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The impact of digital technology on changing consumer behaviours with special reference to the home furnishing sector in Singapore

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The impact of digital technology has altered consumers' choices for decades, which has fostered large amounts of eCommerce, including in the home furnishing business. Furthermore, due to the Coronavirus disease (COVID-19) pandemic, consumer behaviours have changed, with consumer satisfaction influencing purchasing initiatives and decision-making online. There is insufficient research on online purchasing behaviours in the home furnishing sector in the context of Singapore. The advent of digitisation and the emergence of marketing through digital platforms compared to offline marketing have changed purchasing behaviours regarding home furnishing in Singapore. Research designs and methods, including realism philosophies, deductive approaches, a quantitative research method, a cross-sectional analysis in a descriptive research design and a questionnaire research instrument, were applied to the current study. The findings show a critical trend: consumers prefer an omnichannel approach when purchasing furniture, thereby enhancing competitive costs and personalisation designs and services. Consumers expect advantages both online and offline to maximise the benefits of their purchasing.

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Introduction

According to the Singapore Economic Development Board (2018), due to an increase in the intensity of the competition in the global market, the ways in which retail markets operate have been changing rapidly. The rate of change from offline to online markets has been so alarming that offline retail stores or traditional markets are now greatly threatened. Furthermore, with the disruption of the COVID-19 pandemic, the existing online retailers have become worried about the sudden influx of competitors who have turned to eCommerce. There has been a 50% increase in online shopping over the last 10 years, while the average purchasing value has decreased significantly, especially that for prices above 200 Singapore dollars, which has been reduced by 20% (Data.gov.sg, 2020). Unfortunately, home furnishing (furniture) products average a value above $200; thus, it is crucial to research Singapore's local online shopping characteristics in terms of the bulky home furnishing category to analyse the market and provide strategic advice for local furniture partners. Neither the Singapore Furniture Industries Council (SFIC) nor the Singapore Furniture Association can help local furniture partners adapt to innovation activities. Unfortunately, there is not enough information in terms of market trends or local consumer behaviours; thus, the gap analysis would involve both external and internal investigations to aid in filling the gaps for higher business potentials (Miller et al., 1998; Booth et al., 2003; Novy and Colomb, 2016).

Research problems have been recognised due to steady improvements, and advances in technologies have fostered market changes from traditional brick and mortar companies towards more click and mortar options, if not click-only options. Online and offline retail players are concerned about user experiences, including both online and offline experiences. Assumptions that the traditional physical retail store design will never be disrupted in regard to home furnishing products may therefore be reconsidered. While local consumers' attitudes will affect the business model in terms of home furnishings, it is important to research purchasing concerns regarding the pros and cons of both online and offline shopping. Additionally, it is crucial to analyse the current buyers' intentions and behaviours with regard to the changing COVID-19 situation. Furthermore, possibilities with regard to omnichannel feasibility analysis have led to this study, which focuses on the impact of digital technology on changing consumer behaviours, especially concerning home furnishing in Singapore as an essential sector.

Moreover, the COVID-19 pandemic has accelerated digitalisation trends and the possibility of the swift development of new digital technologies; thus, it is crucial for organisations to review their overarching digital transformation (Trenerry et al., 2021). Additionally, Singapore, which is one of the top smart cities in the world, has adopted such technology in most business sectors and applications and in almost all the projects led and supported by the government (Huseien and Shah, 2022). Furthermore, for businesses in Singapore, it is crucial that they apply digital technologies in their organisation, as was reported in a study on the application of digital technology (Whitelaw Sera, 2020). This argument was supported by Skare and Riberio Soriano (2021), who argued that globalisation influences the adoption of digital technologies. Considering the minimal research available regarding digital technology's impact on the changing consumer behaviours related to home furnishing in Singapore, there is an urgent and important need to conduct the present study. To analyse the problem mentioned previously and to achieve a positive result regarding the current research, the following research questions were asked in this study, which range from general online shopping to furniture eCommerce and focus on various concerns or variables that can alter consumers' decisions.

- Have there been any changes made in regard to consumer behaviours and attitudes towards furniture, especially regarding vertical eCommerce?
- What are the advantages and disadvantages of both offline and online furniture stores?
- Is the omnichannel (both online and offline) the most consumer-acceptable home furnishing (furniture) business model?

The benefit of conducting the present research is to enable stakeholders to better understand the impact of digital technology on the changing purchasing behaviours towards home furnishing in Singapore. The study reveals customers' expectations towards future home furnishing services, which can be used to alter the furniture industry's strategies. The aim of the current study is to evaluate the digital characteristics that alter buyers' behaviours, i.e., to reveal the underlying demands that analyse the changing needs and desires regarding the purchase of furniture. Furthermore, the study aims to evaluate buyers' preferences for combining both online and offline advantages and to evaluate a potential successful model for the home furnishing business. The COVID-19 pandemic has led to the integration of both the offline and online approaches, which has created an omnichannel as a new competitive advantage that is now seen as the norm. Thus, the objectives of the present research are as follows:

- To evaluate consumer behaviour trends towards home furnishing (furniture) expansion, especially concerning vertical eCommerce in Singapore.
- To compare the advantages and disadvantages of traditional (offline) versus online home furnishing stores (furniture) in Singapore.
- To examine the future omnichannel (online + offline) of the home furnishing business model.

Literature review and conceptual gap. This research used a deductive approach. In doing so, the research reviewed the existing literature and determined the research gap in the existing conceptual models; it also determined the best business model/theory to be used to examine home furnishing (furniture) eCommerce, i.e., applying a quantitative approach involving purchasing frequency, attitudes and so on (Cleveland and McCutcheon, 2022; Bell et al., 2018; Creswell, 2014). Important reviews related to the research are presented in this section.

It is crucial to investigate the components or variables, such as features, attitudes, behaviours, and involvement, in the context of their impact on buyer behaviour (O'leary, 2017). With such research variables influencing different components, such as advanced technology, the digital revolution, ageing, income levels, lifestyle changes, environmental concern, etc., there are changes made to consumer behaviours. Consumers are influenced by various factors that exert varying degrees of power on their decision to purchase furniture (Zwierzyński, 2018). In Poland, the main factors in such a decision are the buyer's family and financial situations. However, Singapore presents a different economic stage, in which the buyer's household income influences his or her desire for home furnishing purchase intentions, as confirmed by research conducted in 2012–2014 (Studio, 2012) in Poland.

As online shopping has become more prevalent and attractive, home furnishing has presented itself as one of the potential sectors; however, the lack of data regarding the related research, especially concerning Singapore, raises the importance of conducting a questionnaire based on the literature review. The current research ranges from macro digital impacts to consumer buying behaviours to evaluate the pros and cons of both online and offline businesses by analysing the factors of the attitudes affected by specific home furnishing categories. A previous study (Moreno-Llamas et al., 2020) argued that digital technology development encourages higher levels of sedentary behaviour; however, this argument has not yet been confirmed. However, it was previously found that the ownership of an e-device (either a DVD player, CD player, desk computer, laptop, or an internet connection) was associated with a longer sitting time (>4.5 h/day) for the overall population, with slight differences by gender. Another study (Hoyer et al., 2020) highlighted that new technologies, such as the Internet of Things (IoT), augmented reality (AR), virtual reality (VR), mixed reality (MR), virtual assistants, chatbots and robots, which are typically powered by artificial intelligence (AI), are dramatically transforming the customer experience. This study also argued that the role of new technologies on the customer/shopper journey is crucial at each broad stage of the shopping journey (pretransaction, transaction, and posttransaction).

As highlighted by previous research, the local market for online furniture in Singapore has been changing and evolving (Lee, 2020). This study presented various drivers of change in the context of local markets in Singapore. The first of the market-changing drivers highlighted was the availability of retail space, which has been supported by the ongoing COVID-19 situation. Second, the local market has always supported the idea that there should be some form of a physical presence presented rather than only a fully online presence. This support, in turn, influences the value and recognition of retailers. Additionally, having a physical presence shows that the local retailers are better than the overseas retailers, who only have an online presence from whom customers may choose to import. Third, there has been a fundamental shift in consumer perception towards physical experiences in the context of the brand value of a product. Similarly, another previous study (Zwierzyński, 2018) highlighted that due to the COVID-19 pandemic, there would be significant ongoing innovations made throughout society during the pandemic, with many of these innovations having the possibility of long-term societal impacts. Digital technologies are seen as part of these large-scale systemic shifts.

In the literature (Jafari-Sadeghi et al., 2021), researchers have studied the digital transformation, which has been broken into three categories, namely, technology readiness (e.g., ICT investments), digital technology exploration (e.g., research and development) and digital technology exploitation (e.g., patents and trademarks). Several significant relationships between constructs have been identified. The digital transformation of value creation has contributed to technology entrepreneurship and technological market expansion. Digital transformation assists as an innovative network in which the digital supply chain helps organisations establish an ecosystem and enhance the supply chain. These changes in the digital systems of an organisation help management make better tactical decisions and maximise the value for the organisation (Choudhury et al., 2021). This argument was agreed to and supported by Cruz-Cárdenas et al. (2021), who highlighted that the technology and measures adopted by governments and social media stand out as external factors that affect organisations. Furthermore, the authors argued that organisations should work on varied marketing strategies that reflect the technological changes made to consumer behaviour. As such, organisations must work on creating digital transformations that address such changes in the consumer and market.

Similar to earlier studies, Matarazzo et al. (2021) examined the impact of digital transformation on customer value creation and highlighted that digital channels contribute to the innovation of an organisation's business model. Such transformation also helps to create new distribution channels and new ways to create and deliver value to customer segments. Additionally, digital transformation impacts technological market expansion when organisations are seen as embracing digital innovation (Jafari-Sadeghi et al., 2021). Such conclusions and arguments indicate that the enhanced use of digital technologies increases an organisation's innovation performance (Usai et al., 2021). Another study (Jessen et al., 2020) empirically demonstrated the sequential mediation process connecting the use of technological advances with customer engagement, customer creativity and anticipated satisfaction. The study highlighted that such use was better in the early stages of customers' purchase journeys. Additionally, it has been emphasised that consumer involvement plays a central role in explaining the intention to participate in online buying (Sharma and Klein, 2020). Furthermore, it has been argued that consumer perceived value, trust, and susceptibility to interpersonal influence are significantly correlated with consumer involvement (Cruz-Cárdenas et al., 2021).

Customer involvement also depends on the level of convenience offered by organisations; when retailers enhance their level of service convenience, this affects the consumers' channel switching behaviour. When looking at the omnichannel retailing industry, both offline search convenience and online purchase convenience have impacts on motivating consumers' showroom behaviour (Shankar et al., 2021). Furthermore, these elements of convenience can also help identify motives, barriers, personality traits, and the role of culture in consumer adoption, which helps one recognise enablers and inhibitors (Jain et al., 2022). A meta-analysis conducted by Jayawardena et al. (2022) indicated that online engagement strategies based on gamification assist retailers in improving the engagement of customers and their level of involvement. This approach can further assist in enhancing online education, online brand engagement, and information system engagement.

Another study (Mims, 2017) argued that a company should work on enhancing their brand visibility before planning an overseas venture through an online presence. This study also stated that a lack of brand visibility may affect the company's physical and emotional connection with customers. It is crucial for Singapore firms to address these concerns locally before moving towards options of internationalisation or exploring the regional markets. Furthermore, the debates related to the waning efficacy of offline and online media advertising channels, especially in the context of increasing advertising budgets, cannot be ignored. As such, in the home furnishing industry, the role of the offline retail experience and the way in which the industry operates is different. With increasing levels of internet penetration, online shopping has maintained a competitive position since the 21st century, and the high risk of cybercrime has made it difficult to choose (Davis, 1989). Therefore, a vertical eCommerce approach could change the retail game for a sector such as home furnishing. Home furnishing, especially furniture purchasing, requires personally tailored products with a modern value. Simultaneously, cost sensitivity characteristics are another main factor of purchasing decisions (Bednarik and Pakainé Kováts, 2010). Personal relations with counselling are used to obtain a market share in Hungary; this approach may also be used in markets such as Singapore.

In the US, according to a study by Cisco (2012), 74% of customers conduct online research before they make an in-store purchasing decision; furthermore, it is stated that nearly 40% of American respondents use mobile phones to obtain onsite digital content information, while another 35% use tablets for the same purpose. In addition, research by Furniture Today has shown that nearly 50% of furniture store consumers use smartphones before their visit to look up information, which means that customers hop from one single information channel to another. Such a "cross-channel" shopping experience demands a new approach to retain and win consumers for most retailers. For example, using in-store kiosks to provide potential buyers with fully displayed information provides a unique competitive advantage.

Another previous study (Ponder, 2013) also suggested that a significant shift, which includes shopping attitudes and online furniture purchasing, is occurring quite gradually. This study shows that the number of people who bought furniture online doubled to 21.6% within a span of only five years. Additionally, it shows that nearly 52% of people would be willing to order home furnishings, including bulky furniture, through the internet in the future; this means that "the retailer's standalone website" is the most crucial element of online home furnishing purchase consideration for the majority of such shoppers (78.31%). Furthermore, it is highlighted that the COVID-19 pandemic and the subsequent lockdown have disrupted consumer buying and shopping habits (Sheth, 2020). Consumers are learning to improvise and learn new habits, which also emerge from technological advances and the supply chain (Chowdhury et al., 2021).

The existing research highlights that there is a lack of data concerning Singapore furniture authorities; the related reviews that are used as references for further localisation verification come from either the US or Poland. All of the data indications reveal the development of successful local furniture models from end users' opinions, which can help guide local players to meet the existing demands. It is crucial in a research study to review the available literature to understand the research topic more clearly, and a further in-depth literature review is needed to identify the research gaps; the valuable data gathered during these processes have made this research more relevant to the current requirements of stakeholders and market players. Thus, researching the local market for home furnishing online purchasing in terms of consumer behaviours is in high demand, especially for local furniture dealers.

A conceptual framework has been developed to address these research gaps with the aim of also studying local consumer behaviours with a digital lifestyle to better understand the local market by utilising analogies. Other studies (Moreno et al., 2014; Berman and Pollack, 2021) have analysed changing factors to help formalise the omnichannel strategy with adopted consumer attitudes, thereby enhancing the strengths from both online and offline models to a new vertical eCommerce business model. This framework (Fig. 1) has been developed with two main factors, namely, external technology's impact on digital life and internal customers' attitudes and behaviours. These factors have been analysed mostly in demographic segments to evaluate the final hypotheses regarding the omnichannel for home furnishing in Singapore. Hypotheses derived from this conceptual model need to address the demographic characteristics of the consumers that contribute to their behaviours and attitudes in regard to purchasing furniture either online or offline. Online shopping frequency and purchasing time duration are also seen as contributing factors. Keeping in mind the limited resources available to analyse these purchasing behaviours in regard to how they change along with the digital life, especially in the home furnishing sector, the following hypotheses are tested using the data collected:

- H1: There is no significant relationship between gender and consumer behaviours towards purchasing furniture either online or offline.
- H2: There is no significant relationship between gender and consumer attitudes towards having either a showroom or a purely online presence.
- H3: There is no significant relationship between marital status and consumer attitudes towards having either a showroom or a purely online presence.
- H4: There is no significant relationship between income levels and consumer behaviours regarding online shopping frequency.
- H5: There is no significant relationship between income levels and consumer attitudes towards having either a showroom or a purely online presence.
- H6: There is no significant relationship between education and consumer behaviours regarding purchasing time duration.

The present study about home furnishing in Singapore is examined in the context of the impact of digital technology, changes in home furnishings and changes in buyer behaviours.

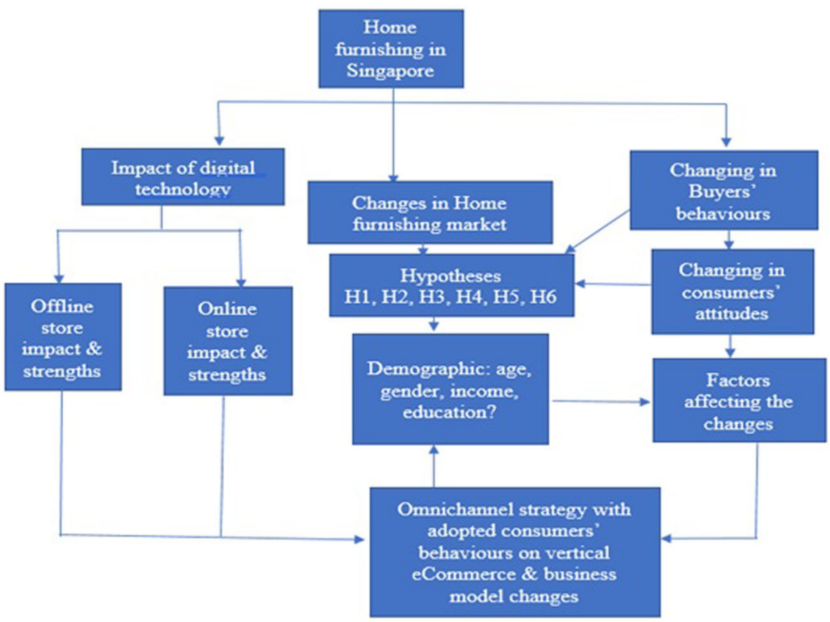

Fig. 1 Conceptual framework for a study on the impact of digital technology on changing consumer behaviours.

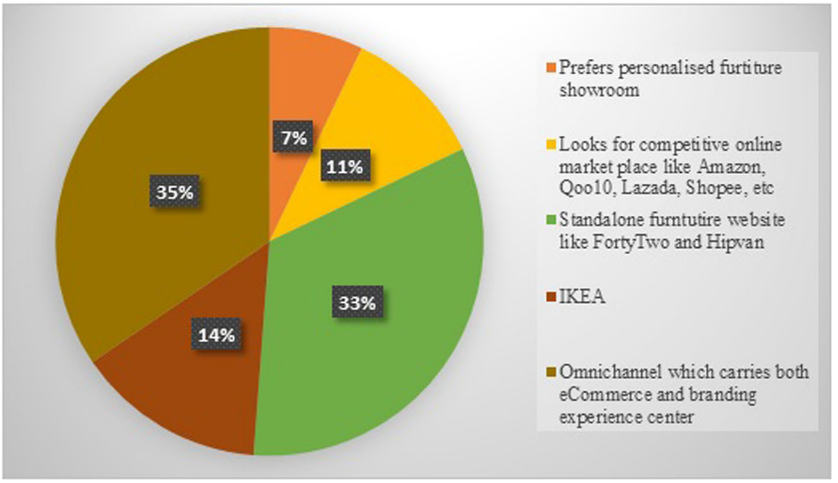

Fig. 2 Consumer shopping behaviour on home furnishings.

Table 1 Cross-tabulation—gender and furniture purchasing offline or online.

Consumer behaviours		Furniture purchasing offline or online			Number of respondents	Percentage
		Purely online	Purely offline	Purchased on seller's website after viewing the physical items		
Gender	Female	11	4	19	34	43
	Male	6	1	36	43	54
	No Response	0	1	2	3	4
Total		17	6	57	80	100
Percentage		21	8	71	100	

Table 2 Chi-square test results.

Details	Value	df	Asymptotic significance (2-sided)
Pearson's Chi-square	10.791[a]	4	0.029
Likelihood ratio	10.558	4	0.032
Linear-by-linear association	5.284	1	0.022
No. of valid cases	80		

[a]Five cells (55.6%) had an expected count of <0.5. The minimum expected count was 0.22.

Impact in digital technology is studied in both offline and online store impact strengths. Changes in buyer behaviours lead to the study of the attitudes and factors that affect these changes. These changes are, in turn, studied along with the omnichannel strategy of adopted consumer behaviours concerning vertical eCommerce and business model changes. Various demographic characteristics, such as age, gender, income and education, are also studied along with the hypotheses that are developed and tested.

Methods

The present quantitative research used a deductive approach based on the literature (Bell et al., 2018; Creswell, 2014). The research also applied realism to the study process, which is a philosophy based on the scientific approach to developing knowledge (Saunders et al., 2009). A cross-sectional analysis was applied, with participants being arranged in different groups; this approach did not require an extended monitoring period of longitudinal research (Jackson, 2015). The research design used in this study was descriptive in manner, which means that it aimed to accurately portray the character of a group or situation.

The primary data (Corbin and Strauss, 2014) were collected using convenience sampling as the technique method. The research instrument used was a questionnaire consisting of four parts: sociodemographic information, buying behaviour, behavioural intention to purchase furniture, and external influences of purchasing. Eighty-four respondents were selected to participate in the study. The participants were aged 18–75, with miscellaneous income and education levels and specified sexes and marital statuses. To minimise the discrepancy of the sample, the research was carried out using nonprobability sampling, in which everyone had an equal chance of being selected and selection was based on the individual's availability and having enough time to complete the questionnaire (Bryman, 2016).

Data were collected from the respondents, who were members of the general public in Singapore who had internet access. The survey questionnaire was posted on social media and responded to anonymously via Google Forms between October and November 2020. Validity tests were conducted for the research instrument. Content validity was assessed by seeking feedback from two information technology professionals, two marketing professionals and two experts in the home furnishing industry. Construct validity was assessed by consulting a statistician to ensure that appropriate variable types, such as nominal, ordinal and categorical, as well as appropriate intervals, were chosen. Reliability analysis was performed using Cronbach's alpha measure, where a score of at least 0.73 or above is considered reliable (Bell et al., 2018). The Cronbach's alpha reliability score for the current research instrument is 0.749. As this score is >0.73, the research instrument used in the study is considered to be reliable.

Table 3 Cross-tabulation—gender and consumer attitude towards showroom-only retailers and purely online ecommerce stores.

Consumer attitudes		Showroom vs. a purely online eCommerce store		Number of respondents	Percentage
		Showroom only	Purely online		
Gender	Female	35	1	36	44
	Male	38	6	44	54
	Not Response	1	1	2	2
Total		74	8	82	
Total		90	10	100	100

Table 4 Chi-square test results.

Details	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	6.423[a]	2	0.04
Likelihood ratio	5.467	2	0.065
Linear-by-linear association	5.165	1	0.023
No. of valid cases	82		

[a]Four cells (66.7%) had an expected count of <0.5. The minimum expected count was 0.20.

Table 5 Cross-tabulation—marital status and showroom only vs. purely online ecommerce store.

Consumer attitudes		Showroom vs. a purely online eCommerce store		Number of respondents	Percentage
		Showroom only	Purely online		
Marital Status	Single	26	7	33	40
	Married	48	1	49	60
Total		74	8	82	
Percentage		90	10	100	100

Although various nonparametric tests exist, such as the 1-sample sign test, 1-sample Wilcoxon signed-rank test, Friedman test, Goodman–Kruska gamma test, Mann–Whitney test, and Spearman rank correlation test, the present study used chi-square tests in conjunction with descriptive-analytical tools. Chi-square tests were performed to better understand the relationships between the variables used in this study. In the present study, chi-square tests were used as nonparametric tests, as such tests help to determine whether there is an association between categorical variables (i.e., whether the variables are independent or related). Demographic variables were tested, including variables that were related to consumer behaviours in terms of online and offline furniture purchases, consumer attitudes towards showrooms, consumer behaviours regarding online shopping frequency, consumer behaviours in terms of purchasing time duration and consumer attitudes towards purchasing furniture both offline and online. Such analysis assisted with the hypothesis testing. In chi-square test results, if the p value is greater than the chosen significance level ($\alpha = 0.05$), then the null hypothesis is not rejected.

Results

The research revealed trends related to home furnishing in terms of offline stores and online platforms. The data showed that omnichannel and standalone furniture websites accounted for two-thirds of the overall shopping behaviour. As such, consumers who are willing to spend money on home furnishings will both satisfy their physical needs and value them. Thus, the omnichannel approach has a significant favourable influence on consumer behaviours regarding home furnishings in Singapore. Figure 2 indicates the importance of an online plus offline combination, with consumers preferring a more omnichannel approach (35%). This preference is followed by new standalone branded furniture websites (33%).

This section studies the relationships between demographic characteristics and purchasing online structure characteristics. Table 1 shows that gender significantly influences the choice of online or offline shopping in terms of furniture. The first hypothesis is that online shopping with physical viewing ability is the most appealing shopping method (71%). In contrast, the second hypothesis is translated as a positive relation of the two variables (0.029), with males intending to purchase more when using the omnichannel approach.

Hypothesis 1: There is no significant relationship between gender and consumer behaviours towards purchasing furniture either online or offline.

Hypothesis 1 is rejected, as Table 2 shows a positive relationship between the variables.

The results of Table 3 indicate that gender significantly impacts consumer attitudes towards showroom-only retailers and purely online shopping retailers in terms of furniture. The first hypothesis indicated that offline shopping (90%) is still mainstream. In contrast, the second hypothesis indicates to a positive relationship between the two variables (0.04), with males intending to more easily accept purely online shopping compared to females; in other words, females prefer physical stores.

Hypothesis 2: There is no significant relationship between gender and consumer attitudes towards having either a showroom or a purely online presence

Hypothesis 2 is rejected, as Table 4 shows a positive relationship between these variables.

Table 5 shows a significant positive relationship between marital status and preferring either a showroom or a purely online presence. The results of the first hypothesis indicate that visiting a showroom is still the most attractive method for purchasing (90%). The second hypothesis indicates that couples display more purchasing intention when visiting a showroom than do single individuals, and these variables are statistically significantly associated (0.004).

Hypothesis 3: There is no significant relationship between marital status and consumer attitudes towards having either a showroom or a purely online presence.

Hypothesis 3 is rejected, as Table 6 shows a positive relationship between these variables.

Table 7 shows a significant positive relationship between income and frequency of online shopping. The results of the first hypothesis indicate that the most common online shopping occurs between one week and one month for all income groups. Furthermore, the second hypothesis indicates that those with lower incomes purchase by online shopping more frequently than do those with higher incomes.

Hypothesis 4: There is no significant relationship between income levels and consumer behaviours regarding online shopping frequency.

Table 6 Chi-square test results.

Details	Value	df	Asymptotic significance (2-sided)	Exact Sig.(2-sided)	Exact Sig. (1-sided)
Pearson Chi-square	8.232[a]	1	0.004		
Continuity correction	6.199	1	0.013		
Likelihood ratio	8.56	1	0.003		
Fisher's exact test				0.006	0.006
Linear-by-linear association	8.132	1	0.004		
No. of valid cases	82				

[a]2 cells (50.0%) have an expected count of <0.5. The minimum expected count was 3.22.

Table 7 Cross-tabulation—income and online shopping frequency.

Consumer behaviours		Online shopping frequency					Number of respondents	Percentage
		At least once every 3 days	At least once a week	At least once a month	At least once a year	Have never purchase online		
Income	Below S$2000	1	0	0	3	1	5	6
	S$2001–S$3000	0	5	3	0	0	8	10
	S$3001–S$4000	1	6	2	1	0	10	12
	S$4001–S$5000	4	8	2	2	0	16	19
	S$5001–S$6000	1	3	5	3	0	12	14
	S$6001–S$10,000	0	2	5	1	2	10	12
	S$10,001–S$20,000	3	5	3	1	0	12	14
	Above S$ 20,001	1	6	2	2	0	11	13
Total		11	35	22	13	3	84	
Percentage		13	42	26	15	4	100	100

Table 8 Chi-square test results.

Details	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	41.942[a]	28	0.044
Likelihood ratio	41.941	28	0.044
Linear-by-linear association	0.257	1	0.612
No. of valid cases	84		

[a]Thirty-seven cells (92.5%) had an expected count of <0.5. The minimum expected count was 0.18.

Hypothesis 4 is rejected, as Table 8 shows a positive relationship between these variables.

Table 9 results indicate that income has a significant association with both online and offline shopping methods in terms of furniture, which leads to a positive relationship between the two variables. The high-income group has a higher level of intention to order furniture online, and purchasing online with a physical view available is the most attractive scenario, especially for the high-end income group.

Hypothesis 5: There is no significant relationship between income levels and consumer attitudes towards having either a showroom or a purely online presence.

Hypothesis 5 is rejected, as Table 10 shows a positive relationship between these variables.

Table 11 shows a significant positive relationship between education and research time allowed for online purchasing. The results indicate that the more education a group has, the more time they spend researching online shopping. This outcome is evident in the results, as bachelor's degree holders account for 37% of the total. There is a significant relationship between education and purchasing time duration (0.009).

Hypothesis 6: There is no significant relationship between education and consumer behaviours regarding purchasing time duration.

Hypothesis 6 is rejected, as Table 12 shows a positive relationship between these variables.

Discussion

Digital technology has changed lifestyles, while the COVID-19 pandemic has accelerated the pace of consumer behaviours. The trend of eCommerce is a popular way of shopping that is driven by the benefits of both offline stores and online platforms, while consumer behaviours demonstrate a massive push towards the omnichannel strategy (Wilmarth and Milstead, 2020), especially the need for brands. Gender has a significant influence on online or offline shopping choices in terms of furniture. The first hypothesis suggests that online shopping with physical viewing available is the most appealing shopping method. In contrast, the second hypothesis suggests a positive relation between these two variables, with males intending to purchase more with regard to the omnichannel approach. Gender also has a significant impact on the preference between visiting a showroom versus engaging in purely online shopping in terms of furniture. The first hypothesis indicates that offline shopping is still mainstream, while the second hypothesis suggests a positive relationship between the two variables. Males seem to more easily accept purely online shopping compared to females; in other words, females prefer visiting a physical store.

There is a significant positive relationship between visiting a showroom and engaging in purely online purchasing in terms of marital status. The results of the first hypothesis indicate that visiting a showroom is still the most attractive method for purchasing. In contrast, the second hypothesis suggests that couples are statistically significantly more likely to visit a showroom

Table 9 Cross-tabulation—income and furniture offline or online.

Consumer attitudes		Furniture offline or online			Number of respondents	Percentage
		Purely online	Purely offline	Purchase on seller's website after viewing the physical items		
Income	Below S$2000	0	2	2	4	5
	S$2001-S$3000	0	0	8	8	10
	S$3001-S$4000	2	3	3	8	10
	S$4001-S$5000	5	0	10	15	19
	S$5001-S$6000	3	1	8	12	15
	S$6001-S$10,000	1	0	9	10	13
	S$10,001-S$20,000	2	0	10	12	15
	Above S$ 20,001	4	0	7	11	14
Total		17	6	57	80	
Percentage		21	8	71	100	100

Table 10 Chi-square test results.

Details	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	32.423[a]	14	0.003
Likelihood ratio	28.92	14	0.011
Linear-by-linear association	0.069	1	0.793
No. of valid cases	80		

[a]Seventeen cells (70.8%) had an expected count of <0.5. The minimum expected count was 0.30.

compared to single individuals. Couples are the most attractive group for shopping for home furnishings, especially with a showroom experience. Thus, local furniture sellers should be encouraged to focus more on the demands of couples while also developing goods for and attracting single individuals. Such results align with the results of previous research (Zwierzyński, 2018), which highlights that decision-making is influenced by various factors with degrees of power. Similarly, O'leary (2017) also agrees that the relationship of the variables affects the behaviour of consumers.

There is a significant positive relationship between education and research times for online purchasing. The results indicate that those with a higher education spend more time researching online shopping; there is a significant relationship between education and research time. Those with a higher education were more prudent regarding purchasing; thus, a piece of sufficient information was displayed in these results, the effective oh which has a massive impact on targeting, with tremendous sales initiatives. It is also crucial, as highlighted, that such relationships are important to and aid in online shopping (Wiśniewska and Paginowska, 2006), which can also be further observed in the future (Gauri et al., 2021).

Income has a significant association with both online and offline shopping methods in terms of furniture, which suggests a positive relationship between the two variables. The high-income group has a higher level of intention to order furniture online, and purchasing online with a physical view available is the most attractive scenario, especially for the high-end income group. The higher-income groups are the target population segment for existing sales growth, while the low-to-medium income groups represent the basis of the home furnishing business. The study by Studio also supports and agrees with the impact of finances on one's purchase decision (Studio, 2012). This includes the intention to purchase home furnishings. The most frequent range for engaging in home furnishing shopping is one to ten years, and consumers prefer the omnichannel approach and supporting a branded standalone website due to their reputation. A similar study (Ponder, 2013) also showed that the frequency of online furniture purchases using newly available mediums doubled to 21,6% within five years compared to the growth of traditional options, and it is suggested that such growth will continue in the postpandemic period (Al Mansoori and Ahmad, 2021).

Implications of the study. The impact of digital technology has altered consumers' choices for decades, which has, in turn, fostered large amounts of eCommerce, including in the home furnishing sector. With limited literature available in the present research area, especially in regard to the home furnishing sector, the present study is quite significant for decision-makers and stakeholders in the industry. Furthermore, in addition to the COVID-19 pandemic, consumer behaviours have changed during the movement control period, and consumer satisfaction will continue to influence purchasing initiatives and decision-making online. Therefore, there has been a need for the current study to address the present conditions of the market. Additionally, this study shows that consumers expect advantages from both online and offline purchasing to maximise their benefits of purchasing, which is also key for the home furnishing industry to consider in their strategies. The current study also highlights that the home furnishing business does need to adapt to changing consumer attitudes and behaviours. Clarity regarding the impact of demographic variables has also been shown for those in the home furnishing business to reflect upon. By helping to fill the research gap, which is present due to the limited amount of literature on eCommerce studies focused on home furnishing, the present study's contribution to the literature is important.

The current research was conducted using limited respondents and a time loop, which could be improved by expanding the sample size and spreading the study period to either 9–12 months or a longer period of longitudinal research. Furthermore, future research questions should be modified to focus on the details or specific categories of the home furnishing sector. Such findings would help guide Singapore home furnishing companies to plan for offline and online campaigns to better ensure a successful business. Additionally, convenience sampling was used in the current study due to time and cost constraints, as the study was self-sponsored. The results would have provided different dimensions if the study has accommodated the probability sampling method with a larger sample size. Future research can also include other critical success factors, such as branding recognition, existing reviews, and decision-making processes. These outcomes would also help guide Singapore home furnishing companies to plan offline and online campaigns to better ensure a successful business. Future studies can also study online

Table 11 Cross-tabulation—education and purchasing time duration.

Consumer Behaviours		Purchasing time duration					Number of respondents	Percentage
		No research done	0–1 h	1–2 h	2–3 h	More than 3 h		
Education	Secondary and below	1	3	2	3	1	10	12
	Tertiary (GCE "A" Levels, Diploma, Higher NITEC, NITEC)	0	2	7	7	7	23	28
	Bachelor's Degree	0	0	14	11	5	30	37
	Master's Degree	0	4	5	5	2	16	20
	Doctoral Degree	0	0	0	0	3	3	4
Total		1	9	28	26	18	82	
Percentage		1	11	34	32	22	100	100

Table 12 Chi-square test results.

Details	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	32.184[a]	16	0.009
Likelihood ratio	29.245	16	0.022
Linear-by-linear association	1.46	1	0.227
No. of valid cases	82		

[a]Seventeen cells (68.0%) had an expected count of <0.5. The minimum expected count was 0.04.

engagement strategies such as gamification with reference to digital channel marketing in the home furnishing business. Although there is a scope for future study, the current results can help lead the home furnishing industry to more positive strategic implications.

Conclusion

The present study has evaluated consumer behaviour trends in home furnishing (furniture) expansion in eCommerce in Singapore. It has also compared the advantages and disadvantages of traditional (offline) versus online home furnishing stores (furniture) in Singapore. A further examination of the home furnishing business model's future omnichannel (online plus offline) approach has also been presented. With the options of omnichannel options, retailers would ideally manage their issues on the level of consumers' product involvement; offering such conveniences helps with regard to customer retention and managing consumers' channel switching behaviours (Shankar et al., 2021). Additionally, such an approach would assist organisations in recognising the main enablers of and inhibitors to adopting (Jain et al., 2022). Additionally, organisations must use an appropriate engagement strategy to improve their involvement. Such approaches include online education, online brand engagement, and information system engagement (Jayawardena et al., 2022). As Singapore is a developed society, traditional brick and mortar stores have occupied most of the market share; however, vertical eCommerce is a fast-growing industry due to the effects of the COVID-19 pandemic. The results of the current study show that consumers are motivated if they are engaged online, which helps to change their behaviour and attitudes. It has also been reinforced that an exciting offline experience is one way to cater to consumer needs and enhance consumer buying behaviours. This research is crucial, as the business community needs to capture and retain customers' attention, while at the same time, the need to brand a home furnishing is a stimulus. Such a unique value proposition will distinguish competitors. In return, the brand's image will create positive reinforcement. As using the internet has become the norm for almost everyone, an alternate target market strategy is recommended for gender, education and income level differences, with reinforced consultation and customisation and enhanced content marketing to attract an audience. To retain existing customers, more emphasis should be placed on the postsale period, as the concerns of buyers include showroom location and quality and design.

Data availability

The authors confirm that all data generated or analysed during this study are included in this published article.

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References

Al Mansoori MS, Ahmad SZ (2021) Adapting to the "new normal" post-pandemic consumer behavior: the case of Rafeeg's strategy of service marketing. Emerald Emerg Markets Case Stud 11(3):1–17. https://doi.org/10.1108/EEMCS-08-2020-0311

Bednarik E, Pakainé Kováts J (2010) Consumer behaviour model on the furniture market = Vásárlói magatartásmodell a bútorpiacon. Acta Silvatica Lignaria Hung 6:75–88

Bell E, Bryman A, Harley B (2018) Business research methods. Oxford University Press.

Berman B, Pollack D (2021) Strategies for the successful implementation of augmented reality. Bus Horiz 64(5):621–630. https://doi.org/10.1016/j.bushor.2021.02.027

Booth WC, Booth WC, Colomb GG, Colomb GG, Williams JM, Williams JM (2003) The raft of research. University of Chicago Press.

Bryman A (2016) Social research methods, 4th edn. Oxford university press.

Choudhury A, Behl A, Sheorey PA, Pal A (2021) Digital supply chain to unlock new agility: a TISM approach. Benchmarking 28:2075–2109. https://doi.org/10.1108/BIJ-08-2020-0461.

Chowdhury P, Paul SK, Kaisar S, Moktadir MA (2021) COVID-19 pandemic related supply chain studies: a systematic review. Transp Res Part E 148, 102271. https://doi.org/10.1016/j.tre.2021.102271

Cisco (2012) Annual report 2012. https://www.cisco.com/c/dam/assets/cdc_content_elements/docs/annualreports/ar2012.pdf

Cleveland M, McCutcheon G (2022) 'Antiglobalscapes': a cross-national investigation of the nature and precursors of consumers' apprehensions towards globalization. J Bus Res 138:170–184. https://doi.org/10.1016/j.jbusres.2021.09.011

Corbin J, Strauss A (2014) Basics of qualitative research: techniques and procedures for developing grounded theory. Sage publications.

Creswell JW (2014) Qualitative, quantitative and mixed methods approaches. Sage.

Cruz-Cárdenas J, Zabelina E, Guadalupe-Lanas J, Palacio-Fierro A, Ramos-Galarza C (2021) COVID-19, consumer behavior, technology, and society: a literature review and bibliometric analysis. Technol Forecast Soc Change 173:121179. https://doi.org/10.1016/j.techfore.2021.121179

Data.gov.sg. (2020) Online shoppers. https://data.gov.sg/dataset/online-shoppers

Davis FD (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q 319–340.

Gauri DK, Jindal RP, Ratchford B, Fox E, Bhatnagar A, Pandey A, Navallo JR, Fogarty J, Carr S, Howerton E (2021) Evolution of retail formats: past, present, and future. J Retail 97(1):42–61. https://doi.org/10.1016/j.jretai.2020.11.002

Hoyer WD, Kroschke M, Schmitt B, Kraume K, Shankar V (2020) Transforming the customer experience through new technologies. J Interact Mark 51:57–71
Huseien GF, Shah KW (2022) A review on 5G technology for smart energy management and smart buildings in Singapore. Energy AI 7:100116. https://doi.org/10.1016/J.EGYAI.2021.100116
Jackson SL (2015) Research methods and statistics: a critical thinking approach. Cengage Learning.
Jafari-Sadeghi V, Garcia-Perez A, Candelo E, Couturier J (2021) Exploring the impact of digital transformation on technology entrepreneurship and technological market expansion: the role of technology readiness, exploration and exploitation. J Bus Res 124:100–111
Jain R, Jain K, Behl A, Pereira V, Del Giudice M, Vrontis D (2022) Mainstreaming fashion rental consumption: a systematic and thematic review of literature. J Bus Res 139:1525–1539. https://doi.org/10.1016/J.JBUSRES.2021.10.071
Jayawardena NS, Ross M, Quach S, Behl A, Gupta M, Lang LD (2022) Effective online engagement strategies through gamification: a systematic literature review and a future research agenda. J Global Inf Manag 30(5):1–25. https://doi.org/10.4018/JGIM.290370
Jessen A, Hilken T, Chylinski M, Mahr D, Heller J, Keeling DI, de Ruyter K (2020) The playground effect: how augmented reality drives creative customer engagement. J Bus Res 116:85–98. https://doi.org/10.1016/j.jbusres.2020.05.002
Lee (2020) Re-imagining and improving the customer experience. https://www.fortytwo.sg
Matarazzo M, Penco L, Profumo G, Quaglia R (2021) Digital transformation and customer value creation in made in Italy SMEs: a dynamic capabilities perspective. J Bus Res 123:642–656. https://doi.org/10.1016/J.JBUSRES.2020.10.033
Miller NJ, Schofield-Tomschin S, Kim S (1998) Consumers' apparel and home furnishings inshopping behavior in rural communities. Cloth Text Res J 16(4):157–166. https://doi.org/10.1177/0887302X9801600402
Mims C (2017) Amazon is leading tech's takeover of America. Available at: https://www.wsj.com/articles/amazon-is-leading-techs-takeover-of-america-1497653164 (Accessed: 9 December 2020).
Moreno-Llamas A, García-Mayor J, De la Cruz-Sánchez E (2020) The impact of digital technology development on sitting time across Europe. Technol Soc 63:101406
Moreno DP, Hernández AA, Yang MC, Otto KN, Hölttä-Otto K, Linsey JS, Wood KL, Linden A (2014) Fundamental studies in Design-by-Analogy: a focus on domain-knowledge experts and applications to transactional design problems. Des Stud 35(3):232–272
Novy J, Colomb C (2016) Urban tourism and its discontents. In: Colomb C, Novy J (eds.) Protest and resistance in the tourist city. Routledge.
O'leary Z (2017) The essential guide to doing your research project. Sage.
Ponder N (2013) Consumer attitudes and buying behavior for home furniture. Mississippi. Available at: http://ffi.msstate.edu/pdf/consumer_attitudes.pdf%0A.
Saunders M, Lewis P, Thornhill A (2009) Research methods for business students. Pearson education.
Shankar A, Gupta M, Tiwari AK, Behl A (2021) How does convenience impact showrooming intention? Omnichannel retail strategies to manage global retail apocalypse. J Strateg Mark 1–22. https://doi.org/10.1080/0965254X.2021.1965189
Sharma VM, Klein A (2020) Consumer perceived value, involvement, trust, susceptibility to interpersonal influence, and intention to participate in online group buying. J Retail Consum Serv 52:101946
Sheth J (2020) Impact of Covid-19 on consumer behavior: will the old habits return or die? J Bus Res 117:280–283
Singapore Economic Development Board (2018) Singapore Economic Development Board 2018, Singapore:E-COMMERCE Gateway to ASEAN and Southwest Pacific. Available at: http://repositorio.unan.edu.ni/2986/1/5624.pdf. (Accessed: 1 December 2020)
Skare M, Riberio Soriano D (2021) How globalization is changing digital technology adoption: an international perspective. J Innov Knowl 6(4):222–233. https://doi.org/10.1016/J.JIK.2021.04.001
Studio B (2012) Polaków wydatki na meble http://brstudio.eu/polakow-wydatki-na-meble-2012-2015/
Trenerry B, Chng S, Wang Y, Suhaila ZS, Lim SS, Lu HY, Oh PH (2021) Preparing workplaces for digital transformation: an integrative review and framework of multi-level factors. Front Psychol 12:1–24. https://doi.org/10.3389/fpsyg.2021.620766
Usai A, Fiano F, Messeni Petruzzelli A, Paoloni P, Farina Briamonte M, Orlando B (2021) Unveiling the impact of the adoption of digital technologies on firms' innovation performance. J Bus Res 133:327–336. https://doi.org/10.1016/J.JBUSRES.2021.04.035
Whitelaw S, Mamas MA, Topol E, van Spall HGC(2020) Applications of digital technology in COVID-19 pandemic planning and response. Lancet Digit Health 2:e435–e440. https://doi.org/10.1016/S2589-7500(20)30142-4
Wilmarth MJ, Milstead SM (2020) Theses and dissertations completed in family and consumer sciences: 2019. Fam Consum Sci Res J 49(2):183–200. https://doi.org/10.1111/fcsr.12379
Wiśniewska A, Paginowska A (2006) Research on the furniture market in Poland. Research knowledge of furniture brands and elements of the decision-making process among individual customers. Ogólnopolska Chamber of Commerce of Furniture Manufacturers.
Zwierzyński P (2018) The determinants of consumer behaviours in the furniture market. Ann Mark Manag Econ 3(1):131–143. https://doi.org/10.22630/amme.2017.3.1.12

Ethical approval

The procedures used in this study adhere to the principles of the Declaration of Helsinki. The study was conducted according to the guidelines of the Declaration of Helsinki and was approved by the ethics committee of the authors' affiliate institution.

Informed consent

All study participants provided informed consent.

Competing interests

The authors declare no competing interests.

Additional information

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