

Changes in Consumer Purchase Behaviour towards E-Grocery Shopping in Malaysia

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ABSTRACT

E-grocery shopping has become an established retail option in Malaysia, yet consumers do not automatically continue using it after an initial purchase. This conceptual paper explains how Malaysian consumers move from trying an e-grocery channel to making it part of their regular grocery routine. It integrates the Technology Acceptance Model, Theory of Planned Behavior, Expectation-Confirmation Theory, e-service quality, trust and perceived risk into a unified framework. The paper proposes that lifestyle and situational constraints, perceived usefulness, perceived ease of use, trust, convenience, e-service quality and perceived risk shape the overall shopping experience. This experience subsequently influences continuance intention, which guides actual repeat purchase behaviour. The framework also recognises that intention may not always lead to purchase because consumers remain affected by delivery coverage, fees, product urgency, household needs and the availability of nearby physical stores. Particular attention is given to the combined influence of the digital interface and fulfilment performance, including product availability, substitution accuracy, freshness, delivery punctuality and service recovery. The conceptual analysis suggests that continued e-grocery use depends on a dependable end-to-end experience rather than on technology acceptance alone. The paper contributes by connecting adoption, post-purchase evaluation and repeat behaviour within one consumer journey that reflects Malaysia's diverse retail environment. By treating repeat purchasing as a staged decision, the framework also clarifies where retailers can intervene when consumers hesitate or discontinue use. It offers testable propositions for future empirical research and practical guidance for retailers seeking to strengthen consumer confidence, improve service consistency and encourage sustainable channel use.

Keywords: e-grocery shopping; consumer purchase behaviour; shopping experience; continuance intention; Malaysia

INTRODUCTION

Digital retail has become part of everyday commerce in Malaysia. In 2024, e-commerce transactions generated RM1.2881 trillion, of which RM374.7 billion came from business-to-consumer activity (Department of Statistics Malaysia [DOSM], 2025). These figures cover more than grocery retail, but they show the scale of the infrastructure and consumer activity that now support online purchasing.

Groceries, however, are not bought in quite the same way as most other online products. They are purchased frequently, orders often contain many items, and quality may depend on freshness, expiry dates, temperature and individual preference. Because shoppers cannot inspect the items before delivery, they must allow the retailer to make decisions about selection, substitution and handling. A usable website or application is therefore only one part of the experience. Trust, fulfilment, recovery from service failures, convenience and risk also affect whether the channel feels worth using.

Consumers also make grocery decisions across several connected channels. The same household may use home delivery for a routine weekly order, click-and-collect when time is limited, and a physical store for fresh or urgently needed items. Work schedules, household responsibilities, distance, product type and available delivery slots all influence this choice. Theoretical attention should therefore move beyond the narrow question of whether consumers accept an e-grocery technology. The more useful question is how technology, service performance and everyday circumstances come together to create an experience that consumers are willing to repeat.

Evidence from Malaysia supports the role of behavioural intention in online grocery purchasing, but the familiar technology variables do not always predict intention directly (Moorthy et al., 2025). Rather than dismissing usefulness and ease of use, this mixed evidence suggests that their influence may work through the broader shopping experience. Consumers judge not only the platform but also the delivered products, the reliability of the service and the way problems are resolved.

Building on this argument, the article makes a specific cross-stage contribution. Existing models commonly explain initial technology adoption, post-use satisfaction, or repurchase intention as separate problems. The proposed framework instead traces one sequence from household and channel conditions, through evaluation of the combined digital-and-fulfilment experience, to continuance intention and observable repeat purchasing. Its novelty therefore lies not in claiming new constructs, but in assigning established constructs distinct roles within a grocery-specific customer journey and showing where the intention-behaviour gap can arise.

The issue matters because grocery purchasing is habitual but not uniform. A household may place a large planned order online and still make several store visits during the same week. Purchase frequency alone can therefore obscure how the channel is being used. Changes in behaviour may appear as a larger share of routine replenishment moving online, a growing dependence on delivery for bulky items, or greater use of click-and-collect when delivery is inconvenient. A conceptual model must be able to explain these partial and task-specific changes rather than assume complete migration from stores.

Malaysia is a particularly useful setting for this discussion. Digital payment adoption, marketplace familiarity and widespread mobile access create favourable conditions for online retail. At the same time, delivery coverage, urban density and physical access to supermarkets vary considerably across regions. Cultural preferences for inspecting fresh produce and comparing prices in-store may also shape channel choice. These features make it unlikely that a single technology-centred explanation will account for all forms of e-grocery use.

REVIEW OF LITERATURE

E-Grocery Shopping as a Distinct Retail Service

E-grocery shopping involves searching for, selecting, ordering and paying for grocery products through a website or application, followed by home delivery or collection. Although the transaction begins digitally, value is completed through a physical service operation. This makes e-grocery retail a hybrid service: the platform manages information and choice, while the fulfilment system manages inventory, picking, packing, substitution and delivery.

The hybrid character of the service explains why grocery consumers face more uncertainty than buyers of many standardised products. An image and product description can communicate brand, package size and price, but they cannot fully represent ripeness, texture, temperature or remaining shelf life. The consumer must depend on another person's judgement. This delegation creates an agency problem in which the retailer's employee or fulfilment partner decides whether a product is acceptable and whether a substitute is sufficiently similar (Campo & Breugelmans, 2015; Singh & Söderlund, 2020).

Frequency also differentiates groceries from occasional online purchases. Grocery orders form part of household routines, and service failures can affect meal planning, caregiving and daily time allocation. A missing item may require an unplanned store visit, eliminating the convenience that encouraged the online

purchase. As a result, consumers evaluate not only whether an order was delivered, but whether it reduced the total effort of completing the household task (Morganosky & Cude, 2000; Singh, 2019).

The customer journey extends across several stages that are often evaluated together. Before ordering, the consumer considers assortment, prices, fees and available delivery times. During ordering, search, filtering and product information influence effort and confidence. After checkout, inventory confirmation, picking and communication become more important than interface design. Delivery then determines whether the products arrive in the expected condition, while recovery determines what happens when the promise is not met. A conceptual account that focuses on only one stage will miss how an excellent interaction can be undermined later in the journey (Lemon & Verhoef, 2016; Rose et al., 2012; Singh & Söderlund, 2020).

Grocery baskets also create interdependence among items. The value of the order may depend on receiving a complete set of ingredients rather than isolated products. If one essential item is missing, the consumer may still need to visit a store. Order completeness therefore has a larger behavioural consequence than the monetary value of the missing product suggests. This feature supports the inclusion of fulfilment within the shopping experience and explains why inventory accuracy can influence continued use (Hübner et al., 2016; Singh, 2019).

Another distinctive feature is the repeated nature of evaluation. Consumers encounter the same retailer across multiple orders and can compare performance over time. Consistency may become as important as average quality because household planning depends on predictability. A service that is excellent on some occasions but unreliable on others may be harder to incorporate into a routine than one that provides stable, acceptable performance. Future research should consequently consider variability across orders, not only satisfaction with the most recent transaction (Bhattacharjee, 2001; Singh & Rosengren, 2020).

Omnichannel Grocery Behaviour

Online and physical grocery channels are often complementary rather than mutually exclusive. Consumers divide shopping missions according to urgency, basket size, product type and the value of inspection. Routine packaged items are easier to reorder online, while fresh produce may remain store-oriented until the retailer earns sufficient trust. Bulky goods may be purchased online to avoid transport effort, whereas urgent items favour nearby stores (Campo & Breugelmans, 2015; Driediger & Bhatiasavi, 2019; Verhoef et al., 2015).

This task allocation changes the meaning of adoption. A consumer does not need to abandon physical stores to become a continuing e-grocery user. Continuance may involve regular but selective use, such as one online order each month or digital purchasing for a stable group of products. Research should therefore distinguish channel continuity from channel exclusivity and should measure the share and purpose of online purchasing, not merely whether the consumer has ever used the service (Campo & Breugelmans, 2015; Singh & Rosengren, 2020).

Channel integration can make selective use easier. Shared inventory, loyalty points, prices, returns and customer records allow consumers to move between delivery, collection and stores with less friction. When channels are poorly connected, consumers may lose discounts, repeat information or encounter conflicting stock and prices. These breaks weaken the overall relationship even if each channel performs adequately in isolation (Hübner et al., 2016; Verhoef et al., 2015).

The omnichannel perspective also changes how competition is understood. The relevant alternative to one platform is not always another platform; it may be the consumer's usual supermarket, a neighbourhood shop or a combination of channels. Online use must therefore create enough value to compete with established routines and the immediate certainty of physical inspection. Retailers that operate both online and offline can use channel integration to reduce this trade-off, while standalone platforms must create confidence through information, fulfilment and recovery (Campo & Breugelmans, 2015; Verhoef et al., 2015).

Price remains part of the comparison even though it is not included as a core construct in the framework. Consumers evaluate item prices together with delivery charges, service fees, minimum order values,

promotions and the time saved. These components form a transaction-specific value judgement that may alter whether intention becomes behaviour. Price is treated as a situational condition rather than a permanent psychological antecedent because its effect can change from one basket or retailer to another (Lee & Kamarulzaman, 2020; Singh & Rosengren, 2020).

Habit provides another explanation for repeated use. Grocery decisions are frequently made under time pressure and may become routinised after the consumer develops a saved basket, preferred delivery time and confidence in fulfilment. Habit can reduce deliberate evaluation, but it is likely to emerge from repeated favourable experiences rather than replace them at the beginning of the relationship. Longitudinal research could examine when continuance intention gives way to routine behaviour and whether a service failure disrupts an established habit (Bhattacharjee, 2001; Singh & Rosengren, 2020).

Fragmentation in Existing Explanations

Several theoretical traditions have been used to study e-grocery shopping. TAM directs attention to usefulness and ease of use. TPB highlights attitude, social influence and perceived behavioural control. Trust and risk research examines uncertainty in online transactions, while service research considers efficiency, fulfilment, privacy and recovery. Continuance studies add a further question: what makes consumers keep using a service after they have tried it? The difficulty is that these explanations are commonly applied in isolation, leaving three gaps (Ajzen, 1991; Bhattacharjee, 2001; Davis, 1989; Parasuraman et al., 2005).

- Technology acceptance may explain willingness to try a platform without explaining whether product fulfilment supports repeated grocery purchasing (Driediger & Bhatiasavi, 2019; Singh & Söderlund, 2020).
- Purchase intention is sometimes treated as equivalent to behaviour even though consumers may intend to use a channel but purchase elsewhere because of price, availability, urgency or access (Ajzen, 1991; Sheeran, 2002).
- Generic online-shopping models may understate grocery-specific risks involving perishability, variable quality, substitutions, cold-chain handling and delivery punctuality (Campo & Breugelmans, 2015; Munikrishnan et al., 2023).

The proposed framework places shopping experience between these antecedents and continuance intention. Experience is not limited to what happens on the screen; it includes the delivered products and the retailer's response when something goes wrong. Continuance intention remains a separate motivational state, and purchase behaviour is treated as the later outcome. This arrangement helps explain the journey from trying an e-grocery service to making it part of an ongoing shopping routine (Singh & Söderlund, 2020; Tyrväinen & Karjaluo, 2022).

The fragmented treatment of these theories also creates a sequencing problem. If usefulness, trust, risk, convenience and service quality are all connected directly to purchase intention, the model offers little explanation of how the consumer combines those judgements. A shopper does not normally make seven separate decisions. The impressions are experienced together during the customer journey and form a more general assessment of whether the channel works for the household. Shopping experience is therefore introduced as the integrating mechanism (Lemon & Verhoef, 2016; Rose et al., 2012).

A further limitation is the frequent use of broad labels without clear construct boundaries. Convenience may be measured using items that refer to usefulness, while trust items may describe service reliability and risk items may simply reverse trust statements. Such overlap can produce apparently strong relationships that reflect wording rather than distinct theoretical processes. The framework addresses this problem by defining each construct according to what it represents, where it occurs in the journey and how it differs from neighbouring concepts (Blut et al., 2015; Parasuraman et al., 2005).

The model does not include every factor previously associated with online shopping. Social influence, hedonic motivation, price sensitivity, environmental concern and demographic characteristics may matter in particular

settings. They are excluded from the central sequence because the present objective is to explain the transition from platform and service evaluation to continued purchasing. Future research can add other variables when a clear mechanism or boundary condition justifies them, rather than expanding the framework without theoretical discipline (Driediger & Bhatiasevi, 2019; Lee & Kamarulzaman, 2020).

Theoretical Novelty and Positioning

The framework is integrative but not additive. A simple additive model would attach several familiar predictors to one intention outcome and leave their theoretical roles unchanged. Here, the theories are assigned to different stages. TAM explains the consumer's appraisal of the digital channel; e-service quality, trust and risk address dependence on the retailer and fulfilment system; expectation-confirmation explains learning from prior orders; and TPB preserves the distinction between motivation and action. Shopping experience is the mechanism through which these stage-specific judgements are combined.

This ordering produces three departures from prevailing e-grocery models. First, it treats the service as a hybrid of interface and physical fulfilment rather than a technology alone. Second, it positions overall shopping experience before continuance intention instead of treating experience, satisfaction and intention as interchangeable outcomes. Third, it retains actual repeat purchasing as a separate endpoint, allowing delivery access, product urgency, fees and store availability to interrupt an otherwise favourable intention. The resulting contribution is a process explanation of selective channel continuity, not another inventory of adoption predictors (Bhattacharjee, 2001; Lemon & Verhoef, 2016; Singh & Söderlund, 2020; Tyrväinen & Karjaluoto, 2022).

Table 1. Positioning of the proposed framework against common model specifications

Model tradition	Typical explanatory focus	Difference in the proposed framework
Technology-adoption models	Usefulness and ease of use predict adoption or intention.	Technology beliefs shape an end-to-end experience that also includes fulfilment.
Continuance/ECM models	Confirmation and satisfaction predict continued-use intention.	Experience is broader than satisfaction and connects multiple antecedent domains to intention.
Experience-repurchase models	Experience or attitude predicts repurchase intention.	Continuance intention and actual repeat purchasing remain separate outcomes.
Proposed cross-stage model	Circumstances and channel evaluations -> experience -> continuance intention -> behaviour.	Explains selective grocery-channel continuity and specifies product, channel, capability and access boundaries.

Technology Acceptance Model

The Technology Acceptance Model identifies usefulness and ease of use as two central beliefs behind technology acceptance. In an e-grocery setting, usefulness may come from saving time, comparing products, reusing past orders or arranging delivery. Ease of use is reflected in clear navigation, accurate search, understandable information, manageable baskets and a checkout process that does not create unnecessary effort (Davis, 1989; Driediger & Bhatiasevi, 2019).

These beliefs matter, but they tell only part of the story. E-grocery value is produced jointly by the platform and the fulfilment operation. Even a well-designed application will disappoint if stock information is wrong, fresh items are poorly selected or an order arrives late. For this reason, the framework treats TAM beliefs as influences on the overall experience rather than assuming that they always lead directly to purchase intention (Hübner et al., 2016; Singh & Söderlund, 2020).

Perceived usefulness and ease of use are conceptually related but should not be merged. A platform can be easy to operate yet offer little practical advantage over visiting a nearby store. Conversely, a service may be highly useful for a consumer with limited mobility even if the interface requires effort. Their separate treatment allows future studies to determine whether the effect of ease of use diminishes as consumers become more experienced, while usefulness remains important because it reflects continuing functional value (Davis, 1989; Moorthy et al., 2025).

Theory of Planned Behavior

According to the Theory of Planned Behavior, intention is the closest motivational predictor of behaviour, while attitude, subjective norms and perceived behavioural control help form that intention. This framework draws specifically on the intention-behaviour relationship. A shopper may genuinely intend to continue using an e-grocery service but be unable to do so because delivery is unavailable, products are out of stock or the household budget changes. Intention and actual purchasing should therefore remain separate concepts (Ajzen, 1991; Sheeran, 2002).

The intention-behaviour gap deserves particular attention in grocery retail. Intention may not become behaviour when the preferred delivery slot is unavailable, minimum order values are too high or an item is needed immediately. Price promotions and household cash flow can also redirect the purchase to another channel. Measuring intention without recent behaviour may therefore overstate the strength of digital channel continuity (Ajzen, 1991; Sheeran, 2002).

Expectation-Confirmation and Continuance

Expectation-confirmation theory is useful because it separates first-time acceptance from continued use. After trying a service, users compare its actual performance with what they expected, and that comparison shapes satisfaction and the decision to continue. For e-grocery shoppers, the comparison covers both the online journey and what eventually arrives at the door. The present framework captures this combined judgement through the broader concept of shopping experience (Bhattacharjee, 2001; Tyrväinen & Karjaluo, 2022).

Continuance also involves learning. Early orders teach consumers how the retailer handles substitutions, how accurately delivery windows are observed and how easily refunds are obtained. These experiences reduce or increase uncertainty. A consumer whose expectations are repeatedly confirmed may develop a routine and require less deliberate evaluation, whereas inconsistent performance keeps the channel under review (Bhattacharjee, 2001; Singh & Rosengren, 2020).

Confirmation may also be attribute-specific. A retailer can meet expectations for interface usability but fail on fresh-product selection, or deliver accurately while charging more than expected. Overall experience represents the consumer's integration of these confirmations and disconfirmations. Researchers may therefore examine whether certain failures carry greater weight than equivalent successes, especially when the failed attribute affects meal planning or household safety (Bhattacharjee, 2001; Singh, 2019).

E-Service Quality, Trust and Perceived Risk

E-service quality includes efficiency, system availability, fulfilment and privacy. In grocery retail, fulfilment means more than delivering a parcel. It includes sending the correct items, selecting products in acceptable condition, managing substitutions properly and arriving when promised. Trust adds confidence in the provider's competence, integrity and concern for the customer. Perceived risk captures what the shopper believes could go wrong, whether financially, through loss of privacy, poor products, wasted time or failed delivery. A platform can therefore be easy to use and still feel unsuitable for routine grocery shopping (Blut et al., 2015; Blut, 2016; Gefen et al., 2003; Parasuraman et al., 2005).

These constructs operate at different levels. Service quality refers to what the retailer and platform do; trust refers to the consumer's willingness to depend on them; and risk refers to the potential consequences the consumer anticipates. Strong service quality can build trust and reduce risk over time, but the concepts should

remain distinct. A trusted national retailer may still be associated with product risk for fresh food, while a technically efficient platform may still create privacy concerns (Featherman & Pavlou, 2003; Gefen et al., 2003; Kim et al., 2008).

Service recovery is especially important because grocery fulfilment is difficult to make error-free. Out-of-stock items, traffic delays and variable fresh products are common operational realities. Consumers may tolerate an initial failure when communication is timely, substitutions are controlled and refunds are uncomplicated. Poor recovery, however, can transform a small operational problem into a broader judgement that the channel is unreliable (Singh, 2019; Singh & Rosengren, 2020).

Trust can be directed at several actors. Consumers may trust the retailer but not the delivery partner, or trust the platform's payment process but not an individual picker's judgement. Marketplace arrangements can make responsibility less visible when the platform, supermarket and courier are separate organisations. Future models may distinguish institutional trust, retailer trust and fulfilment-partner trust where the service configuration makes these relationships meaningful (Gefen et al., 2003; Kim et al., 2008).

Perceived risk likewise changes with product and process. Fresh items create quality and performance risk, while digital payment creates financial and privacy risk. Long delivery windows create time risk, and uncertain substitutions create planning risk. A multidimensional approach may provide better explanation than a single global risk score, although the dimensions should be combined only when theory and measurement show that they form a coherent higher-order construct (Featherman & Pavlou, 2003; Munikrishnan et al., 2023).

Malaysian Evidence and Contextual Gap

Malaysian research has linked online purchasing with perceived benefits, personal factors, shopping orientation, trust, attitude, subjective norms and perceived behavioural control. Trust research further draws attention to retailer reputation, product quality and logistics in the grocery setting. Collectively, these studies show that e-grocery behaviour cannot be reduced to a single technological belief (Baharin et al., 2024; Cheng et al., 2022; Lee & Kamarulzaman, 2020; Moorthy et al., 2025; Shao et al., 2022).

Recent evidence is also theoretically informative because perceived usefulness and ease of use do not always show significant direct effects on online grocery intention in Malaysia. This result need not be interpreted as a rejection of TAM. The two beliefs may instead influence a broader customer experience that includes fulfilment, risk and trust. Testing this indirect mechanism could explain why findings differ across general e-commerce, mobile shopping and grocery-specific studies (Driediger & Bhatiasavi, 2019; Moorthy et al., 2025; Tyrväinen & Karjaluo, 2022).

A further gap concerns regional diversity. Much Malaysian consumer research relies heavily on urban respondents with established access to delivery platforms. Consumers in smaller cities or less densely served areas may face different fees, slot availability and product ranges. The proposed framework consequently includes access context as a boundary condition rather than assuming that identical perceptions lead to identical behaviour throughout the country (Driediger & Bhatiasavi, 2019; Lee & Kamarulzaman, 2020).

Malaysia's demographic and household diversity also creates variation in shopping responsibility. The person who operates the application may not be the person who decides the budget, prepares meals or evaluates product quality. Household purchasing can therefore involve shared decision-making and delegated use. Studies that survey only the platform user should clarify whether that respondent also controls the grocery decision, especially when interpreting intention and behaviour (Baharin et al., 2024; Lee & Kamarulzaman, 2020).

Payment and promotional ecosystems may further influence current use. E-wallet rewards, loyalty programmes, subscription benefits and free-delivery thresholds can lower the perceived cost of online shopping, but their effects may be temporary. Researchers should distinguish genuine channel continuity from promotion-dependent purchasing. Behaviour that disappears when incentives end may reflect deal seeking rather than a stable change in grocery routines (Campo & Breugelmans, 2015; Singh & Rosengren, 2020).

METHODOLOGY

Integrative Conceptual Synthesis

This article uses integrative conceptual synthesis for theory building. It does not report primary data or claim the exhaustive coverage of a systematic review. The analysis brings together theoretical domains that explain different stages of e-grocery purchasing, examines their conceptual boundaries and arranges them into a causal sequence. The propositions are therefore testable theoretical claims rather than empirical findings.

Sources were interpreted comparatively rather than counted. Foundational theory established the meaning of each construct; e-grocery and customer-experience studies showed how those constructs operate in a hybrid retail service; and Malaysian evidence was used to assess contextual relevance. Contradictory or non-significant findings were retained because they help identify indirect effects and boundary conditions rather than merely confirm the proposed paths.

Construct Selection and Delimitation

The model retains constructs only when they offer a distinct explanation. Convenience, for example, is not treated as another name for usefulness. It refers specifically to reductions in time, travel and procedural effort, whereas usefulness describes the broader practical value of the channel. Trust concerns a willingness to depend on the provider, while perceived risk concerns the possibility of an unwanted outcome. E-service quality refers to the performance of the service process and fulfilment rather than to the shopper's general confidence. Keeping these meanings separate will make the framework clearer and reduce overlap when it is tested.

Selection followed four criteria: relevance to a distinctive e-grocery problem, conceptual non-redundancy, a defensible position in the proposed sequence, and capacity to explain an actionable source of variation. Usefulness and ease of use represent functional and effort-related technology beliefs. Convenience captures saved time, travel and coordination; it remains separate because a usable platform may still be inconvenient when slots, travel alternatives or household schedules are considered. E-service quality represents performed service, whereas trust is willingness to rely on the provider and perceived risk is anticipated loss. Lifestyle and situational constraints enter as demand-side pressures rather than evaluations of the retailer. Shopping experience integrates the encounter, continuance intention captures future motivation, and purchase behaviour records action. Constructs such as social influence, hedonic motivation and environmental concern were excluded because they are less central to the proposed transition from hybrid-service evaluation to repeat grocery purchasing.

Theory Integration Procedure

Theory integration proceeded in stages. The first stage defined the outcome as continuing purchase behaviour rather than initial adoption. The second separated intention from behaviour. The third identified shopping experience as the mechanism connecting antecedent evaluations with continuance intention. The fourth grouped antecedents into situational, technological and service-related domains. The final stage specified boundary conditions that could alter the strength of the proposed relationships.

This approach favours mechanism-based integration over a simple list of predictors. It asks how the antecedents are converted into behaviour, not only whether each variable may correlate with intention. The model remains deliberately parsimonious: it contains enough constructs to capture the hybrid digital-physical service without attempting to represent every possible demographic, promotional or psychological influence.

The proposed ordering should be tested against credible alternatives rather than accepted because it fits the data. Four specifications are particularly informative: (1) a direct-effects model linking all antecedents to continuance intention; (2) the proposed full-mediation model through shopping experience; (3) a partial-mediation model that retains theoretically plausible direct paths; and (4) a serial model in which shopping experience influences satisfaction before continuance intention. A fifth, more granular specification can divide digital experience from fulfilment experience. Comparing these models would show whether overall

experience genuinely integrates consumer judgements or conceals distinct mechanisms. Trust and risk may also be modelled as consequences of service quality, especially after repeated purchases. The preferred model should therefore be selected through theoretical parsimony, construct validity, predictive performance and comparative fit, not fit statistics alone.

Boundary conditions were selected to represent four different sources of variation. Product type changes the uncertainty of the object being purchased. Channel integration changes the retail system surrounding the transaction. Consumer capability changes the ability to use and evaluate the service. Access context changes whether the intended purchase can be carried out. Together, these conditions provide a structured way to explain heterogeneity without adding many weakly justified control variables.

Proposition Development

Each proposition was developed by linking the construct definition to its expected role in the customer journey. Positive propositions indicate that a stronger antecedent should improve experience or increase the later outcome. The risk proposition is negative because anticipated loss undermines the experience. The propositions are directional to support empirical testing, although effect sizes and boundary conditions are expected to differ across products, consumers and locations.

RESULTS AND DISCUSSION

Conceptual Outcome: Integrated Framework

The main outcome of the conceptual synthesis is the framework presented in Figure 1. It contains three stages. Antecedent conditions and evaluations shape the end-to-end shopping experience; experience influences continuance purchase intention; and intention supports actual e-grocery purchasing when circumstances permit. Boundary conditions surround the model because the same relationship may operate differently for fresh products, poorly integrated channels, consumers with limited digital capability or locations with weak delivery access.

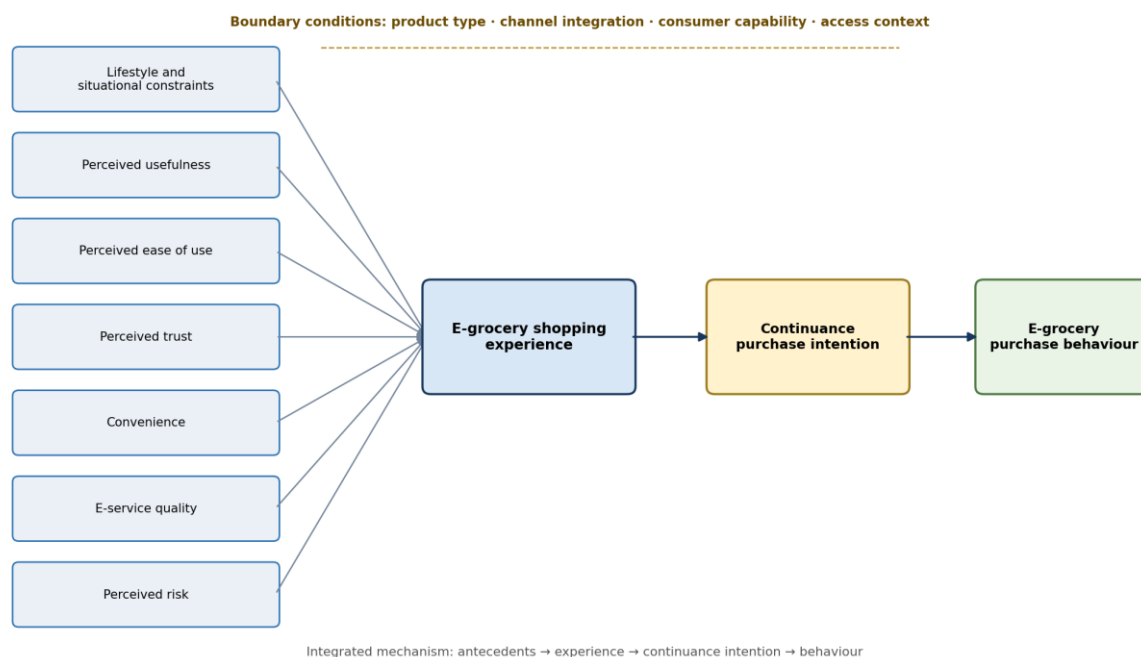


Figure 1. Integrated conceptual framework for e-grocery purchase behaviour

Figure 1 differs from a conventional extended-TAM model in two respects. First, it does not connect every antecedent directly to intention. Instead, the shopper's experience combines evaluations of technology, service and risk. Second, it treats actual purchasing as an outcome beyond intention. These choices respond to the

grocery context, where a smooth interface cannot compensate fully for poor products or fulfilment, and where favourable intention can be blocked by access and situational constraints.

The framework should be interpreted as a process rather than a single simultaneous decision. Situational constraints and technology beliefs can encourage consumers to use the channel. Service performance then provides evidence about whether the channel is dependable. The accumulated experience shapes plans for continued use, while the next purchase reveals whether those plans can be realised. Although cross-sectional studies may test all relationships at once, the underlying logic is temporal and is better examined through repeated measurement.

Shopping experience is specified as the principal mediator, but full mediation is not assumed. Usefulness may directly influence continuance intention for consumers whose need is strongly functional, and severe perceived risk may prevent continuation regardless of otherwise favourable experience. Future empirical work should compare partial and full mediation and report effect sizes rather than selecting a model solely because individual paths reach statistical significance.

Lifestyle and Situational Constraints

Lifestyle and situational constraints are the practical conditions that make one channel more attractive than another. Traffic, distance, time pressure, caregiving duties, mobility limitations and access to delivery can all increase the value of buying groceries online. Yet these conditions do not guarantee a good experience. Their importance depends on whether the service actually solves the problem that led the shopper online.

P1: Lifestyle and situational constraints are positively associated with e-grocery shopping experience when the service effectively reduces the consumer's access, time or mobility burden.

The conditional wording is important. Time pressure may encourage a trial, but the experience improves only if the service actually saves time. A late delivery or difficult substitution process can create more work than a store visit. Situational need therefore increases the opportunity for value; it does not guarantee that value will be realised.

The relationship may also be non-linear. Moderate time pressure can make delivery attractive, while extreme urgency makes waiting impossible and favours a nearby store. Mobility limitations may create strong dependence on delivery even when the experience is only satisfactory. These examples show why researchers should measure the form of the constraint and the available alternatives instead of using a single general situational-factor score.

Perceived Usefulness

Perceived usefulness captures the practical value of the channel. When online grocery shopping saves time, simplifies comparison, preserves order history and provides useful delivery options, it helps consumers complete a necessary household task. That value is fully realised only when the platform and fulfilment service work together, which is why usefulness is expected to feed into the overall experience.

P2: Perceived usefulness is positively associated with e-grocery shopping experience.

Usefulness may also vary by shopping mission. Order history and scheduled delivery are highly useful for routine replenishment but less useful when a consumer needs one item immediately. Future testing should capture whether the transaction is planned, urgent or exploratory rather than assuming that all grocery purchases involve the same functional objective.

Perceived Ease of Use

A grocery order may involve dozens of products, brands and variants, so even small usability problems can accumulate. Accurate search, sensible categories, useful filters, easy basket editing and straightforward

payment reduce both mental and procedural effort. These features should improve the interaction itself, although a smooth interface cannot fully offset a poor delivery or an incomplete order.

P3: Perceived ease of use is positively associated with e-grocery shopping experience.

Ease of use is likely to matter most during early use and for complex baskets. As familiarity develops, consumers may rely on saved lists and repeat-order functions, reducing the effort required. Researchers should therefore consider experience level when examining the relationship and avoid assuming that interface simplicity has an equal effect for first-time and established users.

Perceived Trust

Online grocery shoppers depend on the platform for secure payment, accurate information, product selection, substitutions, delivery and refunds. This dependence is greater for fresh and perishable products because the retailer is making quality decisions on the shopper's behalf. Malaysian evidence likewise points to reputation and product-quality concerns as important foundations of trust in e-grocery services (Shao et al., 2022).

P4: Perceived trust is positively associated with e-grocery shopping experience.

Trust is built through repeated evidence rather than claims alone. Accurate fulfilment, fair substitution, timely communication and reliable refunds provide observable signals. Retailer reputation may create initial confidence, but transaction-specific performance determines whether that confidence is sustained.

Trust may also reduce the effort involved in each purchase. Consumers who believe that the retailer will choose acceptable substitutes and correct problems fairly do not need to monitor every stage closely. This reduction in vigilance can become part of convenience, but it remains conceptually distinct because it arises from willingness to rely on the provider rather than from the number of steps or amount of travel saved.

Convenience

Convenience is experienced through saved time, reduced travel and fewer steps in completing the purchase. Shoppers can order from home, avoid queues, repeat an earlier basket and choose delivery or collection. These advantages improve the experience when they outweigh the delivery charge, the waiting period and the inability to inspect items personally.

P5: Convenience is positively associated with e-grocery shopping experience.

Convenience should be assessed as a net benefit. Delivery fees, minimum orders, waiting windows and the need to resolve errors can offset travel and queue savings. A measure that asks only whether home delivery is convenient may therefore miss important costs experienced after checkout.

E-Service Quality

E-service quality covers what happens both online and after the order is placed. Inventory accuracy, system reliability, order completeness, product condition, on-time delivery and helpful recovery all determine whether the retailer delivers what it promised. Research on online grocery experience similarly identifies convenience, delivery and recovery as important influences on attitude and repurchase intention (Tyrväinen & Karjaluoto, 2022).

P6: E-service quality is positively associated with e-grocery shopping experience.

Fulfilment deserves particular weight because it converts a digital promise into a physical outcome. Inventory accuracy affects whether the consumer can plan; picking quality affects whether products are acceptable; and recovery determines whether the retailer can restore the relationship after failure. These components may be modelled as lower-order dimensions of a broader e-service quality construct.

Perceived Risk

Perceived risk is the shopper's sense that the transaction may produce an unwanted outcome. Freshness and suitability create product risk; payment and refunds create financial risk; personal information creates privacy risk; delays create time risk; and missing or incorrect items create performance risk. When these concerns remain high, an otherwise efficient transaction can still feel unreliable.

P7: Perceived risk is negatively associated with e-grocery shopping experience.

Risk perceptions are also likely to change through learning. Successful orders may lower product and performance risk, while a single unresolved failure may sharply increase them. Longitudinal designs would therefore be more informative than one-time surveys for explaining how risk and trust develop across repeated purchases.

Loss aversion suggests that negative incidents may carry more weight than equivalent positive incidents, although the magnitude is an empirical question. An incorrect fresh item or failed delivery may be remembered more strongly than several routine successful orders. Retailers should therefore monitor recurring failure points and not rely only on average satisfaction scores that can conceal small groups of severely affected customers.

Shopping Experience and Continuance Intention

Shopping experience brings together the consumer's judgement of the platform, fulfilment, delivered products and service recovery. A positive experience gives consumers evidence that the channel is dependable and genuinely useful, making it more likely that they will include it in their future routines. This is the point at which favourable technology beliefs are translated into a reason to continue.

P8: A favourable e-grocery shopping experience is positively associated with continuance purchase intention.

Experience is the key mediating mechanism in the model. It gives consumers a single basis for evaluating whether the channel fits their routines after they have considered interface quality, delivery, products, costs and recovery. A favourable experience can therefore carry the effects of several antecedents even when their direct relationships with intention are weak.

The experience construct should be measured broadly enough to represent the journey but narrowly enough to remain distinct from satisfaction and intention. Experience concerns what the consumer encountered and how the journey was evaluated; satisfaction concerns the affective or evaluative response to that performance; and continuance intention concerns the future plan. Empirical studies may test satisfaction as an additional mediator, but should avoid using identical wording for all three concepts.

Continuance Intention and Purchase Behaviour

Continuance purchase intention is the consumer's willingness and plan to keep buying groceries through digital channels. TPB suggests that a stronger intention should make repeated purchasing more likely. The relationship is not automatic, however, because actual behaviour still depends on price, product availability, delivery access and the immediate shopping situation.

P9: Continuance purchase intention is positively associated with e-grocery purchase behaviour.

Researchers should measure behaviour with more than a yes-or-no adoption item. Recency, frequency, online share of grocery expenditure and the type of products purchased reveal different forms of continuity. Where possible, self-reports should be combined with transaction records or purchase diaries to reduce recall error.

Boundary Conditions

Product type

Packaged and fresh products are unlikely to produce identical relationships. Packaged goods are relatively standardised, whereas fresh food involves sensory uncertainty and requires someone else to judge quality. Trust, perceived risk and fulfilment quality are therefore likely to matter more when a basket contains a larger share of fresh or perishable products.

Channel integration

A smoother experience is also more likely when the retailer connects its online and physical channels. Shared inventory, prices, loyalty benefits, returns and customer records allow shoppers to move between delivery, collection and store visits without beginning again each time. Poor integration can make the relationship feel fragmented even when each channel performs reasonably well on its own.

Consumer capability

Consumers differ in digital literacy, familiarity with online payment and prior shopping experience. These differences can shape their views of ease of use, risk and trust. Accessibility needs may also determine whether a platform genuinely creates convenience or instead introduces another barrier. The framework therefore does not assume that one interface produces the same experience for everyone.

Access context

The value of e-grocery services also depends on where and how consumers live. Urban density, delivery coverage, distance to stores, transport access and household schedules all affect the trade-off between online and physical shopping. A belief that predicts use in a well-served city may have little effect where slots are limited or delivery fees are high. Findings from the Klang Valley should therefore not be assumed to describe every Malaysian region.

These boundary conditions prevent the framework from implying universal effects. They also identify where future studies can make stronger contributions. Rather than adding demographic variables as routine controls, researchers can examine theoretically meaningful differences, such as whether risk matters more for fresh-food baskets or whether convenience has a stronger effect where store access is limited.

Interactions among the boundary conditions may also be important. Limited digital capability may matter less when a retailer provides assisted ordering or a highly integrated store-collection service. Fresh-product risk may decline when consumers can reject items at collection. Poor delivery coverage may be less restrictive for consumers with easy transport access. These combinations suggest that future research should move beyond simple subgroup comparisons where sample size permits.

Overall Theoretical Interpretation

The shift towards e-grocery shopping is better understood as a reallocation of shopping tasks than as the replacement of stores. Consumers may use delivery for routine replenishment, visit a store for urgent items and prefer personal inspection for selected fresh products. The framework reflects this mixed behaviour by linking experience with continued use while allowing product and context to influence which channel is chosen.

Making experience the central mechanism also helps explain a puzzle in the literature. Usefulness and ease of use appear important for adoption, but their direct links with Malaysian e-grocery intention have not always been significant (Moorthy et al., 2025). The implication is not that TAM has lost its value. Technology beliefs may instead become part of a wider judgement that includes delivery, product outcomes and recovery. Empirical studies can test this possibility by comparing direct-effect models with the experience-mediated structure proposed here.

Trust, risk and service quality often move together, but they describe different things. A shopper may trust a well-known retailer and still worry about the quality of fresh produce. A platform may be technically reliable yet respond poorly when delivery fails. Future studies will need clear, non-duplicative measures so that these constructs remain distinguishable before their relationships are interpreted.

The framework also clarifies the level at which managerial action can occur. Platform design primarily affects ease of use and parts of usefulness. Retail operations affect service quality and product risk. Communication, reputation and recovery influence trust. Delivery coverage and channel integration shape the conditions under which intention can become behaviour. Treating these as a sequence helps retailers identify whether a weak outcome arises from the interface, fulfilment, consumer confidence or access.

The model also encourages researchers to treat changes in purchase behaviour as gradual and multidimensional. A consumer can increase online spending without increasing order frequency by placing larger baskets, or increase frequency while keeping most expenditure in stores. The products bought online may also change as trust develops. Behavioural measurement should therefore align with the research question and report more than a single adoption indicator.

From a theoretical standpoint, the framework links acceptance, experience and behaviour without claiming that one theory is sufficient for every stage. TAM is strongest at the technological evaluation stage, expectation-confirmation explains learning from use, service quality and trust-risk perspectives explain the hybrid service, and TPB provides the intention-behaviour connection. Their integration is complementary rather than competitive.

CONCLUSION

Changes in Malaysian e-grocery purchasing are best understood as the outcome of an experience that spans both the digital platform and physical fulfilment. Everyday constraints, usefulness, ease of use, trust, convenience, service quality and risk all contribute to that experience. A favourable experience strengthens the intention to continue, and that intention can lead to repeated purchasing when circumstances allow. By bringing together theories that are usually examined separately and by recognising four important boundary conditions, the framework provides a practical and testable foundation for future research on e-grocery behaviour in Malaysia.

The central implication is that continued e-grocery use is earned through the entire journey. Technology creates access to the channel, but fulfilment determines whether the promise is realised. Trust and risk shape the willingness to depend on the service, while intention becomes behaviour only when products, prices and delivery remain available. This integrated view is more suitable for grocery retail than a model concerned only with initial acceptance.

The framework is intentionally contestable. Its specific theoretical claim is that overall shopping experience integrates technology, service and risk evaluations before continuance intention forms, and that intention remains distinct from repeat purchasing. Empirical evidence may instead support direct effects, satisfaction as an additional mediator, or separate digital and fulfilment experiences. Comparing those alternatives is part of the contribution because it identifies the mechanism that existing adoption or repurchase models leave unresolved. The framework should therefore be treated as a disciplined starting explanation, not a settled universal model.

Implications for Empirical Testing

A useful first test of the framework would combine a consumer survey with information about the respondent's most recent e-grocery order. General attitude questions alone may invite vague answers, whereas a recent-order reference helps the respondent evaluate concrete events such as product availability, substitutions, delivery punctuality and the condition of fresh items. The survey should distinguish consumers who ordered directly from a retailer from those who used a marketplace or delivery intermediary because responsibility for service failures may be interpreted differently. Screening questions should also confirm that participants

personally selected or paid for the groceries rather than merely receiving an order placed by another household member.

Measurement should preserve the distinction between channel adoption and channel continuation. Adoption can be represented by first use or recent trial, while continuation requires evidence of repeated choice over time. Purchase frequency, share of grocery spending placed online and the number of platforms used can provide complementary behavioural indicators. Intention remains valuable, but it should not be treated as an exact substitute for action. Where access is possible, researchers could compare self-reported intention with a later purchase diary or transaction record. This design would reveal whether situational constraints, habit or attractive store promotions interrupt the movement from intention to actual repurchase.

Future studies should adapt multi-item scales from the originating literature and then assess content validity with e-grocery consumers and subject experts. A pilot study should examine wording, item redundancy and the separation of neighbouring constructs, particularly usefulness versus convenience, trust versus risk, and e-service quality versus fulfilment experience. The measurement model must be established before structural paths are interpreted: internal consistency should be reported using appropriate reliability coefficients; convergent validity should be assessed through indicator performance and average variance extracted; and discriminant validity should be examined with a method such as HTMT together with cross-loading or factor evidence. Measurement invariance is required before comparing Malaysian regions, user groups or product categories. Researchers should also address common-method bias and, where possible, combine survey measures with transaction records or purchase diaries. Structural analysis should then compare the direct, full-mediation, partial-mediation, satisfaction-mediation and decomposed-experience specifications described in Section 3.3. Mediation should be evaluated through indirect effects and uncertainty intervals, while model choice should consider explanatory clarity, out-of-sample prediction and theoretical coherence.

A longitudinal design offers the strongest test of the proposed sequence. One practical design would measure expectations, trust and risk before an order; confirmation, service performance and shopping experience immediately after delivery; continuance intention several weeks later; and actual repurchase at a subsequent follow-up. A two-wave design can provide a feasible minimum by separating the service encounter from later intention and behaviour. Repeated observations would reveal whether favourable experience changes trust and risk, whether intention predicts the next purchase, and whether habit eventually reduces deliberate evaluation. This temporal ordering also limits retrospective reconstruction of expectations from a later positive or negative outcome.

Malaysia also offers opportunities for meaningful group comparisons. The relationships may differ between dense urban areas and locations with limited delivery coverage, between households with and without dependent children, and between frequent users and recent adopters. Multi-group analysis can assess whether the same measurement structure and path strengths apply across these groups. However, demographic categories should not be used as automatic explanations. Their value lies in representing differences in household responsibility, time pressure, access, purchasing power and prior digital experience that can be theoretically connected to channel choice.

RECOMMENDATIONS

Recommendations for Retailers

Retailers should treat e-grocery as a complete service rather than as an application supported by delivery. Improvements to the interface need to be matched by accurate inventory, clear guidance for pickers, customer control over substitutions, appropriate temperature handling, reliable delivery and effective recovery. Trust grows when product information is honest, fees are visible, refund rules are clear and communication remains consistent. Customers should also be able to keep their loyalty benefits, order history and service relationship when moving between delivery, collection and the store.

- Measure customer experience across search, ordering, picking, delivery and recovery instead of assessing the application alone.

- Provide customer-controlled substitution rules and real-time communication for unavailable products.
- Treat inventory accuracy, product condition and on-time delivery as core digital-service metrics.
- Maintain loyalty benefits, pricing clarity and order history across delivery, collection and physical stores.
- Segment services by shopping mission, recognising that routine, urgent and fresh-product purchases create different expectations.

Recommendations for Policymakers

Consumer protection in e-grocery retail should cover transparent pricing, consent for substitutions, timely refunds, responsible handling of personal data and accountability for product condition. Digital inclusion also matters because platform accessibility and delivery coverage are uneven. Innovation should be encouraged, but not at the cost of hidden fees, weak avenues for redress or exclusion of consumers who have limited digital confidence.

Recommendations for Future Research

Future empirical work should compare the proposed sequence with the alternative models identified in Section 3.3 and test whether shopping experience mediates technology, trust, risk and service-quality effects. Longitudinal or two-wave designs are particularly valuable for the intention-behaviour gap and for changes in trust, risk and routine across repeated orders. The framework should also be tested across Malaysian regions, fresh versus packaged product categories, integrated versus standalone channels, and consumers with different levels of digital capability. Service-recovery experiments can further identify which responses rebuild trust after fulfilment failure.

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