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Digital Customer Experience and Its Relationship with Brand Loyalty (A Field Study of Miswak Customers in Iraq)

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ABSTRACT

This research aims to analyze the impact of digital customer experience in enhancing brand loyalty among customers of Miswak Company in Iraq. The study adopted a descriptive-analytical approach and utilized Structural Equation Modeling (SEM) via SmartPLS V4. The dimensions of digital customer experience were; ease of use, responsiveness, digital security and trust, and content quality and interaction, whereas brand loyalty was measured through behavioral and attitudinal loyalty. A cross-sectional survey supplied 384 valid responses (420 returned; 36 excluded). The results revealed a positive and significant effect of digital customer experience on brand loyalty, The reported overall digital-experience association was $\beta = 0.804$ ($p < 0.001$), accounting for 64.6% of loyalty variance ($R^2 = 0.646$), with prominent impacts stemming from ease of use, digital security and trust, and content quality and interaction, whereas the effect of responsiveness was statistically insignificant. Furthermore, the results referred that the model possesses high levels of validity and reliability. The study recommends developing digital platforms, enhancing security, and fostering interactive content to support customer loyalty and boost competitive advantage.

Keywords: Digital Customer Experience, Brand Loyalty, Miswak Company, Iraq.

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Introduction:

Rapid digital transformation has made digital technology central to customer relationship management and marketing. Digital customer experience comprises cognitive, affective and sensory responses across online touchpoints, and such encounters are associated with customers' subsequent attitudes and loyalty (Lemon & Verhoef, 2016, pp. 69–96; Becker & Jaakkola, 2020, pp. 630–648; Bleier et al., 2019, pp. 98–119; Cornelia &Pasharibu, 2020, pp. 145–157).

In digital retailing, brand loyalty depends not only on price and product quality but also on ease of online shopping, customer trust and cumulative service experiences (Rose et al., 2012, pp. 308–322; Cornelia & Pasharibu, 2020, pp. 145–157). Favorable experiences can reinforce attitudinal loyalty and repurchase intentions. Behavioral loyalty refers to repeat purchases, while attitudinal loyalty concerns preference and commitment (Dick & Basu, 1994, pp. 99–113; Oliver, 1999, pp. 33–44).

Prior research identifies ease of use, responsiveness, transaction security and informational service quality as key characteristics of the digital service experience (Davis, 1989, pp. 319–340; Parasuraman et al., 2005, pp. 213–233; Gefen et al., 2003, pp. 51–90; Rose et al., 2012, pp. 308–322). Empirical studies in Iraqi online commerce and banking underscore the importance of digital communication, service delivery and user trust (Maaroof&Oğrak, 2024, pp. 397–413; Mousa et al., 2021, pp. 421–431). The relative importance of individual dimensions nevertheless varies across settings (Kim & Peterson, 2017, pp. 44–54; Arifin, 2024, pp. 40–44).

The Iraqi digital-commerce context warrants focused study. An Iraqi study of airline reservation offices links e-commerce applications to digital marketing practices (Maaroof&Oğrak, 2024, pp. 397–413), while an Iraqi survey of social-media users associates digital promotion and user-generated content with purchasing decisions (Mohammed et al., 2025, pp. 429–449). Research on Iraqi social-commerce customers further links engagement with repeat purchasing (Mubdir et al., 2025, pp. 4070–4082). These studies concern related but not identical outcomes; the present survey specifically examines brand loyalty among Miswag customers and distinguishes functional experience from content quality.

Three gaps motivate the study. First, although Iraqi research has examined online promotion, customer engagement and loyalty (Maaroof&Oğrak, 2024, pp. 397–413; Mohammed et al., 2025, pp. 429–449; Mubdir et al., 2025, pp. 4070–4082), the relationships between distinct experience dimensions and both behavioral and attitudinal loyalty among Miswag customers remain insufficiently specified. Second, the conceptual dimensions of ease of use, responsiveness and security/trust may overlap empirically and therefore require discriminant-validity analysis. Third, the partial association of content quality with loyalty may change after functional experience is considered simultaneously. This study assesses those questions in an Iraqi e-commerce setting without claiming causal identification.

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(1) Theoretical Framework

(1-1) Digital Customer Experience

(1-1-1) Definitions of Digital Customer Experience

Lemon and Verhoef (2016, p. 71) define customer experience as a multidimensional construct that focuses on the customer's cognitive, emotional, behavioral, sensorial and social responses to the firm's offerings during the entire purchase journey. In the online setting, Rose et al. (2012, p. 309) define online customer experience as a psychological state manifested as the customer's subjective response to the e-retailer's website, comprising cognitive and affective components. Bleier et al. (2019, pp. 98–119) similarly conceptualize the online customer experience as the customer's cognitive, affective, social and sensory responses to a firm's online touchpoints, which they capture through informativeness, entertainment, social presence and sensory appeal. Kranzbühler et al. (2018, pp. 433–456) add a temporal distinction between the static experience, the customer's evaluation of one or several touchpoints at a single point in time, and the dynamic experience, which evolves across the touchpoints of the whole customer journey.

Synthesizing these definitions, digital customer experience is a cumulative, multidimensional evaluation that customers form across the firm's digital touchpoints, combining functional elements (usability, speed and security) with informational and interactive elements (meaningful content and two-way communication). **Operational definition:** In this study, digital customer experience is defined as the customer's overall evaluation of interacting with Miswag's website and mobile application, measured by the respondent's level of agreement with 18 items (after purification) covering two dimensions: functional platform experience (15 items reflecting ease of use, responsiveness, and digital security and trust) and content quality and interaction (three items).

(1-1-2) Theoretical Grounding and Dimensions of Digital Customer Experience

The four dimensions adopted in this study draw on complementary theoretical perspectives. Ease of use originates in the technology acceptance model, in which perceived ease of use shapes users' attitudes toward a technology and their intention to continue using it (Davis, 1989, pp. 319–340). Responsiveness derives from the electronic service quality literature, where it reflects the effective handling of customer requests and problems through the site (Parasuraman et al., 2005, pp. 213–233). Digital security and trust is grounded in commitment–trust theory, which holds that trust is a precondition of relational commitment (Morgan & Hunt, 1994, pp. 20–38), and in research showing that trust is central to online purchasing (Gefen et al., 2003, pp. 51–90; Kim & Peterson, 2017, pp. 44–54). Content quality and interaction reflects the information-quality component of the information systems success model (DeLone& McLean, 2003, pp. 9–30) and the informativeness and social presence that make online experiences effective (Bleier et al., 2019, pp. 98–119). Recent research likewise treats the digital experience as multidimensional and links it to value and loyalty outcomes (Cornelia and Pasharibu, 2020, pp. 145–157; Hollebeek et al., 2023,

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pp. 8–26; Kandil et al., 2024, pp. 25–54; Giharis& Rufaidah, 2025, pp. 4083–4096).

a) Ease of use. Davis (1989, p. 320) defines perceived ease of use as the degree to which a person believes that using a particular system would be free of effort. On a shopping platform, it is reflected in clear interfaces, intuitive navigation and short ordering steps.

b) Responsiveness. In the E-S-QUAL framework, efficiency refers to the ease and speed of accessing and using the site, and responsiveness to the effective handling of problems and returns through the site (Parasuraman et al., 2005, pp. 213–233). In this study, responsiveness covers both the speed of the platform and order processing and the timely handling of customer inquiries.

c) Digital security and trust. Parasuraman et al. (2005, pp. 213–233) define privacy as the degree to which the site is safe and protects customer information, and Gefen et al. (2003, pp. 51–90) conceptualize online trust as the customer's beliefs about the vendor's integrity, benevolence and ability. The dimension therefore refers to the customer's sense of security when sharing personal data and conducting transactions, and to confidence that the platform handles that data transparently.

d) Content quality and interaction. DeLone and McLean (2003, pp. 9–30) define information quality in terms of the desirable characteristics of system output, such as accuracy, relevance, completeness and timeliness, and Bleier et al. (2019, pp. 98–119) identify informativeness and social presence as core elements of effective online experiences. The dimension refers to accurate, useful and current content together with the platform's interaction with customer comments and inquiries.

Empirical structure adopted. Although the four elements are theoretically distinct, the first three belong to what Parasuraman et al. (2005, pp. 213–233) term the core e-service experience: efficiency (ease and speed of use) and privacy form part of the same core E-S-QUAL scale. Because the measurement-model results showed that customers did not distinguish empirically between ease of use, responsiveness and security and trust (Section 9-2-3), these three were combined into a single dimension, functional platform experience (FPE), defined as the customer's evaluation of how easily, quickly and securely the platform allows transactions to be completed. Content quality and interaction (CQI) was retained as a separate dimension.

(1-2) Brand Loyalty

(1-2-1) Definitions of Brand Loyalty

Oliver (1999, p. 34) defines brand loyalty as a deeply held commitment to rebuy or re-patronize a preferred product or service consistently in the future, causing repetitive same-brand purchasing despite situational influences and marketing efforts that could cause switching behavior. Dick and Basu (1994, p. 99) view loyalty as the strength of the relationship between an individual's relative attitude toward an entity and repeat patronage. Chaudhuri and Holbrook (2001, pp. 81–93) distinguish purchase loyalty, the willingness of the average consumer to repurchase the brand, from attitudinal loyalty, the consumer's level of commitment toward the brand. Recent reviews of brand research confirm that loyalty continues to be conceptualized through both its behavioral and attitudinal components (Parris & Guzmán, 2023, pp.

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191–234).

Operational definition: In this study, brand loyalty is the customer's continued commitment to Miswag, expressed both in repeat purchasing and in favorable attitudes toward the brand, measured by the respondent's agreement with ten items: five for behavioral loyalty and five for attitudinal loyalty.

(1-2-2) Dimensions of Brand Loyalty

Following the two-dimensional view of loyalty (Dick & Basu, 1994, pp. 99–113; Oliver, 1999, pp. 33–44; Chaudhuri & Holbrook, 2001, pp. 81–93), the study treats brand loyalty as a higher-order construct comprising behavioral and attitudinal loyalty.

a) Behavioral loyalty. Chaudhuri and Holbrook (2001, p. 82) describe behavioral, or purchase, loyalty as consisting of repeated purchases of the brand. In this study it refers to the customer's continued purchasing from Miswag and preference for it in repeat purchase decisions.

b) Attitudinal loyalty. Chaudhuri and Holbrook (2001, p. 82) describe attitudinal loyalty as including a degree of dispositional commitment in terms of some unique value associated with the brand. In this study it refers to the customer's emotional attachment to, trust in and sense of belonging to the brand.

(1-3) Digital Customer Experience and Brand Loyalty: Hypotheses Development

Customer-experience research treats loyalty as an outcome of customers' evaluations across multiple touchpoints (Lemon & Verhoef, 2016, pp. 69–96). Functional reliability, clear product information and responsive service may contribute to both repeat purchases and positive brand attitudes (Rose et al., 2012, pp. 308–322; Bleier et al., 2019, pp. 98–119). The positive connection between digital experience and loyalty has also been documented among smartphone users (Cornelia &Pasharibu, 2020, pp. 145–157) and in e-commerce research (Arifin, 2024, pp. 40–44), supporting the rationale for H1.

At the dimension level, the technology acceptance model implies that effortless use encourages continued use (Davis, 1989, pp. 319–340), the e-service quality literature indicates that fast and secure transactions sustain customers' confidence in the provider (Parasuraman et al., 2005, pp. 213–233), and commitment–trust theory holds that trust is the basis of relational commitment (Morgan & Hunt, 1994, pp. 20–38; Gefen et al., 2003, pp. 51–90; Kim & Peterson, 2017, pp. 44–54). Together, these arguments support a positive effect of functional platform experience on brand loyalty (H1.1). The information systems success model and research on online experiences suggest that accurate, useful and interactive content increases perceived value and brand attachment (DeLone& McLean, 2003, pp. 9–30; Bleier et al., 2019, pp. 98–119), supporting H1.2.

(2) Previous Studies

To situate the current study, previous studies were reviewed and classified according to the main research variables and their relationships.

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a) Studies on Digital Customer Experience

Sulistyo (2020, pp. 85–94) investigated digital customer experience, satisfaction, loyalty and online word-of-mouth among millennial consumers, finding an indirect relationship to loyalty through satisfaction rather than a statistically supported direct loyalty path. Cornelia and Pasharibu (2020, pp. 145–157) demonstrated a positive association between digital experience and brand loyalty in a smartphone sample, with implications for repurchase intentions. Kandil et al. (2024, pp. 25–54) developed a framework for improving digital experiences in complex services through integrated, accessible digital touchpoints and consistent communication.

b) Studies on Brand Loyalty

Budiman (2021, pp. 1339–1347) connected social-media marketing with brand image and loyalty among Generation Y respondents. Cornelia and Pasharibu (2020, pp. 145–157) showed that digital experience can reinforce brand loyalty and future repurchase intentions. Agu et al. (2024, pp. 2463–2475) discussed links between sustainable business practices and customer loyalty, while Alghizzawi et al. (2024, pp. 215–225) reviewed how digital-media marketing may contribute to relationships with sports brands. Ali et al. (2025, pp. 114–135) found that social-media marketing activities are associated with loyalty through brand equity, trust and self-brand connections.

c) Studies Linking Digital Customer Experience and Brand Loyalty

Cornelia and Pasharibu (2020, pp. 145–157) found that digital customer experience was positively associated with smartphone brand loyalty, which was related to repurchase intentions. Guan et al. (2021, pp. 1620–1645) examined customer experience and brand affect in the full-service hotel sector and found links to loyalty. Arifin (2024, pp. 40–44) studied digital customer experience in Indonesian e-commerce and reported a positive association with brand loyalty. These studies support a possible relationship while indicating the need to consider sector-specific experience dimensions.

d) Arab and Iraqi Studies

Research in Jordan has examined how e-service quality is related to e-loyalty in online retailing (Al-dweeri et al., 2019, pp. 902–923). For Iraq, Maaroof and Oğrak (2024, pp. 397–413) examined e-commerce and digital marketing in Iraqi airline reservation offices using 250 valid questionnaires. Mohammed et al. (2025, pp. 429–449) surveyed 200 Iraqi social-media users and reported that online advertising and user-generated content are relevant to purchasing choices. Mubdir et al. (2025, pp. 4070–4082) examined engagement and repeat purchasing among Iraqi social-commerce customers. In Iraqi banking, Mousa et al. (2021, pp. 421–431) assessed determinants of customers' e-banking acceptance, including ease of use and security. These settings offer useful comparisons, while the present study focuses on the integrated Miswag platform experience.

e) Benefits Derived from Previous Studies

The review shows that previous studies (1) agree on the importance of digital

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customer experience for building loyalty; (2) identify trust, satisfaction and engagement as mechanisms linking experience to loyalty; (3) span banking, hospitality, retail and e-commerce; and (4) rely mainly on structural equation modeling. These studies informed the selection of the DCX dimensions, the two-dimensional conceptualization of loyalty, the measurement items and the analytical approach.

f) Distinctiveness of the Current Study

The current study differs from previous work in four respects. First, it tests whether the theoretically proposed DCX dimensions are empirically distinct in customers' perceptions before estimating their joint effects, rather than testing each dimension in isolation. Second, it models brand loyalty as a second-order construct reflected in behavioral and attitudinal loyalty, whereas most prior studies, including the Iraqi studies reviewed above, measured a single loyalty outcome. Third, it focuses on a single, well-established Iraqi platform, which allows recommendations to be directed at an identifiable management. Fourth, it reports discriminant validity and collinearity diagnostics explicitly and re-specifies the model on that basis, a step that prior studies of experience dimensions have often omitted.

(3) Research Problem

With digital transformation, the customer journey encompasses online search, product information, ordering, payment and after-sales communication. Customers' evaluations therefore depend on efficiency, trust and the continuity of these touchpoints (Lemon & Verhoef, 2016, pp. 69–96; Becker & Jaakkola, 2020, pp. 630–648). Differences in the measurement of digital experience and in the strength of its relationship with loyalty remain important for research (Kranzbühler et al., 2018, pp. 433–456; Bilro& Loureiro, 2020, pp. 283–307; Maaroof&Oğrak, 2024, pp. 397–413).

In Iraq, e-commerce growth raises practical questions about how customer experience relates to trust, purchasing decisions and repeat purchases. Existing evidence examines marketing and loyalty in local e-stores and social-commerce contexts (Maaroof&Oğrak, 2024, pp. 397–413; Mohammed et al., 2025, pp. 429–449; Mubdir et al., 2025, pp. 4070–4082), but the association of functional platform experience and informational interaction with a two-dimensional measure of Miswag brand loyalty remains insufficiently examined.

Accordingly, the research problem is framed by the following main question: **To what extent does digital customer experience, with its dimensions, affect brand loyalty, as reflected in behavioral and attitudinal loyalty, among customers of Miswag in Iraq?** This main question gives rise to the following sub-questions:

a. Does functional platform experience (ease of use, responsiveness, and digital security and trust), as a dimension of digital customer experience, affect brand loyalty (reflected in behavioral and attitudinal loyalty) among Miswag customers?
b. Does content quality and interaction, as a dimension of digital customer experience, affect brand loyalty (reflected in behavioral and attitudinal loyalty)

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among Miswag customers?

c. Are the theoretically proposed dimensions of digital customer experience empirically distinct in the perceptions of Miswag customers?

(4) Research Objectives

The study seeks to achieve the following objectives:

a. Measuring the overall effect of digital customer experience on brand loyalty among Miswag customers.
b. Measuring the effect of functional platform experience on brand loyalty (behavioral and attitudinal).
c. Evaluating the effect of content quality and interaction on brand loyalty (behavioral and attitudinal).
d. Testing the discriminant validity of the proposed DCX dimensions and specifying the model accordingly.

(5) Research Significance

(5-1) Theoretical Significance

a. The study enriches knowledge on the relationship between digital customer experience and brand loyalty in the Iraqi e-commerce context by testing the empirical structure of DCX and its effect on a two-dimensional, higher-order conceptualization of loyalty.
b. It integrates the technology acceptance, e-service quality, commitment–trust and information systems success perspectives into a single explanatory model.

(5-2) Practical Significance

a. It provides Miswag's management with evidence on which experience levers matter most for retaining customers.
b. It offers recommendations, each linked to a specific finding, for improving the functional experience (ease of use, speed and security) and the content of the platform.

(6) Research Model and Hypotheses

The study distinguishes the reported original specification from the refined analysis. In the original specification, digital customer experience (DCX, X) comprised ease of use (X1), responsiveness (X2), digital security and trust (X3), and content quality and interaction (X4). The overall hypothesis (H1) concerns the association between total DCX and brand loyalty (Y). The original dimension-specific paths are retained as diagnostic comparisons because their VIF values indicate severe collinearity. In the revised specification, X1–X3 are combined as functional platform experience (FPE), and the retained X4_16–X4_18 items define content quality and interaction (CQI). The two jointly adjusted associations are designated H1.1 (FPE–Y) and H1.2 (CQI–Y).

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Brand loyalty is represented conceptually by behavioral (Y1) and attitudinal (Y2) facets; their very high loadings and R^2 values describe measurement relationships rather than independent structural explanatory power (Sarstedt et al., 2019, pp. 197–211).

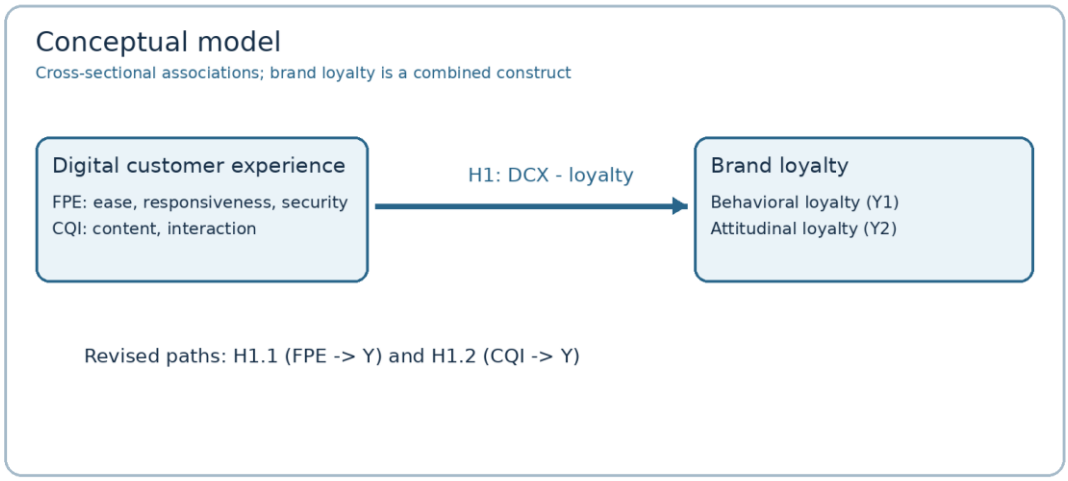

Figure (1): Research Model

Source: Prepared by the researcher based on the literature reviewed.

In light of the research problem, the literature and the research objectives, the following hypotheses were formulated:

Main hypothesis (H1): Digital customer experience has a positive and significant effect on brand loyalty (reflected in behavioral and attitudinal loyalty) among Miswag customers.

H1.1: Functional platform experience (ease of use, responsiveness, and digital security and trust) has a positive and significant effect on brand loyalty.

H1.2: Content quality and interaction has a positive and significant effect on brand loyalty.

(7) Research Boundaries

- **Thematic boundaries:** The research is restricted to digital customer experience as measured through ease of use, responsiveness, digital security and trust (combined into functional platform experience), and content quality and interaction and to brand loyalty reflected in behavioral and attitudinal loyalty.
- **Human boundaries: Adult customers of Miswag who had previously used its electronic shopping services and completed the questionnaire.**
- **Spatial boundaries: Customers of Miswag in Iraq.**
- **Temporal boundaries:** July–August 2026.

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(8) Research Methodology

(8-1) Research Approach and Design

The study adopts a descriptive-analytical approach and a quantitative, cross-sectional field design. The literature review provides the theoretical framework and the study hypotheses, while the field survey examines associations between the research variables among Miswag customers. The initial overall digital customer experience model is presented using its reported statistical results. After measurement refinement, H1.1 and H1.2 are evaluated by standardized multiple linear regression. The cross-sectional design supports statistical association and prediction, not causal inference (Hair et al., 2019, pp. 2–24).

(8-2) Research Population and Sample

The study population comprises customers using Miswag's website or application. Because the supplied materials do not include a complete customer sampling frame, the questionnaire sample is treated as a purposive, non-probability sample. The 384 valid cases are sufficient for the reported regression analysis, but the size alone does not establish representativeness.

Participants were recruited through a purposive online survey among Miswag customers. The final sample included 384 usable responses. A conventional large-population sample-planning calculation, $n_0 = z^2p(1 - p)/e^2$, with $z = 1.96$, $p = 0.50$ and $e = 0.05$, gives $n_0 = 384.16$, consistent with the large-population sample-size guidance of Krejcie and Morgan (1970, pp. 607–610). Sample adequacy in PLS applications also depends on the model and expected effect size (Kock & Hadaya, 2018, pp. 227–261). Because recruitment was purposive, the numerical benchmark does not establish random-sample representativeness.

The questionnaire was distributed electronically to eligible Miswag customers during July–August 2026. The field summary records 500 distributions or link views, 420 returned questionnaires, 36 excluded submissions, and 384 valid observations. Recruitment followed the available purposive online survey channel; individual distribution channels are not treated as evidence of probability sampling. Table (1) presents the survey response accounting.

Table (1): Questionnaire Distribution and Response

Item	Number	Percentage
Questionnaires distributed / link views	500	100%
Questionnaires returned	420	84.0%
Excluded (incomplete, failed screening questions, straight-lining)	36	7.2%
Valid questionnaires analyzed	384	76.8%
Response rate (valid ÷ distributed)	76.8%	

Source: Prepared by the researcher.

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The field summary records 500 questionnaire distributions or link views, 420 returned forms (84.0% relative to that figure), 36 exclusions and 384 valid observations (76.8% relative to 500). These ratios describe the administrative survey flow rather than a documented probability-sample response rate. As with other non-probability web surveys, potential nonresponse bias remains a design consideration, and the early–late response framework of Armstrong and Overton (1977, pp. 396–402) provides a suitable validation approach for subsequent research.

(8-3) Research Instrument

Data were collected with a structured five-point Likert questionnaire. Digital customer experience was initially measured with 20 indicators, five each for ease of use, responsiveness, digital security and trust, and content quality and interaction. Brand loyalty was measured through 10 indicators across behavioral and attitudinal loyalty. After removing X4_19 and X4_20, the final content-quality dimension retained three items; the functional-experience score combined the original ease-of-use, responsiveness and security/trust facets. Item definitions are presented in Tables (4) and (5).

(8-4) Statistical Methods and Analytical Tools

The analysis combines measurement-model diagnostics (indicator loadings, Cronbach's α, rho_A, composite reliability, AVE and HTMT) with multivariable hypothesis testing. Following the construction of the two final experience dimensions, standardized multiple regression was used to examine their joint associations with brand loyalty for n = 384. The regression reports standardized coefficients, standard errors, t and p statistics, F, R^2, adjusted R^2, VIF and Cohen's f^2, while the overall experience-to-loyalty model is reported separately. The statistical criteria are summarized in Table (2), and the hypothesis tests are presented in Table (14b).

Table (2): Measurement and Regression Evaluation Criteria

Criterion	Purpose	Brief computation	Threshold	Reference
Outer loading (λ)	Indicator reliability	Standardized loading of the item on its construct	≥ 0.70 (0.40–0.70 retained if CR/AVE adequate)	Hair et al. (2019, pp. 2–24)
Cronbach's α	Internal consistency (lower bound)	Based on the average inter-item correlation	≥ 0.70	Hair et al. (2019, pp. 2–24)
rho_A (ρA)	Internal consistency (between α and CR)	Consistent reliability coefficient from PLS weights	≥ 0.70	Dijkstra & Henseler (2015, pp. 297–316)
Composite reliability (CR)	Internal consistency (upper bound)	$(\Sigma\lambda)^2 / [(\Sigma\lambda)^2 + \Sigma(1 - \lambda^2)]$	0.70–0.95	Hair et al. (2019, pp. 2–24)

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Criterion	Purpose	Brief computation	Threshold	Reference
AVE	Convergent validity	Mean of squared loadings, $\Sigma\lambda^2 / n$	≥ 0.50	Fornell & Larcker (1981, pp. 39–50)
HTMT	Discriminant validity	Mean between-construct item correlations ÷ geometric mean of within-construct correlations	< 0.85 (conceptually similar constructs < 0.90); bootstrap CI excludes 1	Henseler et al. (2015, pp. 115–135)
VIF (inner)	Collinearity among predictors	$1 / (1 - R^2)$ of each predictor regressed on the other predictors	< 5 (ideally < 3)	Hair et al. (2019, pp. 2–24)
Coefficient (β), t, p	Hypothesis testing	Standardized coefficient; t = β / SE and two-sided p from the regression t test	$p < 0.05$	Hair et al. (2019, pp. 2–24)
R^2	Explanatory power	Share of variance of the endogenous construct explained	0.25 weak; 0.50 moderate; 0.75 substantial	Hair et al. (2019, pp. 2–24)
f^2	Effect size of each predictor	$(R^2\text{included} - R^2\text{excluded}) / (1 - R^2\text{included})$	0.02 small; 0.15 medium; 0.35 large	Hair et al. (2019, pp. 2–24)
Q^2predict	Out-of-sample predictive relevance	PLSpredict: $1 - \Sigma(\text{prediction error})^2 / \Sigma(\text{error of mean benchmark})^2$	> 0	Shmueli et al. (2019, pp. 2322–2347)
SRMR	Approximate model fit	Root mean square of differences between observed and model-implied correlations	< 0.08	Henseler et al. (2016, pp. 2–20)

Source: Prepared by the researcher based on the cited references.

(9) Field Study and Hypothesis Testing

(9-1) Measurement Scale and Coding of the Research Variables

Respondents' opinions were measured on a five-point Likert scale. To interpret the means, the range of the scale (5 − 1 = 4) was divided by the number of levels (5), giving an interval width of 0.80, as shown in Table (3).

Table (3): Five-Point Likert Scale and Interpretation Intervals

Scale value	Response	Mean interval	Level
1	Strongly disagree	1.00 – 1.80	Very low
2	Disagree	1.81 – 2.60	Low
3	Neutral	2.61 – 3.40	Moderate
4	Agree	3.41 – 4.20	High

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Scale value	Response	Mean interval	Level
5	Strongly agree	4.21 – 5.00	Very high

Source: Prepared by the researcher.

The questionnaire covers two main variables, digital customer experience and brand loyalty, each with its dimensions, in addition to demographic variables. Tables (4) and (5) present the corrected coding used consistently in the questionnaire, the data file, the tables and the SmartPLS model. Item codes X1–X3 identify the three facets that form functional platform experience (FPE) in the final model; X4 identifies content quality and interaction (CQI).

Table (4): Coding of the Digital Customer Experience Measurement Model

Dimension	Code	Item
FPE – Ease of use facet (X1)	X1_1	It is easy to use the company's digital platform.
	X1_2	The platform interface is clear and easy to understand without the need for guidance.
	X1_3	I can execute required operations quickly and without complexity.
	X1_4	Registration or ordering steps through the platform are simple and direct.
	X1_5	Navigation between the different pages of the platform is easy.
FPE – Responsiveness facet (X2)	X2_6	The platform responds quickly when executing commands.
	X2_7	Inquiries are answered in a timely manner.
	X2_8	I do not face delays while loading pages or content.
	X2_9	Orders are processed quickly and efficiently.
	X2_10	Customer service is available and responds within a short time.
FPE – Security and trust facet (X3)	X3_11	I feel secure when entering my personal data on the platform.
	X3_12	The platform provides effective protection against hacking or fraud.
	X3_13	I am reassured about the confidentiality of my digital information and transactions.
	X3_14	I trust the brand when transacting over the internet.
	X3_15	The platform deals transparently with customer data.
CQI – Content quality and interaction (X4)	X4_16	The website provides clear and useful content.
	X4_17	The information displayed is accurate and continuously updated.
	X4_18	There is effective interaction with customer comments and inquiries.
	X4_19	The visual design and content are attractive and engaging. (deleted)

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Dimension	Code	Item
	X4_20	Content is provided that suits my interests and needs. (deleted)

Source: Prepared by the researcher based on the literature reviewed.

Table (5): Coding of the Brand Loyalty Measurement Model

Dimension	Code	Item
Behavioral Loyalty (Y1)	Y1_21	I am keen on continuously purchasing products from this brand.
	Y1_22	I recommend others to deal with this brand.
	Y1_23	I do not change my preference for this brand despite the presence of alternatives.
	Y1_24	I prefer this brand in repeated purchase decisions.
	Y1_25	I deal with this brand as my first choice.
Attitudinal Loyalty (Y2)	Y2_26	I feel a sense of belonging to this brand.
	Y2_27	I have positive feelings toward this brand.
	Y2_28	I trust that this brand always fulfills its promises.
	Y2_29	I am emotionally attached to this brand.
	Y2_30	I believe this brand reflects my personality and values.

Source: Prepared by the researcher based on the literature reviewed.

(9-2) Assessment of the Measurement Model (Confirmatory Composite Analysis)

The supplied reflective measurement results were evaluated using outer loadings, Cronbach's α, rho_A, composite reliability, average variance extracted (AVE), and heterotrait–monotrait (HTMT) ratios. These diagnostics follow the measurement-validation framework discussed by Hair et al. (2020, pp. 101–110) and Henseler et al. (2015, pp. 115–135). Item deletion, discriminant validity and score re-specification are discussed before the multiple-regression assessment of the final two predictors.

(9-2-1) Digital Customer Experience: Initial Four-Dimension Model

Table (6) reports the results for the four dimensions of digital customer experience as initially proposed.

Table (6): Measurement Statistics for Functional Facets and Refined Content Quality

Dimension	Item	Loading	Cronbach's α	ρA	CR	AVE
Ease of Use (X1)	X1_1	0.905	0.949	0.951	0.961	0.831
	X1_2	0.880				
	X1_3	0.931				
	X1_4	0.930				

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Dimension	Item	Loading	Cronbach's α	ρA	CR	AVE
	X1_5	0.913				
Responsiveness (X2)	X2_6	0.911	0.964	0.966	0.972	0.873
	X2_7	0.928				
	X2_8	0.951				
	X2_9	0.951				
	X2_10	0.930				
Digital Security and Trust (X3)	X3_11	0.867	0.947	0.950	0.959	0.825
	X3_12	0.883				
	X3_13	0.934				
	X3_14	0.912				
	X3_15	0.944				
Content Quality and Interaction (X4)	X4_16	0.957	0.928	0.931	0.958	0.884
	X4_17	0.929				
	X4_18	0.935				

Source: Measurement statistics supplied for X1–X3 and the three retained CQI indicators X4_16–X4_18.

All loadings of the first three dimensions exceed 0.70, Cronbach's α and CR values lie between 0.947 and 0.972, and AVE values exceed 0.50, indicating adequate indicator reliability, internal consistency and convergent validity. The CR values of 0.95–0.97, however, exceed the upper bound of 0.95 recommended by Hair et al. (2019, pp. 2–24), indicating a high degree of item redundancy and anticipating the discriminant-validity problem examined in Section 9-2-3.

The before-and-after measurement comparison (Table 7) shows that the two excluded CQI items had positive but inadequate initial loadings: 0.482 for X4_19 and 0.397 for X4_20. After their exclusion, the three retained loadings increased to 0.957, 0.929 and 0.935. Reported Cronbach's α rose from 0.812 to 0.928, rho_A from 0.819 to 0.931, CR from 0.869 to 0.958 and AVE from 0.579 to 0.884. The CQI dimension thus displays stronger internal consistency and convergent validity, but the narrower retained scale measures clarity, accuracy and interaction rather than visual appeal or personalization. The reliability results are based on the supplied final summary (Hair et al., 2019, pp. 2–24; Henseler et al., 2015, pp. 115–135).

Table (7): Content Quality and Interaction Before and After Item Removal

Item / criterion	Before removal (five items)	After removal (three items)
X4_16	0.891	0.957
X4_17	0.876	0.929

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Item / criterion	Before removal (five items)	After removal (three items)
X4_18	0.883	0.935
X4_19	0.482	Removed
X4_20	0.397	Removed
Cronbach's α	0.812	0.928
ρA	0.819	0.931
CR	0.869	0.958
AVE	0.579	0.884

Source: Final pre-deletion and post-deletion measurement summaries provided for X4_16–X4_20. The reported indices are retained as supplied.

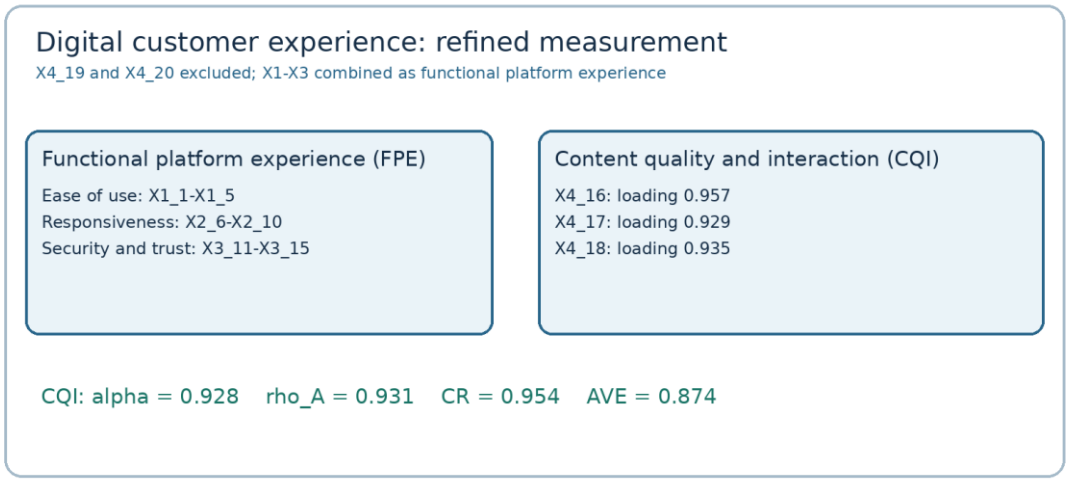

Figure (2): Refined Digital Customer Experience Measurement Specification

Source: Final retained measurement indicators.

(9-2-2) Brand Loyalty

Table (8) reports the results for the two dimensions of brand loyalty.

Table (8): Outer Loadings, Reliability and Convergent Validity of Brand Loyalty

Dimension	Item	Loading	Cronbach's α	ρA	CR	AVE
Behavioral Loyalty (Y1)	Y1_21	0.949	0.962	0.964	0.971	0.870
	Y1_22	0.958				

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Dimension	Item	Loading	Cronbach's α	ρA	CR	AVE
	Y1_23	0.933				
	Y1_24	0.870				
	Y1_25	0.950				
Attitudinal Loyalty (Y2)	Y2_26	0.941	0.944	0.947	0.957	0.817
	Y2_27	0.850				
	Y2_28	0.905				
	Y2_29	0.895				
	Y2_30	0.925				

Source: Prepared by the researcher based on the results of statistical analysis using SmartPLS 4.

All loadings exceed 0.70, Cronbach's α, ρA and CR values exceed 0.70, and AVE values exceed 0.50, indicating that the indicator reliability, internal consistency and convergent validity criteria are met for both loyalty dimensions.

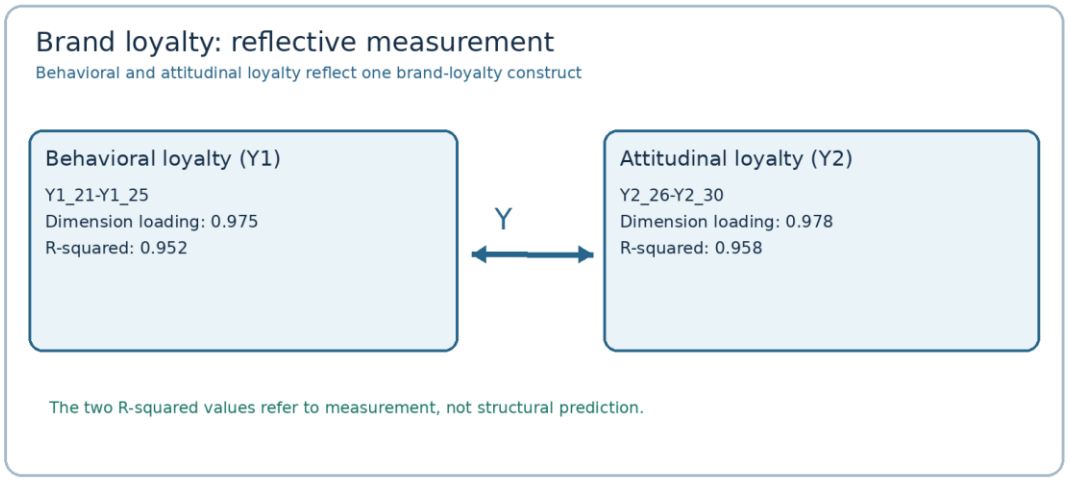

Figure (3): Reflective Measurement Structure of Brand Loyalty

Source: Reflective brand-loyalty measurement results from the study.

(9-2-3) Discriminant Validity and Re-specification of Digital Customer Experience

Discriminant validity was assessed with the heterotrait–monotrait ratio (HTMT), which is more sensitive than the Fornell–Larcker criterion (Henseler et al., 2015, pp. 115–135). Discriminant validity is not established when HTMT exceeds 0.90 for conceptually similar constructs, or when the 95% bootstrap confidence interval of HTMT includes 1, which indicates that the two constructs cannot be statistically

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distinguished (Henseler et al., 2015, pp. 115–135). Table (9) reports the results for the initial four-dimension model.

Table (9): Discriminant Validity of the Initial DCX Dimensions

Pair	Correlation (Table 13)	HTMT (reported)	HTMT cutoff	Interpretation	Fornell–Larcker
Ease of use – Responsiveness	0.937	0.942	> 0.90	Not met	Not met (0.937 > √AVE 0.912)
Ease of use – Security and trust	0.923	0.928	> 0.90	Not met	Not met (0.923 > √AVE 0.908)
Responsiveness – Security and trust	0.951	0.958	> 0.90	Not met	Not met (0.951 > √AVE 0.908)
Pairs involving content quality and interaction	0.693–0.702	0.721–0.734	< 0.90	met	Met

Source: Initial-dimensional correlations and HTMT values; evaluated using the discriminant-validity criterion of Henseler et al. (2015, pp. 115–135).

The HTMT ratios for ease of use–responsiveness (0.942), ease of use–security/trust (0.928), and responsiveness–security/trust (0.958) all exceed 0.90, supporting a discriminant-validity concern across the initial functional dimensions (Henseler et al., 2015, pp. 115–135). High pairwise correlations and the initial VIF estimates (9.12, 14.10 and 11.62) further motivate the revised functional platform experience specification.

The three related facets were combined into functional platform experience (FPE) on theoretical and statistical grounds. The initial dimensions correlated very strongly (r = 0.923–0.951), with HTMT values between 0.928 and 0.958, and had VIF values up to 14.10. This supports a more parsimonious functional experience score encompassing ease of use, responsiveness and security/trust (Parasuraman et al., 2005, pp. 213–233; Henseler et al., 2015, pp. 115–135). In the revised two-dimensional model, the correlation between FPE and content quality and interaction (CQI) was 0.712. The square root of CQI's AVE (√0.884 ≈ 0.940) exceeded the FPE–CQI correlation (0.712), providing a limited Fornell–Larcker comparison for CQI, rather than an HTMT assessment. The VIF of 2.028 for each regression predictor was below the recommended threshold of 3.0, indicating that multicollinearity was not a critical concern for the revised structural model (Hair et al., 2019, pp. 2–24).

(9-2-4) Digital Customer Experience: Final Two-Dimension Model

Table (9a) reports the measurement results of the re-specified model.

Table (9a): Reliability and Validity of the Final DCX Dimensions

Dimension	Items	Loading range	Cronbach's α	ρA	CR	AVE	HTMT with other dimension

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Dimension	Items	Loading range	Cronbach's α	ρA	CR	AVE	HTMT with other dimension
Functional Platform Experience (FPE)	X1_1–X3_15 (15)	0.922–0.951	0.912	0.926	0.934	0.865	0.724
Content Quality and Interaction (CQI)	X4_16–X4_18 (3)	0.929–0.957	0.928	0.931	0.958	0.884	0.724

Table (9b): HTMT Discriminant-Validity Decisions at the 0.85 and 0.90 Thresholds

Construct pair	Observed HTMT	Criterion < 0.85	Criterion < 0.90	Interpretation
FPE – CQI (revised)	0.724	Met	Met	Acceptable by both cutoffs
Ease of use – Responsiveness	0.942	Not met	Not met	Original facets overlap
Ease of use – Security/trust	0.928	Not met	Not met	Original facets overlap
Responsiveness – Security/trust	0.958	Not met	Not met	Original facets overlap

Note: The 0.85 and 0.90 values are alternative decision thresholds, not 95% bootstrap confidence limits. A point estimate below a cutoff supports the corresponding threshold-based assessment only (Henseler et al., 2015, pp. 115–135).

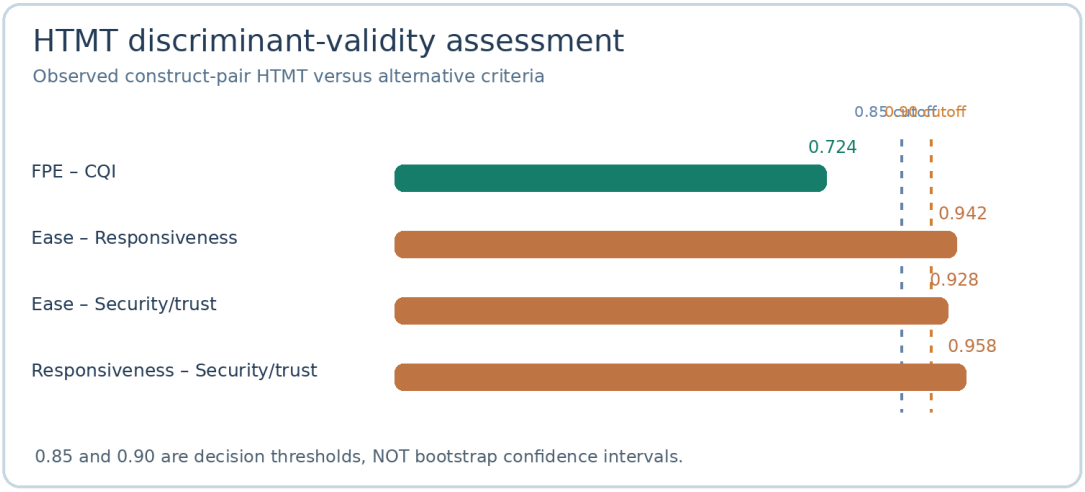

Figure (3a): Discriminant-Validity Comparison of HTMT Estimates and Reference Cutoffs

Source: Refined measurement specifications and post-deletion CQI reliability and validity results.

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Content quality and interaction met the reliability and convergent-validity thresholds after item deletion (Cronbach's α = 0.928, rho_A = 0.931, CR = 0.958, AVE = 0.884). The retained indicator loadings ranged from 0.929 to 0.957, showing strong association with the revised content-quality dimension. The FPE score combines three highly correlated functional aspects of the platform: ease of use, responsiveness and digital security/trust. The final FPE–CQI correlation was 0.712 and each predictor's VIF was 2.028, supporting joint interpretation of their regression coefficients (Hair et al., 2019, pp. 2–24).

(9-3) Descriptive Analysis of the Research Variables

(9-3-1) Characteristics of the Sample

Table (10) presents the distribution of the sample by demographic variables.

Table (10): Distribution of the Sample by Demographic Variables

Variable	Category	Frequency	Percentage (%)
Gender	Male	129	33.6
	Female	255	66.4
Age	18 to less than 30 years	137	35.7
	30 to less than 40 years	176	45.8
	40 to less than 50 years	56	14.6
	50 years and above	15	3.9
Educational qualification	Secondary or less	35	9.2
	University degree	292	76.0
	Postgraduate studies	57	14.8
Monthly income (IQD)	Less than 500,000	60	15.6
	500,000–<1,000,000	150	39.1
	1,000,000–<1,500,000	120	31.3
	1,500,000 and above	54	14.1
Total for each variable		384	100

Source: Final demographic frequencies and percentages supplied with the research results (n = 384).

Women comprised 66.4% of respondents, and the largest age group was 30–39 years (45.8%). Most respondents held a university degree (76.0%). The largest income category was IQD 500,000 to less than IQD 1,000,000 (39.1%), followed by IQD 1,000,000 to less than IQD 1,500,000 (31.3%), below IQD 500,000 (15.6%) and IQD 1,500,000 or above (14.1%). These characteristics describe the study sample rather than the population of all Iraqi online shoppers.

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(9-3-2) Descriptive Statistics of the Research Dimensions

Table (11) reports the means, standard deviations and coefficients of variation of the research dimensions, together with their level according to Table (3).

Table (11): Descriptive Statistics of the Research Dimensions

Variable	Dimension	Mean	SD	CV (%)	Level	Rank
Digital Customer Experience (X)	Functional Platform Experience (FPE)	3.816	0.806	21.1	High	2
	– Ease of use facet (X1)	3.768	0.851	22.6	High	4
	– Responsiveness facet (X2)	3.825	0.819	21.4	High	3
	– Security and trust facet (X3)	3.854	0.802	20.8	High	2
	Content Quality and Interaction (CQI)	4.429	0.618	14.0	Very high	1
Brand Loyalty (Y)	Behavioral Loyalty (Y1)	3.378	0.949	28.1	Moderate	2
	Attitudinal Loyalty (Y2)	3.648	0.879	24.1	High	1

Source: Final supplied descriptive means and standard deviations; CV = 100 × SD / mean. The combined FPE standard deviation is derived from the three facet dispersions and their correlations.

Content quality and interaction received the highest descriptive mean (4.429, SD = 0.618; CV = 14.0%), followed by functional platform experience (mean = 3.816; SD = 0.806; CV = 21.1%). The FPE facets had means of 3.768 for ease of use, 3.825 for responsiveness and 3.854 for security/trust. Attitudinal loyalty was higher (mean = 3.648, SD = 0.879) than behavioral loyalty (mean = 3.378, SD = 0.949), suggesting that favorable brand attitudes may exceed actual repeat-purchase commitment. Descriptive means are not substitutes for adjusted relationships.

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(9-4) Assessment of the Structural Model and Hypothesis Testing

(9-4-1) Higher-Order Constructs

Table (12) reports the loadings of the lower-order dimensions on their higher-order constructs and the reliability and validity of the higher-order constructs in the re-specified model.

Table (12): Loadings, Reliability and Validity of the Higher-Order Constructs

Higher-order construct	Dimension	Loading	R^2 of dimension	Cronbach's α	CR	AVE
Digital Customer Experience (X)	Overall Construct Metrics	—	—	—	—	0.837
	Functional Platform Experience (FPE)	0.902	0.816	0.912	0.934	0.743
	Content Quality and Interaction (CQI)	0.928	0.857	0.901	0.935	0.772
Brand Loyalty (Y)	Overall Construct Metrics	—	—	—	—	0.954

Measurement-level interpretation: Table (9a) describes CQI from its three retained item loadings (CR = 0.958; AVE = 0.884). Table (12) separately reports coefficients and dimensional metrics in the hierarchical representation of X and Y; those entries are not interchangeable with the item-level estimates in Table (9a). For overall X, AVE = $(0.902^2 + 0.928^2)/2 \approx 0.837$; for overall Y, AVE = $(0.975^2 + 0.978^2)/2 \approx 0.954$. Different reported dimensional coefficients must be assessed within their respective specified measurement levels (Sarstedt et al., 2019, pp. 197–211).

Source: Revised construct specifications and CQI measurement estimates.

Both loyalty dimensions load strongly on the higher-order loyalty construct, which fully meets the reliability and convergent-validity criteria. It should be noted that the R^2 values of 0.952 and 0.958 for behavioral and attitudinal loyalty, respectively, represent measurement results rather than structural explanatory power. In a reflective higher-order construct, each lower-order dimension is predicted by the higher-order construct itself; therefore, its R^2 approximates the square of its loading ($0.975^2 \approx 0.951$; $0.978^2 \approx 0.956$). These values indicate how strongly the two dimensions reflect the common loyalty construct, and do not represent how much of loyalty is explained by digital customer experience. The actual structural explanatory power of the model is derived solely from the overall R^2 of brand loyalty, as reported in the structural model assessment.

Regarding higher-order convergent validity, the item-level results for the retained CQI indicators are reported in Table (9a) (CR = 0.958 and AVE = 0.884). Table (12), by contrast, reports loadings and other dimensional indicators in the hierarchical representation of digital customer experience and brand loyalty.

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Its dimensional statistics correspond to that separately reported specification and are not substitutes for the CQI item-level statistics. Using the two second-order loadings, the overall AVE for digital customer experience (X) is $(0.902^2 + 0.928^2)/2 \approx 0.837$, and for brand loyalty (Y) it is $(0.975^2 + 0.978^2)/2 \approx 0.954$. Both exceed 0.50 for the reported higher-order representation (Sarstedt et al., 2019, pp. 197–211).

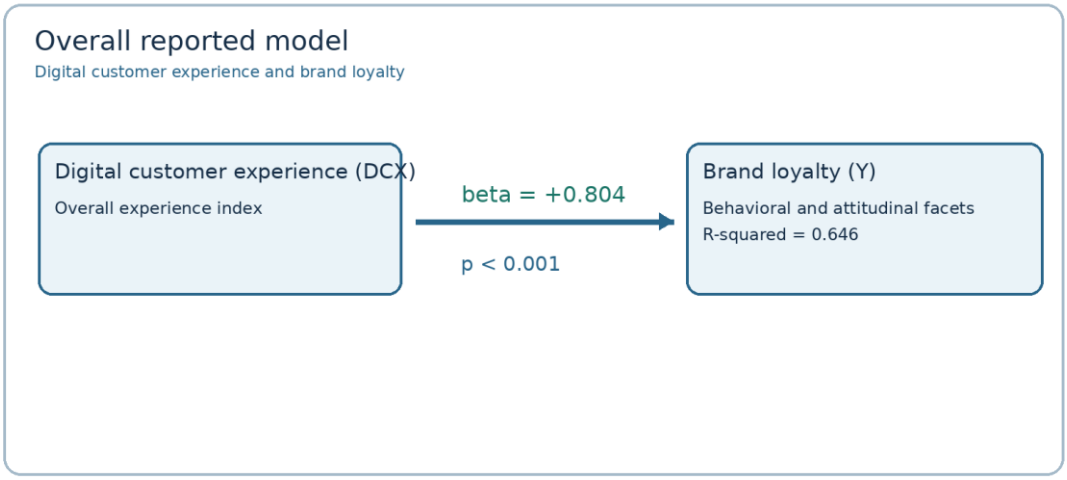

Figure (4): Reported Overall Digital Experience–Loyalty Association (H1)

Source: Reported overall DCX–loyalty path and explanatory power, as presented in Table (14b).

(9-4-2) Correlations Among the Research Variables

Table (13) reports the correlations among the initial dimensions, which motivated the re-specification, and Table (13a) the correlations among the final dimensions.

Table (13): Correlation Matrix of the Initial Dimensions and the Research Variables

	X1	X2	X3	X4	Y1	Y2	X	Y
X1	1							
X2	0.937**	1						
X3	0.923**	0.951**	1					
X4	0.693**	0.702**	0.697**	1				
Y1	0.777**	0.765**	0.774**	0.444**	1			
Y2	0.800**	0.806**	0.823**	0.521**	0.906**	1		

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	X1	X2	X3	X4	Y1	Y2	X	Y
X	0.963**	0.974**	0.969**	0.804**	0.757**	0.805**	1	
Y	0.807**	0.805**	0.818**	0.495**	0.976**	0.977**	0.800**	1

Source: Prepared by the researcher based on the results of statistical analysis using SPSS (V.27). ** Significant at the 0.01 level.

Table (13a): Correlations Among the Final Dimensions

	FPE	CQI	Y1	Y2	Y
FPE	1				
CQI	0.712	1			
Y1	0.789	0.444	1		
Y2	0.827	0.521	0.906	1	
Y	0.828	0.495	0.976	0.977	1

Source: Correlations among FPE, CQI and brand loyalty as supplied in the final research summary; FPE combines the X1–X3 facets.

All correlations are positive. The correlations among ease of use, responsiveness and digital security and trust (0.923–0.951) are very high and confirm the overlap identified in Section 9-2-3; such values signal a discriminant-validity and collinearity problem rather than a favorable result. The correlations of X with its own dimensions and of Y with its own dimensions are inflated by construction, because each higher-order score is computed from the dimension scores (a part–whole correlation), and they are not independent evidence of association. After the merge, FPE and CQI correlate at 0.712, a level that indicates related but distinct dimensions. Content quality and interaction has the weakest correlation with loyalty (r = 0.495), a point that becomes relevant when interpreting its path coefficient.

(9-4-3) Collinearity Diagnostics

Table (14a) compares the inner VIF values of the predictors of brand loyalty in the initial four-dimension model and in the re-specified two-dimension model.

Table (14a): Collinearity Statistics (Inner VIF) Before and After Re-specification

Model	Predictor	VIF computed from Tables (13)/(13a)	VIF (SmartPLS)
Initial model (four dimensions)	Ease of use (X1)	9.08	9.12
	Responsiveness (X2)	14.05	14.10
	Digital security and trust (X3)	11.57	11.62
	Content quality and interaction (X4)	2.03	2.04

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Model	Predictor	VIF computed from Tables (13)/(13a)	VIF (SmartPLS)
Final model (two dimensions)	Functional platform experience (FPE)	2.028	2.028 (regression)
	Content quality and interaction (CQI)	2.028	2.028 (regression)

Source: Original VIF values supplied with the results and final two-predictor regression values.

In the initial model, the VIF values of ease of use, responsiveness and digital security and trust exceeded the threshold of 5 by a wide margin (9.08–14.05), indicating severe collinearity that inflated the standard errors of their path coefficients and made their relative sizes unstable (Hair et al., 2019, pp. 2–24). After the three dimensions were merged into functional platform experience, the VIF values of both predictors fell to 2.03, below the conservative threshold of 3 (Hair et al., 2019, pp. 2–24). Collinearity is therefore no longer a concern in the final model, and the path coefficients of H1.1 and H1.2 can be interpreted.

(9-4-4) Hypothesis Testing

The primary model (H1) was assessed using the supplied overall path statistics. The final two-predictor model (H1.1–H1.2) was assessed using multiple linear regression with standardized scores for FPE and CQI and the brand-loyalty score, based on the reported correlation matrix (n = 384). The predictors had correlation r = 0.712; their correlations with brand loyalty were 0.828 and 0.495, respectively. Regression inference uses 381 residual degrees of freedom and conventional two-sided tests. Table (14b) reports the standardized coefficients, standard errors, t values, p values and f^2. Statistical significance describes conditional associations in this cross-sectional study; it does not establish causality.

Table (14b): Direct Effects and Structural Model Quality

Hyp.	Path	β	SE	t	p	f^2	Effect size	Decision
H1	DCX → Brand loyalty	0.804	0.022	35.952	<0.001	1.834	Large	Supported (reported)
H1.1	Functional platform experience → Brand loyalty	0.965	0.0397	24.286	<0.001	1.548	Large	Supported
H1.2	Content quality and interaction → Brand loyalty	−0.192	0.0397	−4.828	<0.001	0.061	Small	Not supported (+)
Model quality								
Model 1 (reported): R^2 = 0.646; Q^2predict = 0.621.								
Model 2 (regression): R^2 = 0.704; adjusted R^2 = 0.702; F(2,381) = 452.451; p < 0.001.								

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Source: Model effect sizes are interpreted with the f^2 guidelines summarized by Hair et al. (2019, pp. 2–24). The two revised explanatory variables are evaluated jointly in the regression model.

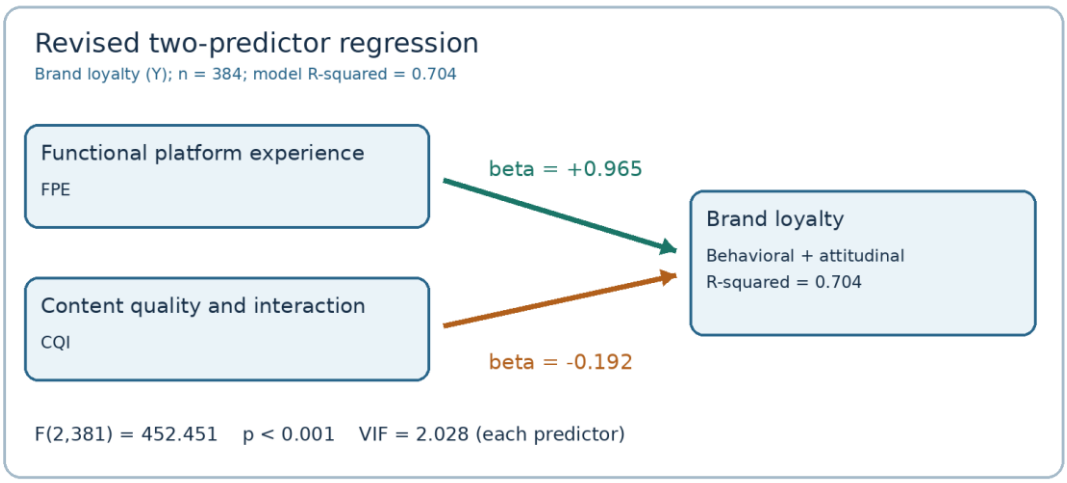

Figure (5): Revised Two-Predictor Regression Model (H1.1–H1.2)

Source: Regression coefficients and model statistics reported in Table (14b); standardized path diagram.

Main hypothesis (H1). The supplied overall DCX model reports a positive association with brand loyalty ($\beta = 0.804$, $t = 35.952$, $p < 0.001$; $R^2 = 0.646$; $f^2 = 1.834$), supporting H1 in its stated positive direction. The re-specified multiple-regression model is assessed separately for the two explanatory dimensions.

H1.1. Functional platform experience is positively associated with brand loyalty after controlling for content quality and interaction ($\beta = 0.965$, SE = 0.0397, $t(381) = 24.286$, $p < 0.001$; $f^2 = 1.548$). This supports the predicted positive relationship.

H1.2. Content quality and interaction has a negative coefficient after functional platform experience is controlled ($\beta = -0.192$, SE = 0.0397, $t(381) = -4.828$, $p < 0.001$; $f^2 = 0.061$). Consequently, the pre-specified positive-direction hypothesis is not supported, despite CQI's positive bivariate correlation with loyalty ($r = 0.495$). The contrast indicates a possible suppression pattern and should not be interpreted causally.

The revised model explains 70.4% of brand-loyalty variance ($R^2 = 0.704$; adjusted $R^2 = 0.702$), with a statistically significant joint regression, $F(2,381) = 452.451$, $p < 0.001$. Each of the two predictors has a VIF of 2.028, indicating acceptable collinearity. The high explained variance highlights the substantive relevance of the two-dimension specification.

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(10) Discussion of Results

The overall digital customer experience finding is consistent with customer-journey theory, which views loyalty as an outcome of cumulative evaluations of successive touchpoints (Lemon & Verhoef, 2016, pp. 69–96). The reported overall association ($\beta = 0.804$, $p < 0.001$) suggests that favorable digital experiences accompany stronger brand loyalty in the Miswag sample. This is also compatible with the literature linking electronic service quality, system performance and trust with customer responses (Parasuraman et al., 2005, pp. 213–233; Kim & Peterson, 2017, pp. 44–54). The result remains associational because the study uses a cross-sectional survey.

The original experience dimensions were closely related: pairwise correlations between ease of use, responsiveness and security/trust ranged from 0.923 to 0.951, and the corresponding supplied HTMT ratios ranged from 0.928 to 0.958. These exceed conventional discriminant-validity guidance (Henseler et al., 2015, pp. 115–135) and indicate that customers did not differentiate the three dimensions reliably within this instrument. Their consolidation into functional platform experience is compatible with the integrated efficiency, availability and privacy aspects of electronic service quality described by Parasuraman et al. (2005, pp. 213–233). The final two-predictor VIF of 2.028 indicates substantially less collinearity than the original four-predictor model.

The earlier four-dimension analysis reported a nonsignificant responsiveness path ($p = 0.743$). This result should not be interpreted as evidence that prompt customer service is irrelevant: responsiveness correlated very strongly with ease of use and security/trust, and the original VIF values indicated substantial predictor overlap. Under such conditions, unique coefficient estimates may be unstable, even when the shared functional experience is positively associated with loyalty. Its practical value is therefore discussed as part of the integrated FPE dimension rather than treated as an independently established effect (Parasuraman et al., 2005, pp. 213–233; Hair et al., 2019, pp. 2–24).

The regression identifies functional platform experience as the strongest positive adjusted correlate of loyalty ($\beta = 0.965$, $t = 24.286$, $p < 0.001$, $f^2 = 1.548$). This result suggests that the practical capacity to shop easily, receive prompt responses and transact securely is a particularly salient aspect of customer evaluations of Miswag. It accords with Davis's (1989) technology-acceptance model, E-S-QUAL's service-performance dimensions (Parasuraman et al., 2005, pp. 213–233), and the meta-analytic relationship between online trust and loyalty documented by Kim and Peterson (2017, pp. 44–54). The large coefficient describes a conditional relationship rather than a proven causal effect.

Content quality and interaction shows a positive zero-order correlation with loyalty ($r = 0.495$), yet its adjusted coefficient is negative after the closely related functional platform experience variable enters the regression ($\beta = -0.192$, $t = -4.828$, $p < 0.001$; $f^2 = 0.061$). Such a sign reversal is consistent with a suppression or competitive-adjustment pattern, in which accounting for another predictor changes the interpretation of a coefficient (MacKinnon et al., 2000, pp. 173–181). It must not be

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interpreted as evidence that improving information or interaction causes disloyalty. Indeed, information quality is an established dimension of information-systems success (DeLone& McLean, 2003, pp. 9–30), and experimental evidence demonstrates that online-page informativeness shapes shopping responses (Bleier et al., 2019, pp. 98–119). Therefore, the original positive-direction hypothesis H1.2 is not supported by the adjusted coefficient, although valuable and accurate content remains a legitimate service-design priority.

Attitudinal loyalty (mean = 3.648) exceeds behavioral loyalty (mean = 3.378). This discrepancy suggests that customers may express positive attitudes toward Miswag without repeating purchases at the same intensity. Dick and Basu (1994, pp. 99–113) distinguish repeated patronage from relative attitudes, while Oliver (1999, pp. 33–44) treats loyalty as a commitment that can withstand situational and competing pressures. Miswag should therefore connect positive sentiment to repeat transactions through service consistency, suitable offers and better checkout or delivery experiences rather than equating favorable attitudes with actual purchasing behavior.

(11) Conclusions and Recommendations

Each conclusion below is followed by the recommendation derived from it, the party responsible and the proposed mechanism and timeframe.

First. Digital customer experience is a strong predictor of brand loyalty. It is therefore recommended that Miswag's top management and marketing department adopt an integrated digital-experience strategy in which experience indicators (such as task completion time, checkout abandonment and repeat-purchase rate) are tracked on a regular dashboard and reviewed annually as part of strategic planning.

Second. Customers perceive ease of use, responsiveness and security as one integrated functional experience, and this experience has a positive effect on loyalty. The information technology, information security and customer service departments should therefore manage these elements as a single service package rather than as separate projects, for example through a joint service standard that covers checkout simplicity, page-loading and order-processing times, response times to inquiries and visible security assurances, monitored monthly and reviewed every six months through usability tests with real customers.

Third. Content quality and interaction correlates positively with loyalty but shows a negative conditional regression coefficient. Miswag's marketing and digital-content teams should maintain reliable product descriptions, updated information and prompt responses to inquiries while investigating why informational evaluations overlap with functional platform evaluations. Monitoring content accuracy, complaint resolution and post-purchase satisfaction separately would help distinguish their relationships with repeat buying.

Fourth. Attitudinal loyalty exceeds behavioral loyalty. The marketing department should design a loyalty programme and personalized offers aimed at converting customers' favorable attitudes into repeat purchases, and review its results quarterly.

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(12) Limitations and Future Research

The cross-sectional, non-probability design limits causal interpretation and generalization to the full population of Iraqi e-commerce customers. The high initial correlations among functional dimensions warrant careful construct differentiation, and the negative adjusted coefficient for CQI should be tested across alternative model specifications, customer groups and longitudinal samples. Further research should combine survey responses with transaction histories, evaluate alternative measurements of informational and functional experience, and distinguish favorable brand attitudes from actual repeat-purchase behavior.

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