Unveiling the complexity of social commerce continuance intention: a fuzzy set qualitative comparative analysis

Mayada M. Aref
Department of Socio-Computing, Faculty of Economics and Political Science, Cairo University, Giza, Egypt

Abstract

Purpose – Comprehending the determinants influencing the sustained engagement in social commerce assumes paramount importance for its success, particularly within the context of developing countries. This study employs complexity theory to examine the antecedents of the intention toward social commerce continuance.

Design/methodology/approach – A structured online survey was designed to collect data regarding four behavioural factors: satisfaction, trust, online social support, and continuance intention. The net effect of each construct was evaluated using a symmetrical modelling technique, and to identify the asymmetric effect, the fuzzy-set qualitative comparative analysis was conducted.

Findings – The findings of the structural equation modelling confirmed the importance of satisfaction and online social support for continuance intention. The asymmetric analysis revealed three recipes leading to social commerce continuance intention and three combinations for its absence, contributing to understanding the complexity of online consumer decision-making.

Research limitations/implications – Theoretically, this research highlights the interplay between online social support, trust, satisfaction, and social commerce continuance intention. Gaining insights into the main factors influencing social media participants’ behaviour assists business organizations and policymakers to foster the growth, and the sustainability of the social commerce.

Originality/value – Combining two distinct methodologies, the findings of this paper allow for a comprehensive exploration of the multifaceted dynamics that underlie consumer behaviour and provide actionable insights for businesses seeking to refine their strategies within the dynamic realm of social commerce. Further, the study offers a valuable roadmap for marketers and policymakers to enhance consumer relationships and augment the efficacy of social commerce initiatives.

Keywords Social commerce, Continuance intention, Complexity theory, Fuzzy set qualitative comparative analysis, Structure equation modelling

Paper type Research paper

1. Introduction

Social media has prompted a transformative revolution, enhancing knowledge sharing, facilitating prompt collaboration among participants, transcending geographical boundaries, and enabling global connectivity (Camacho & Barrios, 2022). The integration of shopping features into social platforms promotes users to discover, discuss, and purchase products within the same digital environment where they connect with friends and family. Social commerce (s-commerce) is shifting online business models from seller-centric to user-centric, promoting a collaborative and cooperative approach among customers in online buying and selling.
Because of the growing popularity of social networking sites, s-commerce represents a significant paradigm change in the new service economy. The examination of s-commerce holds significant importance, particularly in the context of developing countries, as these nations undergo rapid technological advancements and increased Internet penetration. Loh, Lee, and Leong (2024) demonstrated that understanding the motivations for the continued adoption of an information system is crucial for long-term sustainability and profitability. Continuance intention refers to the users’ choice to continue employing the information system rather than abandoning it. Identifying the factors motivating shoppers to keep purchasing products or services from social platforms is essential to maintain the development of s-commerce. Reichheld and Schefter (2000) highlighted the cost-effectiveness of retaining existing customers compared to acquiring new ones.

Over the last decade, there has been a growing inclination among scholars to employ complexity theory to gain a more profound insight into real-world social phenomena. Woodside (2017) emphasized that complexity theory has altered the examination of the relationship between antecedents and outcomes by advocating for a case-based analysis. Researchers recognize the importance of exploring the connections between various factors using asymmetrical methodologies to enhance understanding of social phenomena and avoid potential misinterpretations stemming from reliance on symmetrical approaches (Mehran & Olya, 2020). Additionally, Kumar, Sahoo, Lim, Kraus, and Bamel (2022) urged researchers to revisit prior analyses using asymmetric techniques.

Ragin (2008) introduced fuzzy set qualitative comparative analysis (fsQCA) as a technique enabling a holistic view of the phenomena under investigation by finding different combinations of causal conditions contributing to a particular outcome. Compared to structural equation modelling (SEM), fsQCA can handle asymmetric effects where additivity is no longer assumed, and the assumption that several factors can simultaneously lead to the output is substituted by the reality that every single variable has an independent impact on the outcome (Rihoux & Ragin, 2009). The popularity of the FSQCA methodology is increasing in information systems fields; many researchers have applied it with SEM to explore consumer behaviour in electronic commerce (Yang, 2021; Aref, 2023) and s-commerce (Hu, Akram, Ji, Zhao, & Song, 2023; Elshaer, Alrawad, Lutfi, & Azazz, 2024) studies.

Although prior research has discussed the factors influencing s-commerce continuance intentions, this study, based on complexity theory, aims to show the interplay among various motives contributing to the continued use of s-commerce and complementing SEM with fsQCA. Studying the drivers of s-commerce continuance intention is of great importance to developing countries, especially Egypt, due to its ability to enable small companies and entrepreneurs to survive and compete in a turbulent environment, enhancing economic growth and development. This study adds to the s-commerce literature the empirical analysis of data gathered from Egyptian social media users. Using complexity theory concepts deepens the understanding of the s-commerce continuance intention. After the introductory section, section two reviews previous work on s-commerce continuance and presents the derived hypotheses. Section three describes the research methodology and the results of SEM and fsQCA, respectively. Findings discussions, research limitations and future direction are presented in section four.

2. Theoretical background and model development
2.1 Theories of continuance intention
The Expectation Confirmation Theory (ECT), introduced by Oliver (1980), is widely used to explain technology continuance intention. It suggests that expectations, perceived performance, confirmation, and satisfaction shape repurchase intentions. Consumers form expectations before purchasing a product or service and then compare the actual
performance with their initial expectations; satisfied customers are more likely to repurchase. Building on ECT, Bhattacherjee (2001) developed the expectation-confirmation model (ECM), which examines continuance intentions. Presumably, customers who are pleased with the quality of the product or service will decide to repurchase it, but unsatisfied customers might stop using it. Since the introduction of the ECM, the model has been extensively used in different online contexts (Yan, Filieri, & Gorton, 2021). The selection of the ECM as the theoretical framework for this study stems from its well-established status and emphasis on elucidating users’ continuance intention (Loh et al., 2024).

Moreover, Liang, Ho, Li, and Turban (2011), in their pioneering study on social commerce, offered original insights into continuance intention to s-commerce. Their research highlighted that social support positively influences users’ intention to engage and to continue using social networking sites. The exchange of product information and knowledge facilitates problem-solving and informed decision-making among the social commerce community. Moreover, participants are also involved in emotional aspects like empathy and compassion, thus providing emotional support in decision-making processes. The review conducted by Pouti and Taghavifard (2024) on s-commerce elucidated the significance of social support as a catalyst for s-commerce continuance.

Additionally, the findings of Paramita (2023) indicate that trust emerges as the primary factor influencing s-commerce adoption in developing countries. The direct transaction between buyers and sellers, bypassing intermediaries like marketplaces, underscores the paramount importance of trust. Since consumers rely on feedback and recommendations from social network members, trust becomes indispensable. In diverse online scenarios, experiencing trust reduces uncertainties and risks (Al-Dwairi, Abu-Shanab, & Daradkeh, 2018). Establishing trust is imperative for cultivating enduring relationships with customers and securing the success and sustainability of s-commerce.

Furthermore, several studies have consistently demonstrated that customer satisfaction plays a crucial role in shaping the continuous intention to use. Satisfaction emerges as an influential determinant in driving continuous intention. Molinillo, Aguilar-Illesca, Anaya-Snachea, and Liebana-Cabanillas (2021) declared that customer retention is essential to the success of s-commerce, which require researchers to constantly examine the s-commerce continuance intention (SCCI) within the dynamic evolving business world. SCCI indicates a buyer’s ties toward continuing to purchase products and services online from social platforms (Hu, Chen, Davison, & Liu, 2022). Therefore, this research examines the relationship between continuance intention and the four most influential factors, guided by s-commerce literature reviews (Mou & Benyoucef, 2021); the examined factors are social support, trust, and customer satisfaction.

Egypt is considered a promising and emerging participant in the social commerce arena. By enabling Egyptian enterprises to expand their global reach, social commerce contributes to economic growth by generating employment opportunities, thus alleviating unemployment rates. It provides a platform for small and medium-sized enterprises (SMEs) in Egypt to compete on a level playing field with large corporations, thereby promoting entrepreneurship and fostering innovation (Aref, in press). In essence, s-commerce has the potential to substantially enhance economic growth by expanding market access, boosting job creation, and empowering SMEs; in addition to the dynamic nature of social commerce, more insights are required to comprehend s-commerce continuance intention among Egyptian Users.

2.2 Social commerce continuance model
2.2.1 Users satisfaction (SAT). Customer satisfaction is a fundamental metric that measures overall fulfilment and contentment. It encapsulates the alignment between customer
expectations and the experience during the online process. Satisfaction results from an assessment between a consuming experience and the expected one (Osatuyi, Quin, Osatuyi, & Turel, 2020). A high level of satisfaction indicates that customers’ needs, preferences, and expectations have been achieved, fostering loyalty and the likelihood of repeat engagement. It also plays a pivotal role in shaping the reputation of online retailers, as satisfied customers are more likely to share positive feedback and recommendations, contributing to a positive brand image. Unlike unhappy consumers, contented customers are less inclined to seek alternatives. The positive relationship between user satisfaction and behaviours, especially continuance intention, has been supported in different information systems contexts. The findings of Shang and Bao (2022) confirmed that satisfaction influences whether users want to continue using a social media platform. As a result, it is crucial when studying SCCI to include customer satisfaction in the proposed model.

**H1.** SAT positively influences SCCI

2.2.2 Trust (TRU). The importance of trust in online research lies in its ability to alleviate potential risks in both initial and subsequent interactions. Participating in online activities entails various risks, such as disclosing personal information, following advice, or conducting transactions. As a result, trust has long been recognized as a fundamental determinant influencing technology adoption. Trust, a personal attribute, holds immense importance in our social interactions and in the decision-making process within the online context.

Trust in s-commerce means considering other participants’ words, comments, or recommendations as trustworthy and reliable. According to Kuen, Westmattelmann, Bruckes, and Schewe (2023), trust is gradually built through online interactions and the frequent usage of social platforms. Establishing trust among users becomes pivotal in facilitating online transactions because participants lack direct face-to-face communication. The research conducted by Al-Adwan and KoKash (2019) affirmed the significant influence of trust on motivating Jordanian individuals to embrace s-commerce. As perceived trust levels increase, the intention to continue engaging in s-commerce also rises. Previous studies have consistently highlighted the pivotal role of trust (Hajli, Sims, Zadeh, & Richard, 2017).

The findings of Djan and Adawiyyah (2020) in Indonesia confirmed the direct impact of trust on satisfaction. Likewise, the findings of Moriuchi and Takahasti (2023) in Japan supported the previous findings. Due to its importance in exploring the determinants of s-commerce, this research examined the relationships between trust and the proposed variables.

**H2.** TRU positively influences SCCI.

**H3.** TRU positively influences SAT.

2.2.3 Online social support (OSS). Web 3.0 provides powerful tools for customers to develop, collaborate, discuss, trade, and gather information about products or services, encouraging customers to tell their friends about their purchasing experiences and product information. As a result, customers benefit from social engagement and peer support. This new environment shifts consumer-buyer interactions from one-on-one to community-based, which helps to change customers’ purchasing habits. Liang et al. (2011) classified online social support into informational and emotional. While online emotional support (EmoS) is when members show kindness, empathy, and care for each other, online informational support (InfoS) is when seeking information, recommendations, and guidance to select between different products. Their findings affirmed that the support received from other network members positively influenced customers’ intention to purchase from online social networks. Jadil, Jeyaraj, Dwivedi, Rana, and Sarker (2023) reported that studies from different countries, Spain, Saudi Arabia, and Pakistan, found emotional support to be an essential factor in
driving s-commerce intention. Similarly, the results of Elgheit (2019) on Egyptian consumers disclosed that the intention to shop from social networks is greatly influenced by emotional support. Leung, Chang, Chueng, and Shi (2022) findings verified that social support positively influences member trust and engagement.

\[ H4. \text{ InfoS positively influences TRU.} \]

\[ H5. \text{ EmoS positively influences TRU} \]

Online informational and emotional support significantly impacts customer satisfaction. If s-commerce platforms meet consumers’ social demands, respond to their queries, and assist them in resolving purchasing difficulties, customer satisfaction will rise. Accordingly, the following hypotheses are analysed.

\[ H6. \text{ InfoS positively influences SAT.} \]

\[ H7. \text{ EmoS positively influences SAT.} \]

Prior research has demonstrated that users’ views regarding the usefulness and content offered by social platforms and consumer review websites can shape their intentions to return in the future to these platforms. Further, Qin, Zeng, Liang, and Zhang (2023) findings indicated that a member’s affiliation with a specific community, coupled with active participation in discussions, can increase user engagement and repurchase intention. In addition, users’ emotional interactions facilitate ongoing communication and foster mutual familiarity, positively impacting continuance intention.

\[ H8. \text{ InfoS positively influences SCCI} \]

\[ H9. \text{ EmoS positively influences SCCI} \]

Figure 1 illustrates the conceptual research model, which includes the structural model (i) and the configurational model (ii). This study complements the direct and indirect relationships computed using SEM by analysing the causal combination employing fsQCA. While various configurations may lead to the presence of SCCI, others will refer to its absence. In the vein diagram, the overlapped areas show potential combinations of the proposed variables. For example, trusting participant and their reviews on social media networks and satisfaction lead to SCCI or the existence of online emotional support and satisfaction guide to SCCI.

3. Methodology

3.1 Survey administration and data collection

All scales used in the survey were derived from prior research (Liang et al., 2011; Chen & Shen, 2015; Osatuyi et al., 2020). Constructs were measured using a five-point Likert scale, with one denoting strongly disagree to five for strongly agree. Before the data collection, the questionnaire was pre-tested by five experts, resulting in minor wording changes. Sampling methods can be broadly categorized into random and non-random sampling methods. Random sampling involves selecting individuals from a population at random, ensuring that each member has an equal chance of being chosen. On the other hand, non-random sampling methods involve selecting individuals based on specific criteria, such as convenience. Convenience sampling involves selecting individuals who are easily accessible or readily available to participate in the study. Convenient sampling is acknowledged in the online context due to its ease of implementation and the provision of useful insights. The link to the survey was posted via Facebook and WhatsApp, with the survey link shared multiple times to increase the participation. Participants were requested to distribute the survey link within their social networks. The questionnaire included a brief introduction to define the research
Aim and to motivate respondents to answer it. Participants were assured that their answers were confidential and only used for academic purposes.

A total of 306 respondents were collected. A t-test was performed to check non-response rate bias. Comparing the early and late response for SCCI, the $t = 0.631$ with $p = 0.529$; likewise, the $t$-value for TRU = $-1.44$ with $p = 0.15$, the $t$-value for SAT = $-0.962$ with $p = 0.338$, InfoS the $t = 1.860$ with $p = 0.063$, and for EmoS the $t = 0.818$ with $p = 0.414$. Since there are no significant differences, non-response bias was not a problem.

Opinions regarding the appropriate sample size for SEM have varied (Kline, 2016). Some studies stated that the suitable sample size is 200; other scholars argued that the sample size should be determined based on the complexity of the model, requiring at least ten observations for each statement. Since the proposed model included 16 items; therefore, the minimum sample size should be 160. As a result, the size of the collected sample (306) is acceptable.

In terms of age, 53.6% are under the age of 35. Concerning daily time spent on social media platforms, 44% of the respondent spent less than three hours daily, and 56% spent more than three hours, like the profile of Egyptian social media users (DataReportal, 2023). However, the sample was biased toward females 81% of the respondents were female.

### 3.2 Analytical methods

The data analysis was performed using three software: SPSS version 26 to check constructs’ reliability, test common method bias, and perform the explanatory factor analysis (EFA);
AMOS version 23 was used to conduct SEM, and fsQCA version 3.1 was used to explore causal recipes. The fsQCA method explores the conditions under which an outcome occurs based on complexity theory principles of equifinality, conjunctural causation, causal asymmetry, and interdependence. Equifinality implies that the output may result from multiple alternative causal combinations. Conjunctural causation means that a configuration of conditions can be jointly necessary and/or sufficient for an outcome, while their composing parts might be neither necessary nor sufficient for the output (Fiss, 2011; Saridakis, Zaefarian, Ganatakis, & Angelidous, 2022). Causal asymmetry indicates that a factor or a combination of factors that explains the presence of an outcome can be different from those leading to its absence, and interdependence means that the presence or absence of the other factors affects the influence of a single variable on the outcome. (Kumar et al., 2022).

FsQCA examines several combinations of configurations where each configuration represents only a subset of the data. Some solutions are likely to explain in accord with the SEM methodology large parts of the sample, while others are likely to explain tiny aspects of the data. Different combinations of the multiple factors influencing e-commerce continuance intention can explain the continuance intention, meaning that not all antecedents are needed to attain continuance adoption; on the other hand, some of these factors can be sufficient to maintain the continuance intention. FsQCA analysis involves several phases to enable researchers to identify the multiple causal configurations producing the outcome. The following sections will set out each of these processes in detail.

3.2.1 Reliability and validity. Based on Harman’s single-factor test, the common method bias was not a concern for this study. The highest component illustrated 31.3% less than 50% of the explained total variation. Maximum Likelihood approach with rotation methods Promax was used for EFA. Following Hair, Black, Babin, and Anderson (2019) loading of each item should be more than 0.5, leading to removing one statement from satisfaction (Sat1); and one item from emotional support (Emo3); the items and their loading values are presented in Appendix A. The outcomes of The KMO test, Bartlett’s Sphericity technique and goodness of fit (KMO = 0.863, Chi-square = 153.25, degree of freedom = 50 and p < 0.001) confirmed that the correlation between items and constructs was significant. The aggregate variance percentage value was 71.7%, which suggested that the model is adequate.

The Cronbach’s alpha and composite reliability values were above the cut-off point of 0.70, ranging from 0.83 to 0.98. The AVEs values are more than 0.5, and their square roots are more than the off-diagonal values. Consequently, as demonstrated in Appendix B, all scales exhibit satisfactory discriminant validity. The variance inflation factor was computed to examine multicollinearity; their values were less than the cut-off of 5 (Hair et al., 2019). The model fitness was satisfactory, as showed by the following goodness-of-fit (Byrne, 2006); the ratio of minimum discrepancy to the degree of freedom was 2.567, less than the benchmark value of 5, and the CFI = 0.959 had a value greater than 0.9; the AGFI = 0.867 had values greater than 0.8, and the RMSEA = 0.072 was less than 0.08. The model explains 62% of e-commerce continuance intention and 13% of satisfaction.

3.2.2 The SEM results. The SEM results, presented in Figure 2, showed that SCCI was significantly affected by SAT and EmoS (H1: β = 0.68, p < 0.001) and (H9: β = 0.33, p < 0.001). Trust and online emotional support positively influenced satisfaction (H3: β = 0.19, p < 0.001) and (H7: β = 0.25, p = 0.043). Further, the direct relationship between Emos and trust was accepted (H5: β = 0.318, p = 0.012). The mutual relationship between InfoS and EmoS (β = 0.531, p < 0.001) was supported. On the other hand, the direct relationship between trust and SCCI was not accepted (H2: β = 0.063, p = 0.187), nor was the positive relationship between InfoS and Satisfaction (H6: β = −0.01, p = 0.939), nor was the direct positive relationship between InfoS and SCCI (H8: β = −0.17, p = 0.039). A summary of these relationships displaying the standardized estimate and the standard error is presented in Appendix B. The outcomes of mediation of the construct satisfaction have been measured.
through bootstrapping. The indirect analysis revealed that satisfaction totally mediated the relationship between trust and s-commerce continuance intention; there is a significant indirect effect of trust on SCCI ($\beta = 0.176$, $p = 0.031$).

Symmetrical methodologies like SEM cannot tackle complex causality in examining online consumer behaviour. Different combinations of antecedents could explain the output, and other recipes, not simply the opposite mirrors, may lead to its absence (Pappas, Papavlasopoulou, Mikalef, & Giannakos, 2020). Therefore, this research complements the findings of SEM with fsQCA; the following section provides the fsQCA results.

3.2.3 The fsQCA model results. After the data collection, the configurational analysis starts with data calibration; Figure 3 displays the steps of the fsQCA implementation. The fsQCA version 3.1 graphical software developed by Rihoux and Ragin (2009) is used in this research. The score of each factor must be calibrated into fuzzy sets with values ranging from 0 to 1. Based on Dul's (2016) recommendations, the 95th percentile refers to full-set membership, the 50th to intermediate-set membership, and the 5th percentile to full-set non-membership.

Factor analysis was conducted, resulting in scores for each construct. Next, using the SPSS, the three 95th, 50th, and 5th percentiles are computed for each variable score. Their values are as follows: InfoS 1.48, 0.44, -1.99; EmoS 1.52, 0.25, -1.9; TRU 1.45, 0.05, -1.61; SAT 1.67, 0.44, -2.2; SCCI 1.75, 0.16, -2.1. Then, the fsQCA software, using a non-linear stepwise logistic function, converted scores into a fuzzy score from 0 to 1. SCCIc, EmoSc, InfoSc, TRUc and SATc represent the scores of the variables resulting from the calibration process.

The next step is testing for the necessity of a single condition using the consistency index. The consistency index value ranges from 0 to 1; Ragin (2008) recommended that a dependent variable is necessary if it has a consistency value of 0.9 or higher. Table 1 shows the results of the analysis of necessity factors using the fsQCA software. In practice, necessary or sufficient...
causal factors are uncommon. Typically, there will be some cases within the population that do not follow these general patterns. The consistency scores regarding SCCI and ∼ SCCI range between 0.30 and 0.88. It turns out that none of the proposed factors individually is a necessary condition for attaining or missing SCCI since the consistency values are less than the threshold of 0.9. The value of the coverage rate illustrates the explanation of the dependent variable to the independent one. The higher the coverage rate, the higher the condition explains the output.

Source(s): Author’s own work
To analyse data based on these assigned set membership scores, fsQCA employs the three fundamental operations of Boolean algebra (intersection, union, and negation) (Saridakas et al., 2022). In fuzzy sets terminology, the asterisk (*) refers to the logical AND operation, and the intersection value equals the minimum score obtained from the conditions constituting the recipe. The scores of each recipe are computed through the intersection of the individual conditions that constitute the recipe. Set union, refers a different combination of factors connected via logical OR, represented by the operator (+), identified by fsQCA, leading to the specific output. As mentioned previously, the fsQCA addresses equifinality, wherein multiple alternative pathways can result in the same outcome. Lastly, the logical NOT operation is presented by (~). Using fsQCA, researchers explore the absence of a given condition employing negated sets.

The fsQCA software allows the construction of the truth table where each row represents a causal cause combination that satisfies predefined sufficient conditions for the occurrence of the outcome, in addition to its frequency and consistency. The number of rows of the truth table is $2^k$, where $k$ represents the number of dependent variables. The study at hand yields $2^4 = 16$ possible combinations. To consider any of the truth table relations, following Ragin's (2008) recommendations, a minimum number of observations is needed. The frequency threshold is set based on the sample size; it is equal to three if the sample is more than 150 observations; consequently, any less than three-frequency combinations were removed from further analysis.

Next, the Quine-McCluskey algorithm was used to minimize the truth table and find sufficient causal combinations. Concerning consistency, at least 80% of the cases should represent the extent to which a causal solution leads to an outcome. As a result, the combinations with consistency above the threshold (0.8) are considered an adequate explanation for the output. Fiss (2011) suggested using the (PRI) consistency index in addition to the raw consistency index. Thus, the value for the outcome variable is set to one if the frequency is equal to three or more, the raw consistency is greater than or equal to 0.8, and the PRI consistency is greater than or equal to 0.6; otherwise, the outcome value is equal to zero. The truth tables constructed for SCCI and ~SCCI are presented in Appendix C.

The fsQCA software evaluates the results via three indexes: raw, unique, and solution coverage of each solution. Raw coverage measures the proportion of membership in the output explained by each causal combination. The fraction of memberships in the outcome explained completely by each solution term is measured by unique coverage, and solution coverage measures the proportion of memberships in the results explained by the whole solution (Woodside, 2014). Table 2 presents the configuration results that lead to the presence and absence of SCCI.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Outcome: SCCI</th>
<th>Outcome: ~SCCI</th>
</tr>
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<tbody>
<tr>
<td>SATc</td>
<td>0.88</td>
<td>0.66</td>
</tr>
<tr>
<td>~SATc</td>
<td>0.55</td>
<td>0.79</td>
</tr>
<tr>
<td>TRUc</td>
<td>0.75</td>
<td>0.62</td>
</tr>
<tr>
<td>~TRUc</td>
<td>0.62</td>
<td>0.77</td>
</tr>
<tr>
<td>InfoSc</td>
<td>0.83</td>
<td>0.70</td>
</tr>
<tr>
<td>~InfoSc</td>
<td>0.58</td>
<td>0.62</td>
</tr>
<tr>
<td>EmoSc</td>
<td>0.80</td>
<td>0.68</td>
</tr>
<tr>
<td>~EmoSc</td>
<td>0.63</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Table 1. Analysis of necessary conditions for the presence and the absence of SCCI

Source(s): Author’s own work
For SCCI, the overall solution consistency is 0.89, higher than the acceptability of consistency, which is 0.8. The overall solution coverage is 0.75, indicating that the three configurations explained 75% of the cases with SCCI. Further, the three configurations are sufficient combinations of conditions for SCCI since the consistency of each one is higher than 0.9. For the absence of SCCI, three causal configurations were identified, having overall solution consistency equal to 0.91 and overall solution coverage equal to 0.75.

The first configuration (model 1) is the presence of InfoS, TRU and SAT indifference of EmoS will lead to SCCI, with consistency and coverage of 0.92 and 0.62, respectively. The second one (model 2) for SCCI is the presence of EmoS, InfoS and SAT, with consistency and coverage of 0.90 and 0.69. The third causal combination (model 3) is the presence of EmoS, TRU and SAT with consistency equal to 0.91 and coverage equal to 0.61. Model 2, resulting from the mixing the existence of EmoS, InfoS and SAT, had the highest coverage (69%), followed by combining InfoS, TRU and SAT (62%), and then the mixture of EmoS, TRU and SAT (61%).

Regarding the absence of SCCI, the causal combination (model 4) is the absence of EmoS and SAT with consistency and coverage of 0.93 and 0.65, respectively. Model 5 results from the absence of TRU and SAT with consistency and coverage of 0.92 and 0.65 and the last configuration (model 6) is from the absence of InfoS and SAT, with consistency of 0.95 and coverage of 0.61.

FsQCA software’s built-in functions enable the computation of causal configurations as a variable and plot it versus the output, the causal in the x-axis versus the outcome in the y-axis, as displayed in Figure 4. The goal of asymmetric analysis is to split the sample into subsamples and reach the configuration that suits each group. As seen in Figure 4, none of the resulting causal propositions can predict all cases. However, as Pappas and Woodside (2021) explained, models having consistency higher than 0.8 are sound and advance the knowledge of the social phenomena under study.

Testing the resulting models for predictive validity indicates how well they predict the dependent variable in further samples. To test for predictive validity, divide the collected data randomly into a subsample and a holdout sample. Then conduct the fsQCA analysis for the subsample, and test the results using the holdout sample (Ragin, 2018). If the result of testing shows good consistency, with a value of 0.7 or higher, this implies that the model has passed the predictive validity testing. In our case, the consistency values were adequate. Table 2 displays the subsample solutions, and Figure 5 displays graphically the resulting models from the fsQCA analysis from the subsample tested on the holdout sample. As seen in Figure 5, all the consistency values for the different models are from 0.7 to 0.92.
3.2.4 Evaluation of the findings from the lens of complexity theory. Multiple antecedent factors shape online consumer behaviour; however, it is misleading to conclude that the presence or the absence of a specific condition can lead to the ending behaviour. On the other hand, some combinations of these conditions determine the resulting behaviour in some cases. Complexity theory offers a paradigm shift in exploring social phenomena by challenging...
proportionality between cause and effect and allowing the analysis of the output due to different recipes (Woodside, 2017).

First, the fsQCA results confirmed that no single factor alone is sufficient for SCCI, and none of the causal configurations encompasses the four factors. Secondly, the fsQCA findings exemplify the equifinality principle, revealing three alternative combinations for forecasting the presence of SCCI and two distinct causal configurations for its absence. While a specific recipe may be relevant in specific circumstances, it does not apply universally; therefore, the coverage of any single recipe is less than 1, as shown in Table 2.

Third, causal asymmetry implies that the causal conditions explaining the existence of a result cannot be mirror images of the factors explaining the lack of the same outcome (Fiss, 2011). The findings showed that the causal configurations resulting from the absence of SCCI are not mirroring those for the presence of SCCI. And fourth, the existence of cases demonstrating relationships contrary to symmetrical ones. The findings of SEM did not support the significant direct relationship between InfoS and SCCI. While the configurational causes, two of the proposed combinations included InfoS with coverage of 69% and 62%, implying that mixing the informational support with other factors will lead to SCCI. On the other hand, one of the causal configurations leading to the absence of SCCI includes the absence of InfoS, indicating the importance of informational support to avoid the lack of SCCI.

4. Results discussion, implications, limitations, and future research suggestions

4.1 Results discussion
This study examined the data using two distinctive methodologies, SEM and fsQCA, to deepen the insight into s-commerce continuance intention. Research regarding online
consumers can profoundly benefit from causal analysis by understanding how different causal combinations influence the behaviour of various online consumer groups; no unique recipe fits all users.

Comparing the results obtained from SEM with those of fsQCA reveals some interesting insights. The SEM analysis demonstrated a positive relationship between SAT and SCCI, in line with many previous empirical studies that confirmed the positive impact of satisfaction on user continuance intention (Jong, Tseng, & Wang, 2022; Foroughi et al., 2024). Both SEM and fsQCA confirmed the significance of satisfaction for SCCI. Yet, fsQCA results clarified that only satisfaction is not sufficient for the occurrence of SCCI.

Additionally, the SEM output disclosed that EmoS and TRU are positively associated with SAT, in line with the results of Juntongjin (2022) regarding the importance of trust in promoting satisfaction. The findings of Zhu, Sun, and Chang (2016) confirm the significant impact of emotional support from other social network members on consumer satisfaction. Emotional support can make the user feel better, reduce customer frustration, and increase customer satisfaction; assisting each other can decrease pre-sale stress. Retailers can benefit from consumers’ feedback to improve product quality and design new products. This study proved that emotional support is critical for the prosperity of s-commerce, affirming previous results.

Both SEM and fsQCA confirmed the importance of social support. Two causal configurations leading to the absence of SCCI included the absence of emotional and informational support, which endorse the importance of online social support to avoid the lack of SCCI. While the SEM results confirmed the positive relationship between emotional support and s-commerce continuance, the net analysis did not support the direct relationship between InfoS and SCCI. On the other hand, two causal configurations resulting from fsQCA that led to the presence of SCCI included online informational support, demonstrating the importance of InfoS to achieve SCCI.

The SEM results indicated that the direct relationship between trust and SCCI was insignificant, contrary to previous research confirming the significant direct relationship between interpersonal trust and s-commerce continuance intention, which may be justified that in the Egyptian case satisfaction fully mediated the relationship between trust and s-commerce continuance intention; confirmed with the fsQCA results since one of the causal configurations demonstrated the importance of trust when combined with informational support and satisfaction to maintain SCCI. Therefore, Egyptian retailers should promptly respond to customer complaints and concentrate on pre-sales services to maintain user satisfaction.

Many previous studies, depending on net effect methodologies, confirmed that lacking trust is a major obstacle towards s-commerce diffusion (Sarkar et al., 2020). On the other hand, the findings of fsQCA revealed that the absence of trust is not sufficient to lead to the lack of continuance intention. The absence of s-commerce continuance intention results from mixing the absence of trust, satisfaction and informational support or the absence of emotional, informational support and satisfaction, whether the trust is realized or not.

Although Al-Tit, Omri, and Hadji (2020) findings showed that trust mediates the relationship between informational and emotional support and s-commerce intention, our results did not confirm the mediating role of trust. Unlike Hu et al. (2022) results that demonstrated that informational support mediates the relationship between emotional support and s-commerce continuance intention, our results imply that the direct effect of online emotional support among Egyptian social media users is stronger than the informational one.

4.2 Theoretical and managerial implications
FsQCA bridges qualitative and quantitative methods in a complementary approach that yields comprehensive insights into the phenomena under study. The findings have provided
a more holistic view of the examined interrelationships in the social commerce context. By identifying alternative causal configurations that suffice for high levels of social commerce continuance intention and describing combinatorial complexities with asymmetric relationships rather than focusing solely on symmetrical net effects, this research has contributed to advancing the existing social commerce literature.

This research highlights the interplay between online social support, trust, satisfaction and s-commerce continuance intention among Egyptian social media users. Applying complexity theory to understand online consumer behaviour reveals that different combinations can similarly lead to s-commerce continuance intention; this study demonstrated that combining the results of fsQCA with SEM offers a solid knowledge of complex phenomena. For instance, in terms of interdependency, the application of fsQCA enhances our understanding of the proposed factors that enhance consumer continuance intention; however, for a group of individuals, the presence of informational support, gained trustworthy relationships and satisfaction can guarantee s-commerce continuance, while for other the presence of emotional support combined with trust and satisfaction is needed. fsQCA can capture nuances and uncertainties in data, leading to a deeper understanding of causal relationships and providing insights into the multifaceted nature of phenomena and how different conditions interact to produce specific results.

The results shed new light on several critical issues, including the interdependence among factors in understanding online consumer behaviour and the complexity involved in determining s-commerce continuance. To the author’s knowledge, this research is one of the early studies, if not the first, to examine s-commerce continuance intention using fsQCA using data from Egyptian consumers, adding to social commerce literature, especially in emerging economies. In addition, the findings of this research lead the way to further studies.

Previously, customers would passively receive product information or promotional messages from businesses; however, due to social platforms, consumers can immediately get information and share their experiences and suggestions. In accordance with Agag, Eid, Lababdi, Abdelwahab, and Abdo (2024), the findings showed that members attribute significant importance to the social implications of each other’s opinions even more than the actual content on social websites. Consequently, it is imperative for managers to incentivize user engagement on social websites, particularly among the well-informed, by encouraging the sharing of insights and experiences. Such encouragement is essential for fostering regular interactions among participants and facilitating the development of more responsive and interconnected social media communities.

From a practical view, according to the findings of this study, emotional support and trust in social platform members’ reviews and comments positively influence customers’ satisfaction from shopping through social platforms, and satisfaction positively influences continuance intention. Social media designers should facilitate the flow of information between the shopper and their social network members in an easy and amusing way. Further, social platforms should support different techniques and services that increase users’ trust in the platform; as a result, consumers’ satisfaction from shopping from this platform will increase, and the social platform or online retailers will retain their customers.

Companies should customize marketing strategies based on participants’ characteristics and perceptions to maintain engagement. Marketers and decision-makers should not believe or think that different factors play the same role among multiple users and may be considered the magical ingredient that attracts and pleases all users; however, based on the causal configuration analysis, different combinations lead to the presence of SCCI among multiple groups. In addition, this study reveals what combinations should be avoided to prevent the absence of SCCI. The findings of this study assist strategy makers and retailers who want to invest in the Egyptian market to understand online consumer behaviour.
4.3 Limitations and future research suggestions
The current study has several limitations that lead to future work. First, the study included one dimension for trust; other dimensions may be added, such as trust in the social platform, trust in the seller, or trust in online payments. As AL-Khalifah (2022) mentioned, there is a lack of studies that have examined many diverse trust factors in one study. Egypt is witnessing progress in the diffusion of mobile payment services. Future works examining what drives trust in mobile payment will deepen the knowledge of continuance intention towards social commerce.

Second, the model may include additional constructs to improve understanding of s-commerce continuance intention. For instance, the findings of Al-Adwan and KoKash (2019) demonstrated that familiarity with a platform increases users’ trust and intention to shop from it, and a platform whose interface and processes do not enable familiarity risks losing potential customers. Hence, familiarity may be integrated into the model to examine its relationship with trust, satisfaction, and s-commerce continuance intention. Additionally, an innovation resistance variable could be added to the model to account for the impact of innovation resistance on continuance intention, as the findings of Loh et al. (2024) revealed the negative relationship between innovation resistance and continuance intention.

Third, future studies could utilize random sampling across diverse geographical areas to capture varying consumer behaviours influenced by location, socioeconomic factors, and social media usage. And fourth, does the device used for shopping influence the behaviour of shoppers? Since Egyptian people enjoy high mobile diffusion, future research may examine the proposed model for mobile commerce.

Lastly, it’s important to acknowledge limitations in the application of fsQCA. Since fsQCA examines all potential combinations of causal conditions, the number of combinations grows exponentially as additional conditions are introduced. Consequently, researchers must prioritize theoretically relevant conditions to mitigate the complexity of their analyses and findings.

5. Conclusion
Social commerce is recognized as the future of online commercial transactions, and its rise in Egypt highlights the country’s digital transformation. Unlike previous studies on s-commerce, this study deepens the understanding of s-commerce by combining symmetric and asymmetric approaches. The results of the symmetric analysis supported the significance of satisfaction and online emotional support in driving s-commerce continuance intention. Additionally, the findings highlight the critical role of trust and online emotional support in shaping customer satisfaction within social commerce.

Configurational models clarified that reaching consumers’ satisfaction is essential for retaining customers. Achieving only satisfaction is not sufficient or the only path to maintain the prosperity of s-commerce. Gaining insights into the main factors influencing social media participants’ behaviour assists business organizations in crafting effective strategies, policymakers to foster its growth, and marketers to enhance user satisfaction, ultimately contributing to the sustainability of the digital landscape.

References


**Appendix**
The supplementary material for this article can be found online.
Dr Mayada M. Aref is currently assistant professor in the Department of Socio-Computing, Faculty of Economics and Political Science, Cairo University at Egypt. She received her M.Sc. in Statistics and her doctorate in Socio-Computing from Cairo University. Her current research interests include electronic commerce systems, online consumer behaviour, innovation diffusion, online marketing, and web analytics. Her research has been published in International Journal of Electronic Commerce Studies and International Journal of Business Information Systems, among others. Mayada M. Aref can be contacted at: mayadaaref@cu.edu.eg