consumers to find a house in New Zealand?
RQ2: How did these factors change due to the pandemic event?
RQ3: Which digital marketing platform has the best performance in the New Zealand real estate industry during the pandemic?

This research has important implications for the real estate industry in New Zealand in promoting digital marketing technology in the post-pandemic era. To date, the adoption of digital technology in New Zealand is still superficial. The impact of the pandemic has accelerated the demand of real estate stakeholders for digital technology. Few studies have focused on the factors that affect the adoption of digital technology by customers and investigated how these factors have changed after the spread of the COVID-19 virus. Therefore, this study explores the factors that influence the adoption of New Zealand digital marketing platforms, has practical significance and makes a theoretical contribution to New Zealand real estate industry practitioners and academic circles.

So far, there are two gaps in the research field of digital marketing applications for real estate. There is a dearth of research on first, the factors that affect consumer use of a digital marketing platform for real estate, and secondly, under the continuous influence of COVID-19, whether these factors which affect platform choice have changed and the digital platform meets their purchase demand. Therefore, there is the opportunity to conduct research to re-examine whether digital platforms can support real estate transactions and meet the needs of customers during COVID-19. There is also the need to identify the changes in factors that consumers consider when choosing a digital marketing platform. This research will contribute to the sustainable development of the real estate industry in the post-pandemic era.

2.   Methods and Materials

2.1   Research Framework and Theory

The technology acceptance model (TAM) is considered to be an information system theory, which also explains how digital users accept and are willing to use new technologies in their work. TAM has now developed into a critical analytical model to predict human acceptance and rejection of new technologies (Marangunić and Granić, 2015). Thus, the model contributes to the overall research background for this study.

The information systems success model (ISSM) is another framework used in this study because in the process of real estate transactions, the primary role of a digital marketing platform is to provide consumers with all of the information about the target property to help them make pre-purchasing decisions. In other words, the digital marketing platform plays the role of an information system in transactions. The ISSM is an information systems theory, which describes the success of any system based on six qualities, including those that pertain to the quality of service, information and systems. These characteristics will ultimately affect the intention of a customer to use the service and his/her user satisfaction (Delone and McLean, 2003). Therefore, the ISSM is a practical SISQual analysis approach for this study, which divides all of the information system success factors into three qualities—Service (S), Information (I), and System Qualities (SQual), and makes an essential contribution to this research study.

In terms of data analysis, this study integrates the five factors mentioned in the two models: perceived ease of use, usefulness, information quality, service quality, and system quality. It is a conceptual model suitable for this study, which provides an analytical method; see Figure 1.

Figure 1   Conceptual model used in this research work
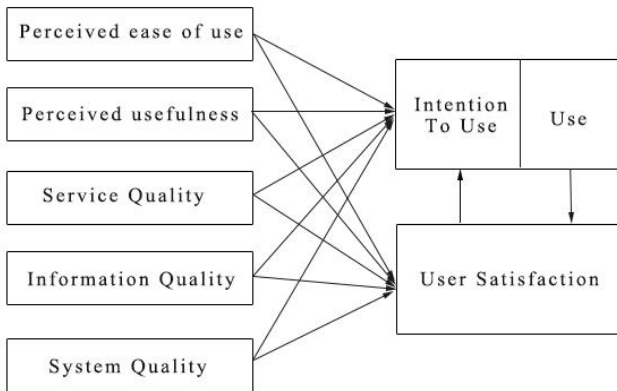
2.2   Data Source

Online customer reviews have become a secondary data source for studying industry problems and customer purchasing behaviours (Gencnayebi and Abran, 2005). User comments expose real feelings and opinions when using an application, which not only provide a valuable reference for other buyers but also data support for product developers and industry researchers (Guzman and Maalej, 2014; Finkelstein et al., 2014; Vasa et al., 2012). The Apple Store and Android Apps have become the leading sources for analyzing secondary data sources from various digital applications. These two sources are used in this study.

2.3   Sample design

The target group of this study are buyers who have reviewed one of the two digital marketing platforms. Trade Me and realestate.co.nz are the two most popular real estate digital platforms with the highest number of homebuyers in New Zealand. Since we want to investigate the changes in customer reviews of these digital platforms under the influence of COVID-19, this study selects the reviews of the two platforms from 2018 to the time of writing (2021) as the research object. Customer reviews from 2018 to 2019 cover the period prior to the COVID-19 pandemic and 2020 to 2021 after the start of the COVID-19 pandemic. The number of customer reviews of the two platforms from 2018 to 2021 is 1349.

The sample size is significant for obtaining accurate information and conducting successful research. To choose the right sample size, we need to consider factors that will affect the study, including confidence interval, confidence and standard deviation. According to the particularities of the research problem, the values of each factor are set as follows: 90% confidence

level, 5% margin of error and 50% standard deviation to represent the opinions of the entire user group. Therefore, in this study, 226 reviews are selected to represent the opinions of the entire user group.

Table 1   Sample Size

Population category	Target population	Margin of error	Confidence level	Standard deviation	Sample size
Customer reviews	1349	5%	90%	0.5	226

In this study, a total of 113 reviews of realestate.co.nz and 113 reviews of Trade Me are used as the samples for analysis.

Table 2   Data collection

Digital Platform	Number of reviews
Trade Me	113
realestate.co.nz	113
Total	226

2.4   Data analysis

This study uses manual efforts and text analysis software to mine and analyze the data to understand the real meaning behind the customer reviews. The manual efforts help to code and understand all of the customer reviews, while the software is low in cost and highly efficient   (Biroscak et al., 2017). Thomas (2014) points out that unstructured information is different from data. The text information in hundreds of documents is difficult to search and analyze systematically, and these documents may be significant for the research of many knowledge fields. Therefore, content analysis technology can efficiently carry out work that would require many hours of work by scholars. In this case, Leximancer is an automatic content analysis and concept mapping software that has been used in many different research fields. Leximancer can find and extract concepts related to the thesaurus from text data, classify them based on the thesaurus, finally encode them into text, and eventually generate a concept map. Leximancer can help researchers to extract and analyze views on the identified features (Lemon and Hayes, 2020).

A theme is a set of codes with similar features (Maguire and Delahunt, 2017;

Smith, 2015). Themes are a group of concepts and contain many different viewpoints, while a code can only reflect one aspect of a thought, so they are more extensive than codes (Braun and Clarke, 2006; 2013)

The TAM and ISSM provide the analytical framework of this study; thus, five factors in the model form the themes in this study (see Appendix for details). Also, customer satisfaction as a theme established in this study is used to determine and distinguish the contents of the feedback of customers for the digital platform. The reviews of customers are divided into positive and negative categories.

3.   Findings

3.1   Total number of positive and negative reviews

Table 3 shows the total number of reviews and the number of positive and negative reviews of the two platforms.

Table 3   Total positive and negative reviews on Trade Me and realestate.co.nz

	Trade Me		realestate.co.nz	
	Frequency	Percentage	Frequency	Percentage
Positive	96	85%	27	24%
Negative	17	15%	86	76%
Total	113	100%	113	100%

Table 3 shows the total number and composition of the customer reviews. Among the customer reviews on Trade Me, there are 96 positive reviews or 85% of the reviews. There are 17 negative reviews or 15% of the reviews. There are 27 positive customer reviews on realestate.co.nz , which account for 24% of the total number of reviews. The number of negative reviews is 86, which account for 76% of the total reviews. These numbers form the basis of the analysis in this study.

3.2   Positive feedback of the factors that influence intention to use a digital platform

After an investigation of the positive feedback of the customers, the data reveal that perceived ease of use, usefulness, and system, information and service quality all affect the intention of customers to use a platform of varying degrees. These results are shown in Table 4, in which the percentage of perceived ease of use and usefulness, and system and information quality are the main factors that influence the intention of customers to use a digital platform.

All data are presented in the table as percentages, and the results are ranked from highest to lowest in Table 4. Among the positive feedback, perceived ease of use is the most frequently cited factor by the respondents, which accounts for 59% of the positive feedback. System quality is mentioned in 59% of the positive feedback. Additionally, 58% of the positive feedback mentioned usefulness and information quality (54%). These four factors are all mentioned in more than half of the positive reviews; therefore, they are considered major factors. Also, only 7% of the positive feedback mentioned service quality, which represents a small number of customers who mention and care about this factor.

Table 4   Results of investigation on positive feedback

Factor	Frequency	Percentage	Ranking
Perceived ease of use	73	59%	1st
System Quality	72	59%	2nd
Perceived Usefulness	71	58%	3rd
Information Quality	67	54%	4th
Service Quality	9	7%	5th

3.3   Negative feedback about factors that influence intention to use digital platform

After investigating all of the negative feedback, the data reveal that perceived ease of use, usefulness, and system, information and service quality all affect intention to use a platform to varying degrees. Table 5 shows that perceived ease of use, and system and information quality are the main factors that influence the intention of customers to use a digital platform.

Table 5   Results of negative feedback

Factor	Frequency	Percentage	Ranking
System Quality	92	89%	1st
Perceived Ease of Use	83	81%	2nd
Information Quality	65	63%	3rd
Service Quality	33	32%	4th
Perceived Usefulness	31	30%	5th

Among the negative feedback, the factors most mentioned by the customers are system quality, which is 89% of the total, and 81% of the negative feedback mention perceived ease of use and information quality (63%). The results of these three factors are all mentioned by more than half of the positive

comments, so they are regarded as the main factors that influence non-adoption of a digital platform. Additionally, 32% of the negative feedback mentioned service quality and 30%, perceived usefulness.

3.4 Comparison between positive and negative feedback of real estate digital platforms

Figure 2 shows that perceived usefulness and ease of use, and system and information quality are the four main factors that influence the adoption of a digital platform as the customers have given more positive feedback than negative feedback.

The results of the service quality show that 33% of the users mentioned this factor in a negative evaluation, but only 7% of the users mentioned service quality as positive feedback. Therefore, the data show that users only contact service personnel when they are not satisfied with the operations of the digital marketing platform. They do not have any issue with service quality when they start to use the digital platform. Therefore, this factor has little influence on the intention of customers to use a platform.

Figure 2   Comparison between positive and negative feedback
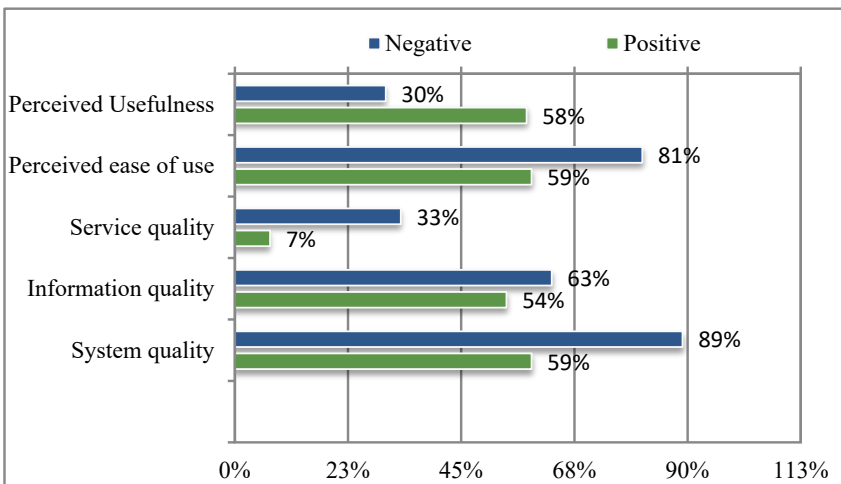
3.5 Customer feedback before and after spread of COVID-19

The number of customer reviews before and after the spread of COVID-19 and the proportion of positive and negative reviews are given below. Table 6 shows that before the spread of COVID-19 , the total number of comments is 140, of which 71 are positive feedback, or 51% of the comments while 69 are negative,

or 49% of the comments. After the spread of COVID-19, the total number of reviews is 86 with 54 that are positive or 63% of the comments, while there are 32 negative reviews which account for 37% of the comments. These results are the basis for the next step of the statistical analysis.

Table 6   Customer feedback before and after spread of COVID-19

	Before Spread of COVID-19		After Spread of COVID-19	
	Frequency	Percentage	Frequency	Percentage
Positive	69	49%	54	63%
Negative	71	51%	32	37%
Total	**140**	**100%**	**86**	**100%**

3.6   Customer feedback on factors that influence use of real estate digital platforms before spread of COVID-19

Table 7 shows customer feedback on these five influencing factors before the spread of COVID-19. The factors mentioned in feedback from 111 customers are system quality, which accounts for 79% of the feedback, and perceived ease of use and information quality are mentioned in 70% and 62% of the feedback respectively. More than half of the customers chose these three factors, so they are considered to be the main factors that affect customer intentions to use a digital platform before the spread of COVID-19. Additionally, 45% of the negative feedback mentioned perceived usefulness and 22% service quality.

Table 7   Customer feedback on five factors before spread of COVID-19

Factor	Frequency	Percentage	Ranking
System Quality	111	79%	1st
Perceived Ease of Use	98	70%	2nd
Information Quality	87	62%	3rd
Perceived Usefulness	63	45%	4th
Service Quality	31	22%	5th

3.7   Customer feedback on influencing factors for using real estate digital platforms after spread of COVID-19

Table 8 shows the results of customer feedback on the five influencing factors after the spread of COVID-19. Perceived ease of use is mentioned by 67% of the customers while 62% mentioned system quality and 52%, information

quality. These three factors comprise the majority so they are considered the main factors that would discourage customers from using digital platforms after the spread of COVID-19. Additionally, 45% of the negative feedback mentioned perceived usefulness and 13%, service quality.

Table 8   Customer feedback on five factors after spread of COVID-19

Factor	Frequency	Percentage	Ranking
Perceived Ease of Use	58	67%	1st
System Quality	53	62%	2nd
Information Quality	45	52%	3rd
Perceived Usefulness	39	45%	4th
Service Quality	11	13%	5th

3.8   Comparison between customer reviews on influencing factors for using real estate digital platforms before and after spread of COVID-19

Table 9 shows that positive feedback and satisfaction both increase after the spread of COVID-19. The data show that satisfaction before the pandemic is 49%, and after the pandemic, is increased to 63%. Tables 13 and 14 compare the results of the five factors before and after the emergence of COVID-19. After the spread of COVID-19, the five factors that impact use intention show a downward trend.

The results in Figure 3 show the percentage decrease of the five factors and the new trend of development of the two digital marketing platforms after the spread of COVID-19. The most apparent decline is that the impact of service quality is reduced by 40%. This is followed by the effects of the system quality which are reduced by 22%. The influence of information quality is reduced by 16%. However, the influencing factors of perceived usefulness and ease of use have not changed, among which the effect of perceived ease of use is only decreased by 4%. In contrast, the impact of perceived usefulness has not changed. Therefore, the data show that the effects of lockdown impact digital marketing in the real estate industry of New Zealand after the spread of COVID-19. The impact of the five factors in the study on customer intention or satisfaction are declining, and customer satisfaction is increasing.

Table 9   Comparison of results before and after spread of COVID-19

Factor	Before COVID-19	After COVID-19	(+/- %)
Perceived Ease of Use	70%	67%	-4%
System Quality	79%	62%	-22%
Information Quality	62%	52%	-16%
Perceived Usefulness	45%	45%	0%
Service Quality	22%	13%	-40%

Figure 3 Comparison of results before and after spread of COVID-19
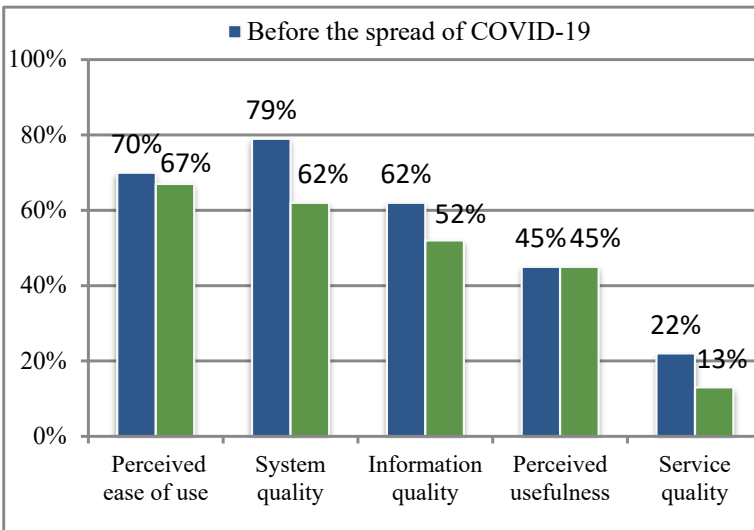
3.9   Digital platform in real estate with best performance in New Zealand after the spread of COVID-19.

The statistics indicated that the number of reviews about realestate.co.nz after the spread of COVID-19 is 47, of which 23 are positive, thus accounting for 49% of the sample, and 24 are negative, thus accounting for 51% of the sample. The total number of Trade Me reviews after the spread of COVID-19 is 39: there are 31 positive reviews thus accounting for 79% of the sample, and 8 negative evaluations, thus accounting for 21% of the sample. The results provide the basis for the statistical analysis and comparison of the two platforms.

Table 10 Information of two platforms after spread of COVID-19

	Realestate.co.nz		Trade Me	
	Frequency	Percentage	Frequency	Percentage
Positive	23	49%	31	79%
Negative	24	51%	8	21%
Total	**47**	**100%**	**39**	**100%**

Table 10 shows that there are more positive comments for Trade Me than realestate.co.nz. Customer satisfaction with Trade Me is 79%, while realestate.co.nz is 49%.   The following will compare the results of the two platforms based on the five factors.

Table 11 Positive results for realestate.co.nz

Factors	Positive Feedback	Percentage
Perceived Ease of Use	8	17%
Perceived Usefulness	11	23%
System Quality	8	17%
Information Quality	10	21%
Service Quality	0	0%

Table 11 shows the number of positive comments and percentage of positive feedback from customers of realestate.co.nz for the five influencing factors. The data show that eight customers provide positive reviews on perceived ease of use, or 17% of the sample. Eleven customers provide positive feedback on perceived usefulness, or 23% of the sample. Eight customers give a positive evaluation of the system quality, or 17% of the sample. Ten positive comments on information quality account for 21% of the sample. However, there is no positive feedback on service quality.

Table 12 is the statistical result for Trade Me. Sixteen customers give positive feedback on perceived ease of use, or 41% of the respondents. Seventeen customers give positive feedback on perceived usefulness, or 44%.   There are fifteen positive reviews for information quality, or 38%. Nine positive comments of system quality account for 23% of the sample. There are no positive reviews for service quality.

**Table 12   Positive feedback for Trade Me**

Factors	Positive Feedback	Percentage
Perceived Ease of Use	16	41%
Perceived Usefulness	17	44%
System Quality	9	23%
Information Quality	15	38%
Service Quality	0	0%

A comparison of the results of the two platforms in Table 13 and Figure 4 shows that among the four main factors, there are more positive comments about Trade Me than realestate.co.nz. The data show that the perceived ease of use and usefulness, and system and information quality for Trade Me is 141% and 91%, and 35% and 81%, respectively, which are all higher than those for realestate.co.nz.

Table 13   Comparison of results for realestate.co.nz and Trade Me

Factor	realestate.co.nz	Trade Me	(+/- %)
Perceived Ease of Use	17%	41%	+141%
Perceived Usefulness	23%	44%	+91%
System Quality	17%	23%	+35%
Information Quality	21%	38%	+81%
Service Quality	0%	0%	N/A

According to Figure 4, the overall customer satisfaction with Trade Me is higher than realestate.co.nz. This is also true for other aspects, including perceived ease of use, usefulness, and system and information quality. This means that after the spread of COVID-19, customers are able to receive more help and high-quality information when using Trade Me to buy real estate as opposed to realestate.co.nz. The process has been more accessible, and the functions and updates of the system excel those of realestate.co.nz. Therefore, the overall performance of the Trade Me platform is more in line with the needs of customers. It is also the optimal digital marketing platform after the outbreak of COVID-19 in comparison to realestate.co.nz.

Figure 4 Comparison of results between realestate.co.nz and Trade Me (plot)
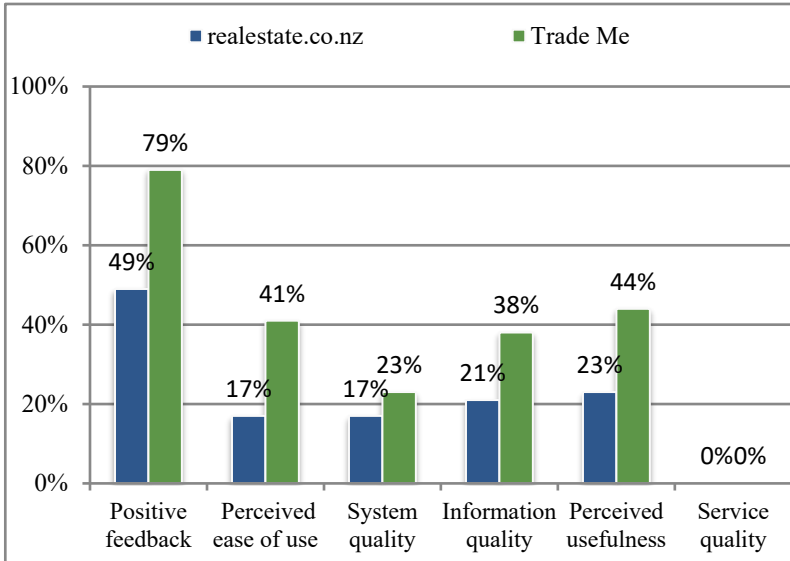
4.   Discussion

4.1   Main factors that influence use of digital marketing platforms for real estate

To answer the research question, "What factors influence the use of a digital marketing platform by consumers to find a house in New Zealand?" this study investigates the positive and negative feedback of customers. The results show that perceived usefulness and ease of use, and system and information quality are the four main factors. The results of perceived ease of use account for 59% and 81% of the positive and negative reviews, respectively. The results of perceived usefulness account for 58% and 30%, respectively. The results of information quality account for 54% and 63%, respectively. The results of system quality account for 89% and 59%, respectively. Therefore, according to the definition of each factor in the analysis model, these four factors impact customer satisfaction or customer attitude towards digital platform technology. In terms of service quality, the proportion of positive and negative evaluations is 33% and 7%, respectively, so the results show that customers do not have high expectations of the service quality of digital marketing platforms, so it does not constitute the main factor that affects the use of a digital platform.

Tuzovic (2009) states that consumers regard the landscape of virtual services as part of the quality of real estate services. Property photos and virtual tours are the most critical contributors to their overall satisfaction. Visual information

will not affect the sales price but can reduce the marketing time. The sales price of real estate sold through MLS and provided with virtual tour information is higher. A virtual tour can improve the probability of selling a house (Allen et al., 2015; Benefield et al., 2012; Fowler et al., 2018) and virtual information technology will become the new normal of real estate marketing (Allen et al., 2015; Larceneux et al., 2018).

4.2   Changes of effect factors during the pandemic

To answer the research question, "How did these factors change due to the pandemic event?" this study investigates five factors before and after the spread of COVID-19. The results show that 49% of the customers gave positive feedback about the two platforms before the spread of COVID-19; however, customer satisfaction rose to 63% after the spread of COVID-19.

The results show that impacts of service, information, and system quality have a downward trend. The most apparent decline is the influence of service quality which is reduced by 40%, and the second is that the effect of system quality is reduced by 22%. Information quality is reduced by 16%. However, the effect of perceived ease of use is only reduced by 4%. In contrast, the impact of perceived usefulness has not changed. Therefore, the data show that the lockdown positively impacts digital marketing after the COVID-19 outbreak in New Zealand. The increase in customer satisfaction is attributed to how the customer perceives the value of service, system, and information quality on the platform. However, two equally important factors that affect the use of the digital platforms, perceived ease of use and perceived usefulness, does not show changes after the spread of COVID-19. Therefore, leaders in the real estate industry should look to enhancing the usability and usefulness of digital technologies when formulating digital marketing strategies to increase the receptivity of customers towards the technology.

4.3   Optimal digital marketing platform for real estate after spread of COVID-19

To answer the research question "Which digital marketing platform has the best performance in the New Zealand real estate industry during the pandemic?, this study investigates the positive feedback from customers after the COVID-19 outbreak. The results show that Trade Me is the most popular digital marketing platform for real estate in New Zealand after the spread of COVID-19. Customers are more satisfied with Trade Me than realestate.co.nz. There are more positive reviews on perceived ease of use by 141%, perceived usefulness by 91%, system quality by 23%, and information quality by 38%. Therefore, the data show that Trade Me can better meet the needs of customers during the pandemic. They are more likely to benefit from the Trade Me digital platform and services for house purchases. Therefore, real estate industry practitioners should refer to the characteristics of the Trade Me platform in designing digital marketing products and businesses in order to align with the needs of potential

buyers in the future.

5.   Conclusion

In summary, 226 customer reviews are collected from the Trade Me and realestate.co.nz online sites and a statistical analysis of the customer reviews of these two digital marketing platforms is done. The results show that perceived usefulness, ease of use, and information and system quality are the main factors that influence use of a digital platform. Service quality is the least important factor based on both positive and negative customer feedback, so it is not a primary influencing factor. After comparing the data of the various factors before and after the spread of COVID-19, overall customer satisfaction is found to have increased, while the importance of information, service, and system quality have declined. This trend shows that the spread of COVID-19 has a promoting effect on the use of digital marketing technology.

In practice, sellers and digital marketing platforms can determine more appropriate digital marketing strategies to attract buyers. Consumers will be able to learn about and find more suitable channels and digital marketing platforms to purchase houses. As a result, the development of digital marketing platforms in the New Zealand real estate industry can be further enhanced. At the same time, this paves the way for the sustainable development of the real estate industry in New Zealand for the post pandemic era.

Finally, by comparing the two digital platforms, Trade Me is found to be a better digital marketing platform after the outbreak of COVID-19. Customers are more satisfied with this platform, and more highly regard its usefulness, ease of use, and information and system quality than realestate.co.nz. This means that Trade Me can better meet the needs of customers in the purchase process and is more in line with the trend of digital marketing developments in the real estate industry of New Zealand in the post-COVID-19 era.

Although this paper contributes to the use of digital marketing platforms for real estate during COVID-19, there are still some limitations. First, the online review of data from the two platforms obtained from the Apple Store and Google Apps in this study does not include the demographic information of the reviewers. Therefore, researchers can conduct research in the future by examining the opinion of the home buyers about the use of digital platforms through primary data to obtain first-hand information for a more in-depth investigation. Finally, the online comments collected in this study include only Trade Me and realestate.co.nz, and not other platforms. Therefore, the sample size and sample quality are limited. The future recommendation for other studies is to include other digital platforms to expand the scope.

In terms of academic contribution, this study fills a literature gap in the field of use of digital technology, provides the theoretical basis for New Zealand real estate practitioners to formulate and implement digital marketing strategies in practice, and promotes the sustainable development of the real estate industry and digital marketing in the post pandemic era.

In the future, research work in this area can use a survey method of primary data to expand the diversity of the sample, that is, to include different user groups to investigate their opinions and suggestions for digital marketing platforms so as to support the further development of digital marketing technology in the real estate industry. Moreover, researchers can combine the SISQual of digital marketing platforms and core concepts of TAM to further explore the impact of these factors on the decision making process of purchases. Furthermore, during the pandemic lockdown period, various real estate companies and marketing platforms have launched a number of online services to support buyers and sellers to complete transactions without contact, including FaceTime house viewing, online auctions and contract signing. Future work could explore and study these different technologies to identify suitable tools for the advancement of digital marketing and provide a more theoretical basis for the sustainable development of the real estate industry after COVID-19.

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