**RESEARCH PAPER**

# Electronic shopping cart abandonment: What do we know and where should we be heading?

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## Abstract

This paper aims to systematically review the literature on electronic shopping cart abandonment (ESCA). It analyzes the development of ESCA literature in terms of publication trends, publication outlets, number of citations, methodologies, and theoretical underpinnings. Furthermore, based on the literature synthesis, this review proposes a conceptual framework integrating the widely used antecedents, mediators, and moderators that influence ESCA. The antecedents include customer attributes and website-related factors while research and comparison mediate the relationship between these antecedents and ESCA. Using lexicometric analysis, this SLR identified key themes studied in ESCA literature over time, including customer decision-making criteria, motives and characteristics, online shopping environment, and website attributes. Further, this SLR suggests future research directions to advance ESCA literature from theoretical, contextual, and methodological perspectives. This SLR also suggests strategies for e-retailers and marketers to overcome ESCA. Overall, this review is a silver line in ESCA literature.

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## Introduction

### Background of the study

The penetration and rapid development of the internet and related technologies have boosted electronic commerce (e-commerce). Online retailing started in the mid-90s through online websites such as the Net Market website, Amazon, and eBay—in 1995 (Ozansoy & Sagkaya, 2021). The global retail industry has been significantly affected by the meteoric development of e-commerce. Global e-commerce sales are projected to reach $7.385 trillion by 2025, and the overall e-commerce share of retail sales will hit 24.5% by then (Lebow, 2021). It is projected that e-commerce is likely to show incredible growth by 2028 (Kotwal, 2023). The number of online buyers is increasing rapidly due to the benefits of online shopping, such as the convenience, wider access to product-related information (e.g., product reviews), and round-the-clock accessibility (Mittal, 2023; Bell et al., 2020; Rubin et al., 2020). The spread of COVID-19 has resulted in a compelling hike in e-commerce and

accelerated digital transactions (Cai et al., 2023; United Nations Conference on Trade and Development, 2021).

Despite the fascinating estimates of growth in the online retail market, e-commerce sales grew only 7.7% in 2022, which is a dramatic drop from the double-digit e-commerce growth in each of the past 5 years (Conley, 2023). This drop in the growth rate in e-commerce is attributable to the consumer's non-completion of the purchase process because 75% of purchase attempts are discarded after adding to the shopping cart (Jiang et al., 2021). This phenomenon of leaving the online shopping site without making any purchase is termed "consumer dropout" or "electronic shopping cart abandonment" (ESCA) (Bell et al., 2020). It can occur at any stage of the online purchase process (Patharia & Jain, 2023). There may be several reasons for ESCA, such as procrastination in purchase (Negra & Nabil, 2012) and hesitation in purchase (Cho et al., 2006).

The typical ESCA rate for e-retailers varies between 60 and 80%, with an average of 71.4% of electronic shopping (e-shopping) carts being abandoned by customers before finishing the purchase (Jiang et al., 2021). Thus, it has emerged as a major bottleneck for global e-retail growth. ESCA leads to a reduction in the rate of purchases, potential sales loss, and wastage of advertising expenditure (Jiang et al., 2021). Companies take various initiatives to curb ESCA. Some of these initiatives include sending reminders, directing re-targeted advertisements (i.e., sending personalized messages and advertisements by tracking customers' personal data), issuing coupons, offering guest checkout options (i.e., shopping without logging into an account), providing social media login options (i.e., using existing social network accounts, such as Facebook and Twitter to sign into the shopping website), giving the option to increase the variety and quantity of products to be added to the cart, and comparing products in a single window (Li et al., 2021).

The review of the past 20-year literature on electronic commerce reveals that online purchase intention has been a pertinent theme of research due to the rising trend of online shopping (Kumar et al., 2021a, 2021b). However, the increasing incidents of ESCA have attracted researchers' interest in investigating ESCA phenomenon tremendously (Bell et al., 2020). Interestingly, though the literature on ESCA is gradually growing, it is highly fragmented. Researchers have examined various aspects of ESCA. For example, some studies focused on understanding the conceptual aspects of ESCA (Bell et al., 2020; Katawetawaraks & Wang, 2011), while several other studies have empirically shown the antecedents of ESCA (Jiang et al., 2021). Further, studies have documented various factors that lead to ESCA at different stages of the online purchase process, for example, at the consideration stage, checkout stage, transaction completion stage, and final payment stage (Jiang et al., 2021; Uma, 2020;

Xu & Huang, 2015; Kukar-Kinney & Close, 2010; Cho et al., 2006; Li & Chatterjee, 2005). This indicates that the ESCA literature is fragmented in terms of factors affecting ESCA. Moreover, the extant literature on ESCA has used various theories while the theoretical perspectives of this domain are still emerging. Hence, there is a need to synthesize the theories and models used in this domain. Due to the sharp hike in online shopping during recent years coupled with increasing rates of ESCA, there is a need to synthesize the ESCA literature to understand this phenomenon comprehensively and suggest future research trajectories.

## Problems of existing systematic reviews

Two literature reviews have been published on the ESCA domain to date, i.e., "Online Shopping Cart Abandonment: A Review and Research Agenda" by Wang et al. (2023) and "Antecedents of Electronic Shopping Cart Abandonment during Online Purchase Process" by Patharia and Jain (2023). These literature reviews have a few shortcomings that necessitate a more comprehensive and rigorous review of ESCA literature.

The review by Wang et al. (2023) has two shortcomings. Firstly, the authors considered online purchase as a focal construct of the model apart from online shopping cart abandonment, and as a result, many research papers that are not focused on ESCA are included in their review. For example, they included research papers by Xu et al. (2022) and Zhou et al. (2018) that focus on purchase intention rather than ESCA. The inclusion of such papers broadens the scope of their SLR from ESCA to online shopping and diminishes the quality and rigor of their SLR. Secondly, they didn't identify the prevailing themes of ESCA research which could have given important insights for future researchers to expand research in ESCA domain. Thus, this review lacks focus, precision, rigor, and comprehensiveness.

On the other hand, the review by Patharia and Jain (2023) has two shortcomings. Firstly, the paper has a limited scope because the paper has synthesized the literature on factors driving the decision to abandon the e-cart during different stages of online shopping process. However, this review did not synthesize the theories used in this domain, context of ESCA research, and the popular themes/ focus of research in this domain. Secondly, no quality criteria have been adopted to synthesize the ESCA literature questioning the quality of papers included in SLR (Paul & Criado, 2020). Thus, the findings of this review also lack rigor, quality, and precision. The shortcomings of existing reviews on ESCA justify the need to systematically review the literature on this domain to provide a state-of-the-art synthesis and provide meaningful insights into the ESCA literature.

## Originality of this systematic literature review

The current SLR addresses the aforementioned shortcomings in three ways. Firstly, we strictly included articles focused on online shopping cart abandonment. Thus, the findings of our study are more robust and conclusive compared to the review by Wang et al. (2023) who had included papers on purchase intention. As a result, the conceptual framework proposed based on the synthesis of the variables reported in ESCA literature precisely reflects ESCA phenomenon. Secondly, using lexicometric analysis, we identified the themes studied in the ESCA research which adds scientific rigor to our systematic literature review (SLR). Thus, our SLR is more rigorous compared to the earlier reviews on ESCA. Thirdly, we have followed the quality criteria used in recent SLRs published in high-quality journals (Chopra et al., 2023; Swain et al., 2023a, b). This lends greater authenticity to our SLR compared to the review by Patharia and Jain (2023).

## Objectives of this systematic review

Lim et al. (2022a, 2022b) argue that the SLR approach serves as an in-depth retrospective of a field, providing bird's eye view of the state of art of knowledge, unfolding the knowledge gap, and providing future research directions (Lim et al., 2022a, 2022b). Hence, an SLR is highly desirable to synthesize the literature, identify research gaps, and suggest future research directions on the ESCA domain. Thus, the present study aims to perform a more comprehensive and rigorous SLR on ESCA following the guidelines set out by Lim et al. (2022a, 2022b). In tandem with this, our study attempts to achieve three objectives. The first objective is to review ESCA literature, analyze its development over the years, and identify themes studied in ESCA literature. We have included ESCA literature available on multiple databases through a much rigorous review process and exhaustively synthesized it to overcome the shortcomings of Wang et al.'s (2023) review. The second objective of this SLR is to propose a comprehensive conceptual framework based on the synthesis of the variables reported in ESCA literature. The third objective is to suggest future research directions on ESCA. The present study adopted the structured SLR approach suggested by Jebarajakirthy et al. (2021) and lexicometric analysis to accomplish the aforementioned objectives.

## Contributions of this systematic review

This review offers several academic and practical implications. Academically, this review makes a substantial contribution to the ESCA literature because it meets all the important criteria suggested by Lim et al. (2022a, 2022b) for an impactful and valuable SLR. As per the criteria set out by Lim et al. (2022a, 2022b), SLR should present the state of art of knowledge, unfold the knowledge gap and provide future research directions. As such, this review synthesized the ESCA literature focusing on research settings, methods, theories, and constructs. For example, the synthesis shows that ESCA research is mainly concentrated in three countries, i.e., the USA, China, and India which opens up room to extend research on this domain to other countries and cultural backgrounds. Further, this review proposes a comprehensive conceptual framework based on the synthesized literature on this domain which provides an overall view of how ESCA operates. Moreover, in line with the second and third criteria set out by Lim et al. (2022a, 2022b), this review identifies knowledge gaps in ESCA literature and suggests specific future research directions to expand ESCA literature from theoretical, contextual, and methodological perspectives. Practically, this study helps e-retailers and marketers in crafting initiatives to combat ESCA.

## Structure of this systematic review

This systematic literature review has been organized into the following sections. The methodology adopted for this SLR is presented in the next section. It is followed by the findings and discussions section that discusses the growth of ESCA literature over the years from multifarious perspectives. In the subsequent section, we have suggested future research avenues based on the synthesis of ESCA literature to advance the extant literature. We have recommended the implications for academia and managers in the next section. Lastly, the paper closes with limitations and conclusions.

## Methodology

### Approach adopted for the review

A systematic review identifies, screens, selects, and critically appraises prior studies (Kumar et al., 2023a, b; Swain et al., 2023a, b). According to Paul et al. (2021), a systematic review can be theory-based (Mahajan et al., 2023), method-based (Kumar et al., 2022), meta-analysis (Maseeh et al., 2022; Liao et al., 2023), or domain-based (Shankar et al., 2022). The most preferred and published forms of systematic reviews are domain-based reviews (Paul et al., 2021). There are four different forms of domain-based reviews, i.e., structured reviews (Kahiya, 2018), bibliometric reviews (Lim, 2022), framework-based reviews (Lim, 2023), and hybrid reviews (Kumar et al., 2023a, b; Chopra et al., 2023).

The present study adopts the hybrid review method by combining the structured review with lexicometric analysis.

A structured review uses a structured approach to present a synthesized overview of the extant literature on a domain or a topic. It is an effective method for summarizing existing research in a field because it follows specific guidelines and can be replicated by future researchers (Palmatier et al., 2018). Accordingly, we have used this method to synthesize the ESCA literature with regard to widely used theories, contexts, constructs, and methods, and propose future research directions. Lexicometric analysis enables researchers to discover major themes and relationships between the themes in a domain by analyzing the textual data (Chopra et al., 2023). A detailed discussion of lexicometric analysis is given later in the "Methodology" section. Accordingly, we used the lexicometric analysis to thoroughly analyze the textual data on ESCA and identify the prevailing themes in this domain and their interrelationships. The combination of these two robust techniques fabricates a comprehensive synthesis of the ESCA literature.

## Search strategy

An important step in writing an SLR is to develop the search process to identify the relevant papers (Ashaduzzaman et al., 2022; Adil et al., 2022). That is, at this stage, appropriate online databases and keywords need to be identified for article search (Ashaduzzaman et al., 2023; Mehta et al., 2022). Kraus et al. (2022) suggest using two or more databases for article search to avoid biased outcomes due to limited/ specific scope of any particular database. Further, previously published literature review papers in top-ranking journals used around three to eight online databases to search for pertinent papers in their specific domain of SLR (Jebarajakirthy et al., 2021; Cartwright et al., 2021; Gupta et al., 2020). Therefore, eight databases were selected for the present study, i.e., Emerald, Google Scholar, Sage, Science Direct, Scopus, Springer, Web of Science, and Wiley Online (Maseeh et al., 2021a).

Next, the keywords need to be identified (Maseeh et al., 2021b). According to Kraus et al. (2022), keywords can be identified by reading the previously published articles in the domain. To do so, a search was carried out in the previously indicated databases using the "electronic shopping cart abandonment" as keyword (Talwar et al., 2020). The initial 20 results were screened to finalize and update the keywords. The finalized list of keywords includes "abandon shopping cart," "cart abandonment," "electronic cart," "online shopping cart," and "electronic shopping cart abandonment." As recommended by Kraus et al. (2022), the search string used for article search should include boolean operators. Hence, we used (Electronic OR online) AND (shopping AND cart AND abandon*) as search string. Research papers with these keywords contained within their abstract, title, or keyword were considered for this SLR.
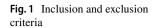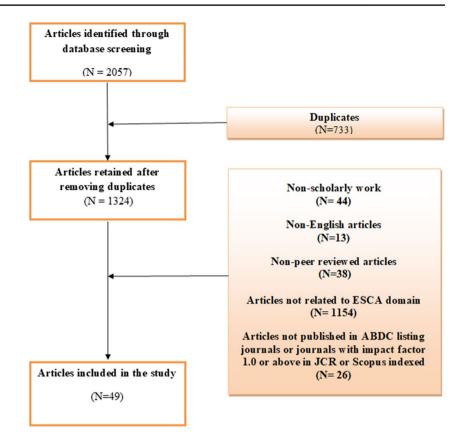
## Inclusion and exclusion criteria

The inclusion and exclusion criteria adopted for shortlisting the relevant papers for the review process are in the line with the guidelines outline by the Kraus et al. (2022). As such, a research paper eligible to enter the review process should be (i) a scholarly work, (ii) available in the English language, (iii) published in a peer-reviewed journal, and (iv) related to ESCA. Further, the suggestion of Paul and Criado (2020) was followed to ensure the quality of the included articles. Accordingly, the research papers published in the journals listed in the Australian Business Deans Council (ABDC) Journal Quality List, or journals having a minimum impact factor of one as per the Journal Citation Report (JCR) or journals listed on Scopus, were considered for review.

The initial search across the selected databases using the finalized set of keywords resulted in a repository of 2057 articles. Next, 733 articles that were inadvertently downloaded more than once were dropped. Thereafter, the inclusion and exclusion criteria were used to shortlist research papers for SLR out of the remaining 1324 articles. The first criterion was to exclude the non-scholarly work. Therefore, 44 papers from non-scholarly sources (e.g., blogs, trade journals, and editorials) were excluded. Further, following the second criterion, 13 non-English publications were excluded. Next, as per the third criterion, 38 articles were removed as they were not published in a peer-reviewed journal. Thereafter, the relevance of the remaining 1229 papers was closely examined. Subsequently, applying the fourth criterion, 1154 articles that were not related to the ESCA domain were dropped. Lastly, the journal quality criteria were checked, and 26 papers that were not published in high-quality journals (as specified earlier) were deleted. Finally, these 49 papers were reviewed intensely using their full-text version to accomplish the objectives of the SLR. The steps adopted for the search process and inclusion/exclusion criteria have been presented in Fig. 1.

## Lexicometric analysis

Similar to bibliometric analysis (e.g., Donthu et al., 2021), lexicometric analysis helps researchers to explore the clusters of concepts in the text under consideration by performing statistical investigations involving qualitative and quantitative methods (Reinert, 1990). Moreover, it offers automated textual analysis using systematic coding of texts, thus minimizing the chances of researchers' bias (Mandjak et al., 2019; Macke and Genari, 2019). As such, lexicometric analysis was performed to enhance traditional SLR methods and gain deeper insights into themes in the extant ESCA literature. Lexicometric analysis involves similarity analysis and factorial correspondence analysis. In the present study, while similarity analysis enabled us to derive key themes of

**Fig. 1** Inclusion and exclusion criteria



ESCA literature, factorial correspondence analysis demonstrated the word groupings emerging from the ESCA literature. Software, such as Iramuteq and Alceste, can be used to perform lexicometric analysis such that the researchers can interpret the large qualitative textual data in a quantifiable term (Abhayawansa, 2011). Therefore, the present study used Iramuteq software to perform a lexicometric analysis of the extant ESCA literature shortlisted for review.

Each research paper was coded as a text with stated variables and imported into Iramuteq as recommended by Mandjak et al. (2019). The variables coded were "year of publication," "country of the study," "category of the journal of the publication" (e.g., business, management), and "research methods." Each article was coded against the variable listed above. For example, if a study used a survey approach to collect data from Australia, and published in 2019 in a marketing journal, the following syntax was used for coding.

    **** *PY_2019 *JC_MKT *Country_Australia *Method_survey

Two independent researchers performed the coding process. We calculated Krippendorff's alpha to examine the inter-coder reliability which suggested 89% agreement in the coding performed by two coders thereby suggesting the inter-coder reliability (Santini et al., 2023). Any

discrepancies in the coding were resolved via discussion (Ladeira et al., 2023).

A collection of texts imported into Iramuteq software for lexicometric analysis is known as a "corpus" which is the collection of selected articles, i.e., 49 papers shortlisted for the current SLR. Further, the Iramuteq software lemmatizes similar words (i.e., combines words, such as "freeze," "froze," and "frozen" into a single word, i.e., "freeze") in a corpus. Such words that are automatically lemmatized by Iramuteq are known as "form." Such forms that appear twice or more in the corpus are known as "active forms," whereas those that appear only once are known as "hapax."

## Findings and discussions

Table 1 provides comprehensive information, such as the author(s) name with the year of publication, title of publication, and journal of publications for the selected 49 papers used in the current SLR. All the shortlisted articles were carefully analyzed to achieve the first two objectives of the present study, i.e., to examine the growth of ESCA literature over years and to propose a conceptual framework to comprehend ESCA phenomenon. The details of the synthesis are discussed in the following sub-sections.

**Table 1** Articles included in this review

| S. No. | Author (s) | Title | Journal |
|---|---|---|---|
| 1 | (Patharia & Jain, 2023) | Antecedents of electronic shopping cart abandonment during online purchase process | Business Perspectives and Research |
| 2 | (Mittal, 2023) | The psychology of online shopping cart abandonment: a scrutiny of the current research framework and building an improved model of the online shopper journey | Electronic Commerce Research |
| 3 | (Wang et al., 2022) | Online shopping cart abandonment: A review and research agenda | International Journal of Consumer Studies |
| 4 | (Wang et al., 2022) | Thanks COVID-19, I'll Reconsider My Purchase: Can Fear Appeal Reduce Online Shopping Cart Abandonment? | Journal of Retailing and Consumer Services |
| 5 | (Ong et al., 2022) | Utilizing SEM-RFC to Predict Factors Affecting Online Shopping Cart Abandonment During the COVID-19 Pandemic | Heliyon |
| 6 | (Rodrigues et al., 2022) | The Influence of Perceived Risk on Mobile Shopping Cart Abandonment | Journal of Strategic Marketing |
| 7 | (Mittal, 2022) | Online Shopping Cart Abandonment: A Critique and Guide to Measuring its Drivers | International Review of Retail, Distribution and Consumer Research |
| 8 | (Khan et al., 2022) | Social commerce advertising avoidance and shopping cart abandonment: A fs/QCA analysis of German consumers | Journal of Retailing and Consumer Services |
| 9 | (Kukar-Kinney et al., 2022) | A model of online shopping cart abandonment: evidence from e-tail clickstream data | Journal of the Academy of Marketing Science |
| 10 | (Rausch & Brand, 2022) | Gotta buy 'em all? Online shopping cart abandonment among new and existing customers | International Journal of Electronic Business |
| 11 | (Zhao et al., 2021) | To Purchase or to Remove? Online Shopping Cart Warning Pop-Up Messages can Polarize Liking and Purchase Intention | Journal of Business Research |
| 12 | (Kapoor & Vij, 2021) | Following you Wherever you Go: Mobile Shopping 'Cart-Checkout' Abandonment | Journal of Retailing and Consumer Services |
| 13 | (Li et al., 2021) | The Double-Edged Effects of E-Commerce Cart Retargeting: Does Retargeting Too Early Backfire? | Journal of Marketing |
| 14 | (Jiang et al., 2021) | Empty the Shopping Cart? The Effect of Shopping Cart Item Sorting on Online Shopping Cart Abandonment Behavior | Journal of Theoretical and Applied Electronic Commerce Research |
| 15 | (Chowdhury & Chouhan, 2021) | Abandonment of the Shopping Cart: A Study of Online Consumer's Non-Shopping Behaviour | Turkish Journal of Physiotherapy and Rehabilitation |
| 16 | (Padigela & Suguna, 2021) | Segmentation of E-Commerce Users Based on Cart Abandonment and Product Recommendation through Collaborative Filtering: The Moderating Effect of Exorbitant Pricing | International Journal of System Assurance Engineering and Management |
| 17 | (Mishra et al., 2021) | Moderating Effect of Cognitive Conflict on the Relationship Between Value Consciousness and Online Shopping Cart Abandonment | International Review of Retail, Distribution and Consumer Research |
| 18 | (Mir, 2021) | Self-Escapism Motivated Online Shopping Engagement: A Determinant of Users' Online Shopping Cart Use and Buying Behavior | Journal of Internet Commerce |
| 19 | (Wang et al., 2021) | Why Do Some Consumers Still Prefer In-Store Shopping? An Exploration of Online Shopping Cart Abandonment Behavior | Frontiers in Psychology |
| 20 | (Rubin et al., 2020) | Online Shopping Cart Abandonment: A Consumer Mindset Perspective | Journal of Consumer Marketing |
| 21 | (Rausch et al., 2020) | Predicting Online Shopping Cart Abandonment with Machine Learning Approaches | International Journal of Market Research |

**Table 1** (continued)

| S. No. | Author (s) | Title | Journal |
|---|---|---|---|
| 22 | (Bell et al., 2020) | Motivational and Affective Factors Underlying Consumer Dropout and Transactional Success in Ecommerce: An Overview | Frontiers in Psychology |
| 23 | (Tiffany et al., 2020) | Gain-Loss Framing: Comparing the Push Notification Message to Increase Purchase Intention in E-Marketplace Mobile Application | IEEE Access |
| 24 | (Rejikumar & Asokan-Ajitha, 2020) | Role of Impulsiveness in Online Purchase Completion Intentions: An Empirical Study Among Indian Customers | Journal of Indian Business Research |
| 25 | (Uma, 2020) | Checking Mobile Users Experience During Checkout Process with Big Data | Journal of Xi'an University of Architecture & Technology |
| 26 | (Kulkarni et al., 2019) | Boomerang Effect of Incentive Reminders During Shopping Trips | Journal of Consumer Marketing |
| 27 | (Tang & Lin, 2019) | Curbing Shopping Cart Abandonment in C2C Markets—An Uncertainty Reduction Approach | Electronic Markets |
| 28 | (Luo et al., 2019) | When and How to Leverage E-Commerce Cart Targeting: The Relative and Moderated Effects of Scarcity and Price Incentives With a Two-Stage Field Experiment and Causal Forest Optimization | Information Systems Research |
| 29 | (Song, 2019) | A Study on Online Shopping Cart Abandonment: A Product Category Perspective | Journal of Internet Commerce |
| 30 | (Sakar et al., 2019) | Real-Time Prediction of Online Shoppers' Purchasing Intention Using Multilayer Perceptron and LSTM Recurrent Neural Network | Neural Computing and Applications |
| 31 | (Huang et al., 2018) | Mobile Shopping Cart Abandonment: The Roles of Conflicts, Ambivalence, and Hesitation | Journal of Business Research |
| 32 | (Zhang et al., 2018) | How do Price Promotions Affect Customer Behavior on Retailing Platforms? Evidence From a Large Randomized Experiment on Alibaba | Production and Operations Management |
| 33 | (Garaus, 2018) | Confusion in Internet Retailing: Causes and Consequences | Internet Research |
| 34 | (Albrecht et al., 2017) | The Relationship Between Consumer Shopping Stress and Purchase Abandonment in Task-Oriented and Recreation-Oriented Consumers | Journal of the Academy of Marketing Science |
| 35 | (Tandon et al., 2017) | Understanding Barriers and Drivers to Online Shopping: An Emerging Economy Case | International Journal of Electronic Business |
| 36 | (Nair, 2016) | Abandonment of the Shopping Cart: A Study of Online Consumer's Non-Shopping Behavior | Journal of Management |
| 37 | (Xu & Huang, 2015) | Factors Influencing Cart Abandonment in the Online Shopping Process | Social Behavior and Personality |
| 38 | (Ding et al., 2015) | Learning User Real-Time Intent for Optimal Dynamic Web Page Transformation | Information Systems Research |
| 39 | (Shukla, 2014) | The Impact of Organizational Efforts on Consumer Concerns in an Online Context | Information & Management |
| 40 | (Negra & Mzoughi, 2012) | How Wise are Online Procrastinators? A Scale Development | Internet Research |
| 41 | (Toyin & Damilola, 2012) | Abandonment Factors Affecting E-Commerce Transactions in Nigeria | International Journal of Computer Applications in Technology |
| 42 | (Katawetawaraks & Wang, 2011) | Online Shopper Behavior: Influences of Online Shopping Decision | Asian Journal of Business Research |
| 43 | (Kukar-Kinney & Close, 2010) | The Determinants of Consumers' Online Shopping Cart Abandonment | Journal of the Academy of Marketing Science |

**Table 1** (continued)

| S. No. | Author (s) | Title | Journal |
|---|---|---|---|
| 44 | (Close & Kukar-Kinney, 2010) | Beyond Buying: Motivations Behind Consumers' Online Shopping Cart Use | Journal of Business Research |
| 45 | (Rajamma et al., 2009) | Why do Shoppers Abandon Shopping Cart? Perceived Waiting Time, Risk, and Transaction Inconvenience | Journal of Product & Brand Management |
| 46 | (Cho et al., 2006) | Online Shopping Hesitation | Cyberpsychology Behavior and Social Networking |
| 47 | (Bruwer & Wood, 2005) | The Australian Online Wine-Buying Consumer: Motivational and Behavioural Perspectives | Journal of Wine Research |
| 48 | (Cho, 2004) | Likelihood to Abort an Online Transaction: Influences from Cognitive Evaluations, Attitudes, and Behavioral Variables | Information & Management |
| 49 | (Oliver & Shor, 2003) | Digital Redemption of Coupons: Satisfying and Dissatisfying Effects of Promotion Codes | Journal of Product & Brand Management |

## Growth of ESCA over the years

The growth of academic research on a specific domain over time can be gauged through analysis of the periodic distribution of research papers published on that research domain. Fig. 2 depicts the year-wise development in ESCA research. The first paper on ESCA was published in 2003 (Oliver & Shor, 2003). Accordingly, 2003 has been considered the starting year for the SLR, and papers published during the 20-year period (i.e., 2003 and March 2023) were included in this study, subject to the inclusion criteria discussed in the methodology section.

Though online retailing emerged in the mid-90s (Ozansoy & Sagkaya, 2021), research on ESCA started in 2003 (as evident from Fig. 2) with Oliver and Shor's (2003) paper on this domain. However, scanty research was published on this domain till 2017. Not more than two papers have been published a year till 2017. Further, no paper was published on this domain in 2007, 2008, and 2013. However, research on this domain gradually increased from 2017 onwards and showed a growth trajectory. 2021 witnessed the highest number of publications in this domain (i.e., nine publications). The upsurge in academic research on ESCA might be attributed to the increasing rate of ESCA in recent years in parallel with the growth of online purchases around the globe during the COVID-19 pandemic and post-pandemic era.

## Journals of publication

The next step of synthesis is to examine the shortlisted papers in terms of publication outlets, i.e., journal of publication. Table 2 shows that ESCA research has been published in 34 high-quality academic journals such as the *Journal*
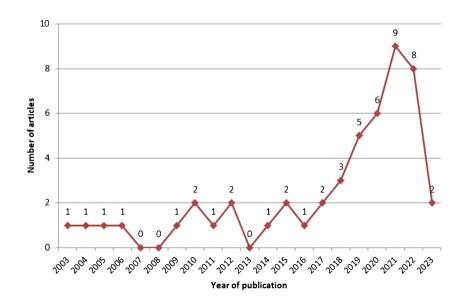
**Fig. 2** Number of publications year-wise

**Table 2** Journals and number of publications

| S. No. | Journal* | # | Articles | ABDC ranking | JCR (IF) |
|---|---|---|---|---|---|
| 1 | Journal of the Academy of Marketing Science | 3 | Kukar-Kinney et al. (2022); Albrecht et al. (2017); Kukar-Kinney and Close (2010) | A* | 14.9 |
| 2 | Journal of Retailing and Consumer Services | 3 | Khan et al. (2022); Wang et al. (2022); Kapoor and Vij (2021) | A | 10.97 |
| 3 | Journal of Business Research | 3 | Zhao et al. (2021); Huang et al. (2018); Close and Kukar-Kinney (2010) | A | 10.96 |
| 4 | Information & Management | 2 | Shukla (2014); Cho (2004) | A* | 10.32 |
| 5 | Internet Research | 2 | Garaus (2018); Negra & Mzoughi (2012) | A | 6.35 |
| 6 | Information Systems Research | 2 | Luo et al. (2019); Ding et al. (2015) | A* | 5.49 |
| 7 | Journal of Product & Brand Management | 2 | Rajamma et al. (2009); Oliver and Shor (2003) | A | 5.24 |
| 8 | Frontiers in Psychology | 2 | Wang et al. (2021); Bell et al. (2020) | - | 4.23 |
| 9 | Journal of Consumer Marketing | 2 | Rubin et al. (2020); Kulkarni et al. (2019) | A | - |
| 10 | Journal of Internet Commerce | 2 | Mir (2021); Song (2019) | B | - |
| 11 | International Journal of Electronic Business | 2 | Rausch and Brand (2022); Tandon et al. (2017) | - | - |
| 12 | International Review of Retail, Distribution and Consumer Research | 2 | Mittal (2022); Mishra et al. (2021) | B | - |
| 13 | Journal of Marketing | 1 | Li et al. (2021) | A* | 15.36 |
| 14 | Journal of Management | 1 | Nair (2016) | A* | 13.5 |
| 15 | Electronic Markets | 1 | Tang and Lin (2019) | A | 6.01 |
| 16 | Journal of Theoretical and Applied Electronic Commerce Research | 1 | Jiang et al. (2021) | B | 5.31 |
| 17 | Neural Computing and Applications | 1 | Sakar et al. (2019) | - | 5.1 |
| 18 | Production and Operations Management | 1 | Zhang et al. (2018) | A* | 4.63 |
| 19 | Cyberpsychology Behavior and Social Networking | 1 | Cho et al. (2006) | - | 4.15 |
| 20 | Heliyon | 1 | Ong et al. (2022) | - | 3.77 |
| 21 | IEEE Access | 1 | Tiffany et al. (2020) | - | 3.47 |
| 22 | International Journal of Market Research | 1 | Rausch et al. (2020) | A | 2.51 |
| 23 | Social Behavior and Personality | 1 | Xu and Huang (2015) | - | 1.18 |
| 24 | Asian Journal of Business Research | 1 | Katawetawaraks and Wang (2011) | C | - |
| 25 | International Journal of Computer Applications in Technology | 1 | Toyin and Damilola (2012) | - | - |
| 26 | Journal of Indian Business Research | 1 | Rejikumar and Asokan-Ajitha (2020) | C | - |
| 27 | Journal of Wine Research | 1 | Bruwer and Wood (2005) | - | - |
| 28 | Journal of Xi'an University of Architecture & Technology | 1 | Uma (2020) | - | - |
| 29 | Turkish Journal of Physiotherapy and Rehabilitation | 1 | Chowdhury and Chouhan (2021) | - | - |
| 30 | International Journal of System Assurance Engineering and Management | 1 | Padigela and Suguna (2021) | - | - |
| 31 | Journal of Strategic Marketing | 1 | Rodrigues et al. (2022) | A | - |
| 32 | International Journal of Consumer Studies | 1 | Wang et al. (2022) | A | 7.09 |
| 33. | Business Perspectives and Research | 1 | Patharia and Jain (2023) | C | - |
| 34. | Electronic Commerce Research | 1 | Mittal (2023) | A | 3.46 |

*All the journals are listed in Scopus #No. of publications

*of the Academy of Marketing Science* (Kukar-Kinney et al., 2022; Albrecht et al., 2017; Kukar-Kinney & Close, 2010), *Information & Management* (Shukla, 2014; Cho, 2004), *Information Systems Research* (Luo et al., 2019; Ding et al., 2015), *Journal of Marketing* (Li et al., 2021), *Journal of Management* (Nair, 2016), and *Production and Operations* *Management* (Zhang et al., 2018) indicating that research in this domain has gained recognition from the readers of leading journals. The highest number of papers on ESCA, i.e., three articles each (20.9% articles on this domain) has been published in *Journal of Retailing and Consumer Services, Journal of the Academy of Marketing Science*, and *Journal*

*of Business Research*. The other 31 journals published only one or two papers. This reveals that the publication on this domain is widely diffused across journals. ESCA research has been published in outlets from various fields, i.e., marketing, information technology and computer science, business and management, and psychology journals.

## Authorship

Following the recommendations by recent SLR studies (e.g., Shankar et al., 2022; Redine et al., 2022; Paul & Feliciano-Cestero, 2021), the shortlisted papers were further examined in perspective of their number of citations. Table 3 highlights the 10 most cited research papers on ESCA domain. As shown in Table 3, the research paper by Katawetawaraks and Wang (2011) has the highest number of citations (i.e., 570) followed by Close and Kukar-Kinney's (2010) research paper with 447 citations. Further, from the perspective of average citations per year, the research paper by Katawetawaraks and Wang (2011) has the highest number of citations on average per year (approximately 47 citations per year) followed by an article by Sakar et al. (2019) (40 citations on average per year). Considering the above facts, Katawetawaraks and Wang's (2011) article is the most influential research study in the domain of ESCA.

## Methodological perspectives

### Research settings

The shortlisted papers were examined with respect to countries where ESCA research was conducted. As per Paul and Feliciano-Cestero (2021), only empirical papers that are based on data collected from a sample should be considered for country-wise synthesis. Accordingly, conceptual papers should be excluded from this synthesis. Therefore, out of 49

shortlisted papers, three conceptual papers (Mittal, 2022; Bell et al., 2020; Katawetawaraks & Wang, 2011) and three review papers (Patharia & Jain, 2023; Mittal, 2023; Wang et al., 2022) were excluded from the research settings-wise analysis. Figure 3 shows that ESCA research was conducted in 14 countries. The highest number of studies was carried out in the USA (13 studies) followed by China and India where eight studies each were carried out. It is important to note that two empirical studies (Albrecht et al., 2017; Huang et al., 2018) were carried out in multiple countries to examine cultural differences. Huang et al. (2018) conducted ESCA research among Taiwanese and American online shoppers, while Albrecht et al. (2017) conducted research on Austrian and German online shoppers. Hence, these studies have been accounted for in the respective countries.

### Research design and data collection

This section highlights the research methods used in the ESCA literature. Table 4 depicts the various methods employed on the ESCA domain indicating a methodological diversity in this domain. The majority of the studies used the survey-based method (26 studies). This is followed by the experimental method (nine studies), the mixed method, i.e., the combination of both the quantitative and qualitative studies (four studies), and the qualitative method (four studies). Three conceptual and three review papers have also been published. Though there appears to be a methodological diversity in this domain, methods are skewed towards quantitative methods that include both survey and experimental methods.

Subsequently, the research papers were synthesized in terms of the modes of data collection (online vs offline). Table 4 reveals that the majority of the studies have either opted for the online mode (34 studies; 21 survey-based, nine experimental studies, and four qualitative studies) or

**Table 3** Ten most cited studies

| Rank | Study | Journal | Citations[1] | Avg. citations/year[2] |
|---|---|---|---|---|
| 1 | Katawetawaraks and Wang (2011) | Asian Journal of Business Research | 570 | 47.50 |
| 2 | Close & Kukar Kinney (2010) | Journal of Business Research | 447 | 34.38 |
| 3 | Cho (2004) | Information & Management | 429 | 22.58 |
| 4 | Kukar-Kinney and Close (2010) | Journal of the Academy of Marketing Science | 332 | 25.54 |
| 5 | Cho et al. (2006) | Cyber Psychology Behavior and Social Networking | 251 | 14.76 |
| 6 | Rajamma et al. (2009) | Journal of Product & Brand Management | 173 | 12.36 |
| 7 | Sakar et al. (2019) | Neural Computing and Applications | 162 | 40.50 |
| 8 | Oliver and Shor (2003) | Journal of Product & Brand Management | 144 | 7.20 |
| 9 | Bruwer and Wood (2005) | Journal of Wine Research | 134 | 7.44 |
| 10 | Huang et al. (2018) | Journal of Business Research | 94 | 18.80 |

[1]Based on Google Scholar citations (24/01/23); [2]Total number of citations divided by number of years after article publication

**Fig. 3** Countries and number of publications. (Note: Conceptual and review papers were not included in this list)
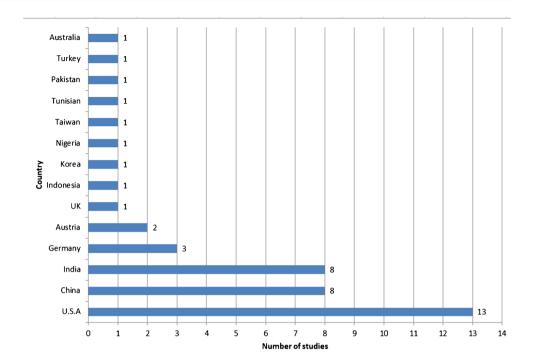


**Table 4** Research methods used in ESCA research

| Research methods | # | Sample type | |
| --- | --- | --- | --- |
| | | Students | Online shoppers in general |
| **Survey-based** | | | |
| *Online* | 21 | Close and Kukar- Kinney (2010); Rajamma et al. (2009); Cho et al. (2006) | Rodrigues et al. (2022); Ong et al. (2022); Khan et al. (2022); Wang et al. (2021); Chowdhury and Chouhan (2021); Kapoor and Vij (2021); Uma (2020); Rejikumar and Asokan-Ajitha (2020); Tang and Lin (2019); Song (2019); Huang et al. (2018); Nair (2016); Xu and Huang (2015); Shukla (2014); Toyin and Damilola (2012); Negra and Mzoughi (2012); Bruwer and Wood (2005); Cho (2004) |
| *Offline* | 3 | | Mir (2021); Mishra et al. (2021); Tandon et al. (2017) |
| *Online and offline both* | 2 | Kukar-Kinney and Close (2010) | Wang et al. (2022) |
| **Experimental** | | | |
| *Online* | 9 | Kulkarni et al. (2019); Ding et al. (2015)* | Padigela and Suguna (2021); Li et al. (2021); Tiffany et al. (2020); Rubin et al. (2020); Luo et al. (2019); Zhang et al. (2018); Ding et al. (2015)*; Oliver and Shor (2003) |
| Qualitative (Big data analysis) | 4 | | Rausch and Brand (2022); Kukar-Kinney et al. (2022); Rausch et al. (2020); Sakar et al. (2019) |
| Mixed methods (*online and offline both*) | 4 | Zhao et al. (2021) | Jiang et al. (2021); Garaus (2018); Albrecht et al. (2017) |
| Conceptual | 3 | Mittal (2022); Bell et al. (2020); Katawetawaraks and Wang (2011) | |
| Literature review | 3 | Mittal (2023); Patharia and Jain (2023); Wang et al., (2022) | |

*The paper by Ding et al. (2015) has been listed twice in the table. It is a two-study paper where they used online shoppers for one study and student sample for the other study

a combination of online and offline mode (six studies; two survey-based and four mixed-method studies) of data collection. The wider use of online mode of data collection in this domain might be because this mode of data collection better aligns to ESCA. Therefore, online modes, such as e-mail, survey websites, and online shopping platforms are the most popularly used in this domain.

Table 4 further elucidates the sample type used for ESCA research. The current SLR classified sample types into students and online shoppers in general. Seven studies (four survey-based, one mixed method, and two experimental-based studies) have used students as respondents. Notably, online shoppers have been widely used as the sample for the empirical studies on ESCA.

## Theoretical perspectives

Research papers were further synthesized in terms of theories used in ESCA research. Table 5 exhibits that overall, 10 theories have been used in ESCA domain. Stimulus organism response theory (five studies), theory of buyer behavior (three studies), and cognitive dissonance theory (two studies) have been used in multiple studies in this domain. However, the majority of the underpinning theories (seven out of 10 theories) have been used only in one study each (see Table 5) indicating that none of these theories have been overly used. The limited theoretical applications to this domain of literature indicate that theoretical perspectives of ESCA research are still emerging and progressing. The theoretical perspectives used in ESCA domain are explained below.

### Stimulus organism response theory

Stimulus organism response (S-O-R) theory posits that environmental factors (stimulus) encountered by an individual result in cognitive and affective responses that reciprocate into approach or avoidance behavior, i.e., to adopt or refrain from specific behavior (Jacoby, 2002; Mehrabian and Russell, 1974). The S-O-R theory has been applied in ESCA domain to explore customers' decision-making behavior. Researchers used the underpinnings of this theory to explain that waiting for a lower price (Wang et al., 2022) and emotional ambivalence (Wang et al., 2021) are the stimuli that trigger the customers' cognitive apprehensions (i.e., hesitation at checkout). Such cognitive apprehension negatively influences their purchase completion decision and hence, increases the likelihood of ESCA.

### Theory of buyer behavior

This theory can be applied to understand customer purchase and non-purchase behavior (Kapoor & Vij, 2021; Li & Chatterjee, 2005). The theory of buyer behavior suggests that there are four stages in the buying process, i.e., search stage, consideration stage, evaluation stage, and purchase stage, and different factors influence customers at the different stage of the purchase process (Howard & Sheth, 1969). Studies have used this theory to support the investigation into various factors contributing to ESCA at the different stages of purchase decision-making (Kukar-Kinney & Close, 2010). Further, using the underpinnings of this theory, Kapoor and Vij (2021) argued that abandonment phenomenon comprises cart abandonment and checkout abandonment. The cart abandonment occurs during the first three stages (e-search stage, e-consideration stage, and e-evaluation stage), while checkout abandonment occurs during the e-purchase stage.

**Table 5** Theories used in ESCA research

| Theory | Author | # | References |
|---|---|---|---|
| Stimulus organism response theory | Mehrabian and Russell (1974) | 5 | Wang et al. (2022); Wang et al. (2021); Tiffany et al. (2020); Rejikumar and Asokan-Ajitha (2020); Garaus (2018) |
| Theory of Buyer Behavior | Howard and Sheth (1969) | 3 | Kapoor and Vij (2021); Kukar-Kinney and Close (2010); Close and Kukar-Kinney (2010) |
| Cognitive dissonance theory | Festinger (1957) | 2 | Zhao et al. (2021); Mishra et al. (2021) |
| Construal level theory | Liberman et al. (2007) | 1 | Rubin et al. (2020) |
| Technology acceptance model | Davis et al. (1989) | 1 | Tandon et al. (2017) |
| Theory of Reasoned Action | Ajzen and Fishbein (1975) | 1 | Cho (2004) |
| Uncertainty reduction theory | Berger and Calabrese (1975) | 1 | Tang and Lin (2019) |
| Expectancy disconfirmation model | Oliver (1980) | 1 | Rajamma et al. (2009) |
| Equity theory | Oliver and Swan (1989) | 1 | Oliver and Shor (2003) |
| Theory of planned behavior | Ajzen (1991) | 1 | Ong et al. (2022) |

## Cognitive dissonance theory

Cognitive dissonance theory propounded by Festinger (1957) postulates that individuals encounter psychological tension when there is a mismatch between their beliefs and behaviors. Zhao et al. (2021) employed the underpinnings of this theory to elucidate how retargeting messages like warning reminders create a state of urgency for customers to decide to buy or abandon the product in their shopping cart within a stipulated time. Pop-up warning messages, such as "*Your shopping cart is full. Please purchase/ remove your items in your shopping cart*" persuade customers to buy or abandon the product in their electronic cart.

## Construal level theory

Liberman et al. (2007) propounded construal level theory to examine one's perceptions of an object using psychological distance between an individual and the specific object. This theory posits that physically or psychologically distant objects from an individual lead to an abstract perception (high-level construal) of that object, whereas proximal objects lead to the concrete perception (low-level construal) of that object (Liberman et al., 2007). Rubin et al. (2020) used the theory to investigate whether customers' abstract or concrete mindsets influence their level of involvement with products and the likelihood of ESCA. Researchers found that customers with an abstract mindset rate products in their electronic shopping carts as more important which leads to increase in ultimate purchase hence, reducing ESCA.

## Technology acceptance model

Technology acceptance model (TAM) explains the role of two primary factors influencing technology adoption intention, i.e., perceived usefulness and perceived ease of use. Tandon et al. (2017) used this model to identify key drivers and barriers affecting online purchase intention. They found that perceived ease of payment (cash on delivery) drives online purchase intention. Further, it was suggested that the perceived usefulness of online shopping may be improved by reducing perceived risks associated with lack of touch and feel, risk of losing personal and financial information, and technological hitch. Ultimately, the perceived ease of payment and perceived usefulness of online shopping will increase the likelihood of purchase intention and reduce ESCA.

## Theory of reasoned action

The theory of reasoned action (TRA) explains that an individual's behavior is influenced by one's affective evaluation (attitude) and subjective norms (Ajzen & Fishbein, 1975).

Cho (2004) used the underpinnings of this theory to identify the factors that influence the likelihood of ESCA. It was found that the customers with past online shopping experience show positive attitude, i.e., lower levels of concern regarding delivery and return. Hence, the rate of ESCA will be lower among experienced online shoppers than those who are inexperienced.

## Expectancy disconfirmation model

The expectancy disconfirmation model propounded by Oliver (1980) postulates that customer expectations serve as the baseline to assess their satisfaction. As per the model, customers experience dissatisfaction if their experience falls short of their expectations and vice-versa. Rajamma et al. (2009) used the model to explore the factors that lead to dissatisfaction during online shopping. They found that the risk and transaction inconvenience (e.g., transaction that endangers their security and violates privacy of the information asked) at the checkout stage will bring the purchase experience short of their expectations leading to dissatisfaction. Hence, they may get de-motivated to complete the transaction, thus leading to ESCA.

## Uncertainty reduction theory

Uncertainty reduction theory posits that customers try to reduce uncertainty by seeking information about a product/service (Sun et al., 2022; Berger & Calabrese, 1975). Customers can acquire information through three strategies primarily, i.e., passive, active, and interactive. Tang and Lin (2019) used the underpinnings of this theory to explain the role of three communication strategies, i.e., perceived effectiveness of product descriptions (passive strategy), perceived interactivity (interactive strategy), and perceived effectiveness of feedback system (active strategy) in reducing uncertainty. The perceived effectiveness of product descriptions can reduce customers' uncertainty perceptions of products/ services. Perceived effectiveness of interactivity helps in resolving customers' uncertainties related to sellers. Further, the perceived effectiveness of feedback system can reduce customers' uncertainty perceptions of sellers and products/ services offered. Overall, these strategies help in reducing customers' uncertainty perceptions and ESCA.

## Equity theory

Equity theory posits that an individual's motivation level is directly proportional to the perceptions of fairness (Oliver and Swan, 1989). In the context of online shopping, if customers feel that the purchase situation is fair, then they will get motivated to complete the online purchase and overcome ESCA. Oliver and Shor (2003) used this theory to analyze

the effect of promotional coupon codes on customers' perception of price fairness (fair prices of product/ service). It was found that customers perceive greater price fairness with promotional coupon codes. Consequently, such customers are motivated to complete the purchase and overcome ESCA. Thus, the underpinnings of equity theory can be used to formulate strategies to curb ESCA.

### Theory of planned behavior

The theory of planned behavior given by Ajzen (1991) helps in predicting and understanding human behavior in a specific context. According to this theory, an individual's behavior is an outcome of his/her intention to perform the given behavior which is in turn determined by attitude towards behavior, subjective norms, and perceived behavioral control. Ong et al. (2022) used this theory to understand the factors affecting ESCA during the COVID-19 pandemic. The unfavorable attitude towards online shopping, peer group's perceptions, and negative emotions, such as anxiety, lead to ESCA

## Widely used variables and constructs

The second objective of this SLR is to propose a conceptual framework by synthesizing the variables (antecedents, mediators, moderators, and outcomes) reported in the ESCA literature (Table 6). ESCA is the prominently used outcome variable in the ESCA literature. The antecedents can be classified into two sets of factors: customer-related factors and website-related factors. Further, research and comparison mediate the relationship between customer-related factors and ESCA. Research and comparison mean shortlisting the choices for future purchases and gathering information via a single website or across websites to evaluate offers. Intention to wait for a sale, current purchase intent (instant or later), availability of products and services (ample or scanty), and choice of mode of payment moderate the relationship between the mediator and ESCA.

### Antecedents of ESCA

All the antecedents of ESCA reported in the literature can be broadly divided into two categories, i.e., customer-related and website-related factors. This classification helps to understand how the customers' characteristics and website characteristics affect ESCA.

**Customer-related factors**  Customers' characteristics and attitude influence their online purchase behavior (Cho et al., 2006). The customer-related factors affecting ESCA include customers' attitudes towards online shopping (Wang et al., 2022; Mir, 2021), product involvement (Mishra et al., 2021;

Rubin et al., 2020), experience (Jiang et al., 2021; Song, 2019), motives (Mishra et al., 2021;), advice from acquaintances (Kapoor & Vij, 2021; Song, 2019), perceived risk (Chowdhury & Chouhan, 2021), and perceived cost (Wang et al., 2022; Uma, 2020; Song, 2019). The first customer-related factor is customer attitudes towards online shopping. Customers' cognitive or affective attitudes towards online shopping may drive customers to complete a purchase or influence them to abandon the purchase in their electronic cart (Ong et al., 2022; Mir, 2021; Cho et al., 2006). The cognitive attitude is based on the evaluation of the characteristics of an object or stimulus which will hamper the purchase process and lead to ESCA (Wang et al., 2022; Wang et al., 2021). The affective attitude is based on customers' emotions (Mir, 2021; Huang et al., 2018). Customers might initially feel that electronic shopping is attractive, but they may abandon the cart due to some negative emotions that emerge during the purchase process, such as nervousness and anxiety (Mishra et al., 2021; Shukla, 2014).

Product involvement is the next customer-related factor that prominently affects ESCA (Rubin et al., 2020). In an online shopping context, customers with high product involvement typically engage in more prolonged information search than customers with low product involvement (Mishra et al., 2021). Therefore, the former group of customers are more cautious regarding their purchases, delay completing the purchase, and often end up in ESCA (Rubin et al., 2020). Experience is another customer-related factor affecting an individual's purchase decisions (Jiang et al., 2021; Song, 2019). Customers with negative past experiences with online shopping hesitate to buy a product or service online (Cho et al., 2006). This increases the chances of ESCA.

The next customer-related factor is purchasing motives. Customers generally visit an online shopping website with some predetermined motives which can be either utilitarian (functional) or hedonic (emotional) motives (Rejikumar & Asokan-Ajitha, 2020; Close & Kukar-Kinney, 2010). Customers with hedonic motives are more likely to abandon the shopping cart compared to those with utilitarian motives because the former groups of customers usually browse shopping websites casually without strong purchase intentions (Close & Kukar-Kinney, 2010). Advice from acquaintances is another important factor leading to ESCA. Some customers often seek and consider the recommendations of others before finalizing their purchase decisions because of subjective norms or a lack of self-confidence (Song, 2019). Such customers postpone their purchase decision or abandon their e-cart after receiving a negative response or no response from their acquaintances (Song, 2019; Cho et al., 2006). Further, the negative reviews and their intensity trigger reluctance among such doubtful, advice-seeking customers in ordering products online leading to ESCA (Kapoor & Vij, 2021).

**Table 6** Variables studied in ESCA literature

| S. No. | Authors | Independent factors | | | | | | | | | | | | Mediator | Moderators | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Customer related factors | | | | | | | Website related factors | | | | | | | | | |
| | | AOS | PI | E | M | AFA | PR | PC | ID | VD | ND | PTI | PBT | R & C | WS | CPI | AOP | MOP |
| 1 | (Wang et al., 2022) | ✓ | | | | | | ✓ | | | | | | | | | | |
| 2. | (Rodrigues et al., 2022) | | | | | | ✓ | | | | | | | | | | | |
| 3. | (Ong et al.,2022) | ✓ | | | | | | | | | | ✓ | | | | | | |
| 4 | (Wang et al., 2021) | ✓ | | | | | | | | | | ✓ | | | ✓ | | | |
| 5 | (Mishra et al., 2021) | ✓ | ✓ | | ✓ | | | | | | | | | ✓ | | | | |
| 6 | (Mir, 2021) | ✓ | | | | | | | | | | | | | | | | |
| 7 | (Jiang et al., 2021) | ✓ | | | ✓ | | | | | | | | | ✓ | | | | |
| 8 | (Zhao et al., 2021) | | | | | | | | | | | | | | | | ✓ | |
| 9 | (Kapoor & Vij, 2021) | | | | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | |
| 10 | (Chowdhury & Chouhan, 2021) | | | | | | ✓ | | | | | | | | | | | |
| 11 | (Rubin et al., 2020) | | ✓ | | | | | | | | | | | | | | | |
| 12 | (Rausch et al., 2020) | | | | | | | | | | | | ✓ | | | | | |
| 13 | (Tiffany et al., 2020) | | | | ✓ | | | | | | | | | | | | | |
| 14 | (Rejikumar & Asokan, 2020) | | | | ✓ | | | | ✓ | | | | | | | | | |
| 15 | (Uma, 2020) | | | | | | | ✓ | | | ✓ | ✓ | | | | | | |
| 16 | (Song, 2019) | | ✓ | ✓ | ✓ | | | ✓ | | | | | | ✓ | ✓ | | | |
| 17 | (Kulkarni et al., 2019) | | | | | | | | | | | | | ✓ | | | | |
| 18 | (Tang & Lin, 2019) | | | | | | | | ✓ | ✓ | | ✓ | | | | | | |
| 19 | (Luo et al., 2019) | | | | | | | | | | | | | | | | ✓ | |
| 20 | (Sakar et al., 2019) | | | | | | | | | | | | ✓ | | | | | |
| 21 | (Huang et al., 2018) | ✓ | | | | | | | | | ✓ | | | | | | | |
| 22 | (Garaus, 2018) | | | | | | | | ✓ | | ✓ | | | | | | | |
| 23 | (Albrecht et al., 2017) | ✓ | | | ✓ | | | | | | | | | | | | | |
| 24 | (Tandon et al., 2017) | | | | | | ✓ | | | ✓ | | ✓ | | | | | | |
| 25 | (Nair, 2016) | | | | | | ✓ | ✓ | | | | ✓ | | | | | | |
| 26 | (Xu & Huang, 2015) | | | | | | ✓ | ✓ | | | | ✓ | | ✓ | | ✓ | | ✓ |
| 27 | (Shukla, 2014) | ✓ | | | | | | | | | | ✓ | | | | | | |
| 28 | (Negra & Mzoughi, 2012) | | | | | | | | | | | | | ✓ | | | | |
| 29 | (Toyin & Damilola, 2012) | | | | | | ✓ | ✓ | | | | ✓ | | | | | | |
| 30 | (Close & Kukar-Kinney, 2010) | | | ✓ | ✓ | | | | | | | | | ✓ | | ✓ | | ✓ |
| 31 | (Kukar-Kinney & Close, 2010) | | | | ✓ | | | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | | ✓ |
| 32 | (Rajamma et al., 2009) | ✓ | ✓ | | | | ✓ | | | | | ✓ | | | | | | |
| 33 | (Cho et al., 2006) | ✓ | | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | | | | | | ✓ |
| 34 | (Bruwer & Wood, 2005) | | | | | | ✓ | | | | | ✓ | | | | | | |
| 35 | (Cho, 2004) | ✓ | | | | | | | | | | | | | | | | |
| 36 | (Oliver & Shor, 2003) | | | | | | | | | | | ✓ | | | | | | |

Independent variables: customer-related factors—*AOS* attitude towards online shopping, *PI* product involvement, *E* experience, *M* motives, *AFA* advice from acquaintances, *PR* perceived risk, *PC* perceived cost; website-related factors—*ID* informational design, *VD* visual design, *ND* navigational design, *PTI* perceived transaction inconvenience, *PBI* perceived behavioral tracking; mediator—*R&C* Research and comparison; moderator—*WS* wait for sale, *CPI* current purchase intent, *AOP* availability of product, *MOP* choice of the mode of payment; outcome variable—*ESCA* electronic shopping cart abandonment

The next customer-related factor is perceived risk. Sometimes, customers feel that online shopping is risky as they cannot touch and feel products to confirm their quality (Rodrigues et al., 2022; Cho et al., 2006). Therefore, due to the perceived risk associated with the quality of products being offered on shopping websites, they abandon their e-cart (Rodrigues et al., 2022; Chowdhury & Chouhan, 2021). Further, some customers perceive that it is risky to share financial information sought in the online shopping context (Tandon et al., 2017; Xu & Huang, 2015). They abandon their e-cart because they perceive risk in sharing their financial information, such as bank accounts and plastic card details with online retailers (Chowdhury & Chouhan, 2021; Rajamma et al., 2009). The final customer-related factor leading to ESCA is perceived cost because it creates a shopping hesitancy among price-conscious customers (Wang et al., 2022; Song, 2019). The charges (e.g., delivery charges, GST, and handling costs) added at the checkout stage increase the ultimate cost that customers need to incur to purchase items online. This mismatch between the quoted price of item and the ultimate price (cost) to be paid by customers

causes disappointment among them leading to ESCA (Xu & Huang, 2015; Kukar-Kinney & Close, 2010; Cho et al., 2006). Additionally, some customers abandon their electronic cart when they fail to avail the discount on promo codes, vouchers, and coupons (Toyin & Damilola, 2012).

**Website-related factors** Synthesis of ESCA literature showed that website attributes also contribute to ESCA (Garaus, 2018). These attributes include informational design (Kapoor & Vij, 2021; Tang & Lin, 2019), visual design, (Kapoor & Vij, 2021; Tandon et al., 2017), navigational design (Uma, 2020; Garaus, 2018; Shukla 2014), perceived transaction inconvenience (Wang et al., 2021; Uma, 2020), and perceived behavioral tracking (Rausch et al., 2020; Sakar et al., 2019). The first website-related factor leading to ESCA is informational design. If an online shopping website has a good informational design, i.e., it encompasses ample, relevant, timely, reliable, and lucid information, and it can encourage customer engagement and reduce ESCA (Kapoor & Vij, 2021; Rejikumar & Asokan-Ajitha, 2020). In contrast, if a retail website contains inadequate or confusing product and purchase-related information on product specifications, price and payment options, return policy, and vendor details, customers feel apathetic and resort to ESCA (Kapoor & Vij, 2021; Rejikumar & Asokan-Ajitha, 2020; Garaus, 2018).

The next website-related factor leading to ESCA is poor visual designs. The visual design exhibits the website quality in terms of informativeness, aesthetics, and attractiveness (Kapoor & Vij, 2021). Online shopping websites with user-friendly, appealing, and attractive visual designs (e.g., 360-degree view of products and videos demonstrating actual usage) provide additional heuristics to customers to infer the quality of products (Tang & Lin, 2019). Therefore, they enrich customers' buying experiences by building trust and interest in online shopping websites (Kapoor & Vij, 2021; Tandon et al., 2017). The absence of appealing and supportive visual design leads to customers' apathy and prompts them to abandon their e-cart (Tang & Lin, 2019; Cho et al., 2006).

Poor navigational design is another prominent factor leading to ESCA. Navigational facilities include filter options and inbuilt features that help customers to do research and organize the most appropriate products as per their shopping preferences (Kapoor & Vij, 2021; Huang et al., 2018). Thus, it makes the customers' online shopping experience effortless and quicker. In contrast, the complicated structural layout of an online shopping website causes inconvenience to customers in organizing and researching products (Garaus, 2018). Therefore, they are forced to put more cognitive efforts which create vexation and abandonment of e-cart (Kapoor & Vij, 2021; Huang et al., 2018; Garaus, 2018).

Perceived transaction inconvenience is another website-related factor leading to ESCA (Ong et al., 2022; Kapoor & Vij, 2021; Tang & Lin, 2019). Customers expect fast and efficient processing of their transactions online (Xu & Huang, 2015; Rajamma et al., 2009). However, lengthy registration forms, queuing (long handling and waiting time), and slowing down of web pages make the purchase process lengthy and tiring (Wang et al., 2021; Tandon et al., 2017). Further, technical glitches increase the time and effort involved in a purchase session or break the purchase session (Tandon et al., 2017; Rajamma et al., 2009). When impatient and tetchy customers experience transactional inconvenience, they tend to abandon their e-cart (Kapoor & Vij, 2021; Nair, 2016).

The last website-related factor leading to ESCA is perceived behavioral tracking. Online shopping websites allow marketers to monitor customers' online activities using cookies, log files, and click stream data. This results in real-time tracking of customers' behavior across websites for marketing purposes. Customers feel captivated due to such online surveillance and increasing cybercrime. Hence, they resort to ESCA to avoid accepting cookies and pop-up options on websites (Rausch et al., 2020; Sakar et al., 2019).

## Mediator

The ESCA literature indicates that research and comparison mediate the relationship between customer-related factors and ESCA (Mishra et al., 2021; Xu & Huang, 2015). Some customers (especially, looky-loos) use their e-cart as a research and comparison tool to shortlist products for future purchases (Kukar-Kinney & Close, 2010). Especially, price-conscious customers compare offers across online shopping websites or between offline and online websites (Mishra et al., 2021). Such customers abandon their e-cart more often because their motive is merely to shortlist products for future purchase (Kukar-Kinney & Close, 2010). Further, some hedonic shoppers seek enjoyment from browsing online stores, and hence, they leave products in their e-cart because they have no immediate intention to buy products (Xu & Huang, 2015). Hence, research and comparison mediate the relationship between different motives and ESCA (Kukar-Kinney & Close, 2010).

Moreover, after comparing competing offers, sometimes customers find some products over-priced (higher perceived cost) which causes disappointment in them leading to ESCA (Mishra et al., 2021; Xu & Huang, 2015). Research and comparison also mediate the relationship between advice from acquaintances and ESCA (Song, 2019). Customers often seek and consider the recommendations of others before finalizing their purchase decisions. Therefore, they compare the reviews and ratings across different websites (Kapoor & Vij, 2021). Negative reviews and poor ratings after research

and price comparison of products placed in e-cart cause shopping hesitancy in them leading to ESCA (Kapoor & Vij, 2021; Song, 2019). Finally, if customers perceive a high risk, they will become more cautious about making the purchase. As a result, they conduct intense research and comparison of products and abandon e-cart if the search results are dissatisfactory or confusing (Xu & Huang, 2015).

### Moderators

The synthesis of ESCA literature indicates that four major moderators affect the relationship between mediators and ESCA, i.e., wait for the sale, current purchase intent, availability of the product, and choice of mode of payment (Wang et al., 2022; Zhao et al., 2021; Song, 2019). Some customers hold products in the e-cart to take advantage of retail offers and deals (i.e., sale promotions) (Song, 2019). Customers in anticipation of a better price exhibit a hesitation in purchasing immediately and leave products in the e-cart to purchase at a later time. Therefore, after doing research and comparison, they wait for the end-of-season sale or festival sales to grab the best deal (Wang et al., 2022; Zeng et al., 2019; Kukar-Kinney & Close, 2010). Such customers abandon their e-cart if they aren't able to find the best deals online or when they find a better deal at brick-and-mortar stores (Song, 2019). Hence, wait for sale moderates the relationship between research and comparison and ESCA.

Current purchase intent is another factor that moderates the relationship between research and comparison and ESCA (Close & Kukar-Kinney, 2010). Customers with a strong intention to purchase usually organize products in their e-cart after research and comparison and finally complete the purchase. Therefore, their chances of ESCA are low (Xu & Huang, 2015). However, if the intention for immediate purchase is low, the chances of ESCA are higher (Close & Kukar-Kinney, 2010). Hence, current purchase intent moderates the relationship between research and comparison and ESCA.

The availability of products on online shopping websites is the next factor moderating the association of research and comparison with ESCA (Zhao et al., 2021). If a customer receives a warning message informing scarcity of a product after adding the product to the e-cart, it prompts him/her to purchase the product faster (Luo et al., 2019). If the supply of the desired product added to the e-cart after rigorous research is scarce, customers are persuaded to complete the purchase instantly rather than leaving or abandoning the e-cart (Zhao et al., 2021; Luo et al., 2019). Contrarily, if the shortlisted product added to the e-cart is available without any limits at many alternate online or offline stores, the likelihood of ESCA is higher (Zhao et al., 2021; Luo et al., 2019). Hence, the availability of products moderates the relationship between research and comparison and ESCA.

The last moderating factor is the availability of a preferred mode of payment. When customers proceed to the payment checkout stage after a satisfactory evaluation of the product and services, the possibility of purchase increases (Xu & Huang, 2015). However, if they do not find their preferred mode of payment (e.g., unified payments interface, wallet interface, such as Amazon pay, net banking, and pay later option like Paytm post-paid), it causes disappointment among them leading to ESCA (Tandon et al., 2021; Kukar-Kinney & Close, 2010; Xu & Huang, 2015). Hence, the availability of the preferred mode of payment moderates the relationship between research and comparison and ESCA.

### Development of an integrated conceptual framework

Based on the synthesis of the literature, a conceptual model was developed integrating the widely studied variables in the ESCA literature (Fig. 4). The model depicts antecedents, mediators, and moderators that influence ESCA. The antecedents have been broadly classified into customer-related and website-related factors. The customer-related factors include attitude towards online shopping, product involvement, experience, motives, advice from acquaintances, perceived risk, and perceived cost. The website-related factors include informational design, visual design, navigational design, perceived transaction inconvenience, and perceived behavioral tracking. Further, research and comparison mediate the relationship between the customer-related factors and ESCA. Moreover, the synthesis of ESCA literature suggests that wait for a sale, current purchase intent, choice of mode of payment, and availability of the product, moderate the relationship between research and comparison and ESCA.

## Results of lexicometric analysis

A lexicometric analysis was performed to statistically analyze the texts to identify clusters of the concepts in the texts. To facilitate this analysis, a corpus was produced by importing the text from the 49 articles included in the present study. Corpus for current lexicometric analysis contains 323,083 occurrences (words) with an average of 7513.55 occurrences per text. Further, the corpus comprises 4274 hapaxes (words appearing once) and 13,341 forms (words occurring more than once). However, 10,622 active forms were used for lexicometric analysis. Table 7 highlights the overview statistics of lexicometric analysis.

### Similarity analysis

The present study used Iramuteq software to perform lexicometric analysis. This software creates a cluster of words by dividing the corpus into segments based on proximity

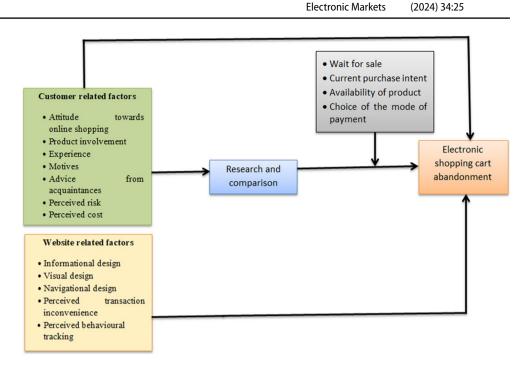**Fig. 4** Proposed conceptual framework for ESCA



**Table 7** Overview of statistics of lexicometric analysis

| Texts | 49 |
|---|---|
| Text segments | 9066 |
| Occurrences | 323,083 |
| Average occurrences per text | 7513.55 |
| Forms | 13,341 |
| Hapaxes | 4274 (1.32% of occurrences, 40.24% of forms) |
| Active forms for analysis | 10,622 |

between words and their recurrence in the segment. This process is known as similarity analysis. The intersection between the concepts (word association) across the corpus is shown in the form of a map.

Similarity analysis was run with the word "*cart abandonment*." The output of similarity analysis (Fig. 5) highlights that three segments are interrelated with the main concept of "*cart abandonment*," i.e., "*consumer*," "*shop*," and "*online*." The first segment is related to the "*consumer*" which encompasses words related to criteria that customers use in online shopping for research and comparison of alternative offers, such as offer, value, price, product, promotion, incentive, large, information, seller, and message. Customer dissatisfaction with these criteria during research and comparison may result in ESCA. The second segment is related to "*shop*" which contains words related to shopping goals and customer characteristics that lead to ESCA, such as hedonic session, goal, motivation, customer, social, attitude, behavior, intent, negative, and experience. The third segment is

related to "*online*" which encompasses words related to fears associated with online shopping and website attributes that lead to ESCA, such as transaction, payment, risk, internet, web, confusion, store, new, and design.

Overall, the similarity analysis highlights the key themes or focussed areas of the ESCA literature. Specifically, the similarity analysis indicates that the ESCA literature mainly focuses on customer decision-making criteria, their motives and characteristics, online shopping environment. and website attributes. Interestingly, the results of similarity analysis replicate the factors proposed in the conceptual model (see Fig. 4). The "c*onsumer*" segment aligns with the research and comparison function. Further, the "*shop*" segment includes several customer-related factors included in the model. The "*online*" segment includes several website-related factors shown in the model. Therefore, through the quantitative approach of lexicometric analysis, similarity analysis confirms the factors proposed in the conceptual model.

### Factorial correspondence analysis

As discussed in the previous section, similarity analysis shows the organization of the main concepts in the corpus. In addition to this, Reinert (1990) and Hoffman and Franke (1986) recommended performing factorial correspondence analysis for an in-depth understanding of the word groupings emerging from a corpus. The factorial correspondence analysis provides two outcomes: (a) hierarchical word clustering dendrogram and (b) a two-dimensional graphical visualization of word clusters.
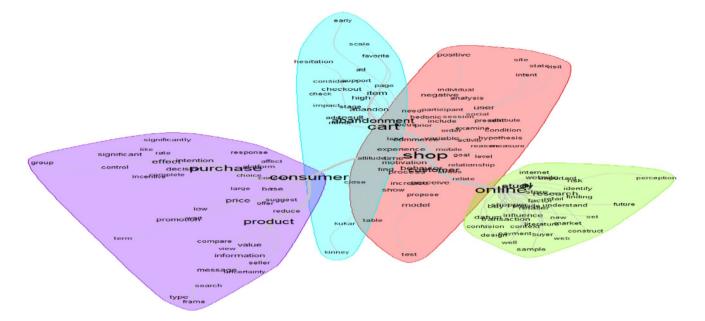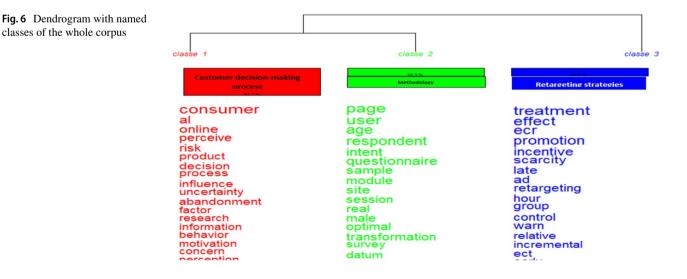
**Fig. 5** Results of similarity analysis

Figure 6 shows the results of the hierarchical word clustering dendrogram which includes three classes of words from our corpus. Three scholars from the marketing domain were consulted to name these classes who followed a two-step process. In the first step, scholars named each class independently and then they were involved in discussion until a consensus was reached on naming the classes. They named class 1 "*customer decision-making process*" which comprised words capturing customer-related factors and research and comparison, such as motivation, information, research, process, evaluation, product, uncertainty, risk, decision, and abandonment. Class 2 was termed "*methodology*" which comprised words related

to the research method used in the studies, such as user, age, respondent, male, sample, questionnaire, survey, site, session, and page. Class 3 was named "*retargeting strategies*," which focuses on the words related to e-cart retargeting strategies adopted to mitigate ESCA, such as promotion, incentive, scarcity, ad, retargeting, group, control, and relative.

Factorial correspondence analysis statistically organized the above-mentioned word classes within a two-dimensional graph based on their co-occurrences within the segments. The three classes of words are depicted on two axes (Fig. 7). The graphical visualization highlights a three-bladed propeller. The first blade (top middle) is predominately focused
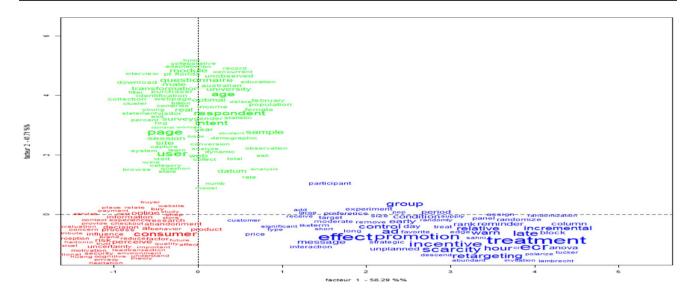
**Fig. 6** Dendrogram with named classes of the whole corpus

**Fig. 7** Clusters of the whole corpus

on "*methodology*." While the second blade (bottom left) is related to the "*customer decision-making process*," the third blade (bottom right) is devoted to "*retargeting strategies*." If we exclude the methodological facts that are intrinsic to any literature reviews, we are left with two categorizations: "*customer decision-making process*" and "*retargeting strategies*." This indicates that research on the ESCA domain focuses mainly on two aspects. One side focuses on customer attributes (i.e., customer-related factors) driving ESCA and criteria for research and comparison. The other side discusses the e-cart retargeting strategies that e-retailers can adopt to mitigate ESCA. These strategies are in sync with the factors which moderate the effects of research and comparison criteria on ESCA, such as wait for a sale, availability of a product, and choice of mode of payment (see Fig. 4).

## Future research directions

The third objective of the study is to provide avenues for future research by highlighting the gaps in the extant literature. Hence, to accomplish this, the current study uses the theory, context, characteristics, and method (TCCM) framework suggested by Jebarajakirthy et al. (2021) which helps to identify the gaps in a research domain across four dimensions: theory development, context, characteristics, and method (Srivastava et al., 2020). The following subsections discuss the future research agenda for the ESCA domain-based on the TCCM framework and Table 8 highlights the summary of future research direction in the ESCA domain.

## Theory development

The synthesis of ESCA literature showed that stimulus organism response theory, theory of buyer behavior, and cognitive dissonance theory have been widely used in ESCA research (Table 4). However, no single theory has been predominantly used, indicating that the theoretical perspectives of ESCA research are still developing and evolving (Table 4). However, this review suggests using the technology threat avoidance theory, reinforcement theory of motivation, actor-network theory, and approach-avoidance theory for addressing some unresolved issues in the ESCA literature. The next sub-section discusses the rationale and potential application of these theories.

### Technology threat avoidance theory

The synthesis of ESCA literature suggests that in the electronic shopping environment, customers experience several threats, including perceived behavioral tracking (Rausch et al., 2020), perceived transaction inconvenience (Wang et al., 2021), psychological risk (Wang et al., 2022), and procedural uncertainty (Kapoor & Vij, 2021) that lead to ESCA. However, in the ESCA literature, not enough focus has been paid to exploring mitigation strategies for addressing these risks. The underpinnings of technology threat avoidance theory (TTAT) will be useful in understanding risks experienced during online shopping that trigger ESCA and in proposing some mitigation strategies for addressing these risks. This theory explains the threat avoidance behavior demonstrated by information and communication technology users due to the perceived risk or

**Table 8** Future research directions in the ESCA domain

| | |
|---|---|
| Theory development | • Technology threat avoidance theory can be employed to examine the risks experienced by customers during online shopping that trigger ESCA. |
| | • Reinforcement theory of motivation can be applied to understand the behavior of customers who have recently abandoned their carts and accordingly develop apt reinforcement strategies to curb ESCA. |
| | • Actor-network theory can be applied to examine how interactions between technology and human processes in the online shopping environment can curb ESCA. |
| | • Approach-avoidance theory can be applied to understand how customers evaluate and respond to the potential positive and negative aspects of online shopping, thereby helping to propose pragmatic strategies to encourage the positive aspects and overcome the negative aspects of online shopping. |
| Context | • Future researchers can examine cart abandonment across product categories, such as travel, food, and service websites. |
| | • ESCA behavior can be compared between products and services or between convenience goods and luxury goods |
| | • More studies need to be conducted in developed and developing countries. |
| Characteristics | • Future research can investigate how AR technology can mitigate ESCA or the impact of AR on ESCA. |
| | • Future researchers can examine whether the advertisement popups (that appear based on the customer's browsing history) increase or decrease ESCA. |
| | • Future research can examine the impact of loyalty programs (e.g., Flipkart Plus) on reducing ESCA. |
| | • Future researchers can examine the efficacy of retargeting strategies in mitigating ESCA across different demographic groups. |
| Methods | • Future researchers can conduct longitudinal studies to present more reliable findings over time. |
| | • Future researchers can use the textual analysis of customers' reviews and ratings to understand the reasons for ESCA. Future researchers can conduct more experimental studies by manipulating independent variables to measure their impact on ESCA. |

threat associated with its adoption (Liang & Xue, 2009). It proposes that firstly the users appraise the degree of risk/ threats associated with adopting technology and then, develop a risk-coping mechanism to resolve the conflict between technology avoidance-adoption decisions. Therefore, the tenets of TTAT can be used to understand the degree of risk associated with threats and then, to evaluate the efficacy of some risk-coping strategies (e.g., retargeting messages, assurance of quality through star ratings, and easy return back policies) that can mitigate ESCA.

### Reinforcement theory of motivation

The synthesis of ESCA literature indicates that inadequate focus has been paid to exploring the impact of the content and timing of retargeting advertisements and messages on customer purchases. Sending reminders with an impactful message to persuade customers to complete their transactions can help reduce ESCA. The application of the reinforcement theory of motivation can help in understanding the behavior of customers who have recently abandoned their cart and developing apt reinforcement strategies to curb ESCA. This theory particularly suggests the response (ESCA)-stimulus (retargeting)-response (purchase or ignore) framework and claims that the behavior of an individual can be mitigated by positive or negative stimuli. Therefore, ESCA can be controlled by adding a positive or negative stimulus based on past shopping behavior (response). For example, immediate retargeting within 3–4 h of abandonment with negative reinforcement (e.g., limited period availability and limited period offer) for customers who might have spent a considerable amount of time selecting the items to add to the e-cart can drive the customers to complete the purchase. Hence, the tenets of this theory can be applied for suggesting apt and timely retargeting messages to e-retailers.

### Actor-network theory

Technological advancements have led to colossal changes in the retail industry. The interactions between technology and human processes can play a crucial role in an online shopping environment and help in understanding and improving customers' online shopping experience and decision-making. The ESCA literature has not yet focused on how people and technology can interact with each other in an online shopping environment to mitigate ESCA. The underpinnings of actor-network theory can be applied to understand this phenomenon. This theory states that all the elements (actors) in a system (i.e., humans or non-humans, social or technological elements) are interrelated and integral and that their interactions affect the outcomes (Ozuem et al., 2021; Kolli & Khajeheian, 2020). Hence, the tenets of this theory provide a sociotechnical perspective to understand how various interactions between technology and human processes in the online shopping environment can curb ESCA (Junior et al., 2023; Lim et al., 2022a, 2022b). For example, the interaction effect of customer personal characteristics (human element), website attributes, and online support systems (technological elements) can help mitigate ESCA.

## Approach-avoidance theory

The synthesis of ESCA literature indicates that inadequate focus has been paid to understanding why customers abandon their online purchases in favor of brick-and-mortar stores. Customers generally weigh the alternative channels' pros and cons when deciding to use a channel for purchase. Considering both pros and cons leads to either approach (purchase) or avoidance (abandon) behavior (Khan et al., 2022; Kelly et al., 2018). Hence, the underpinnings of the approach-avoidance theory will be fruitful to understand how customers evaluate and respond to the potential positive and negative aspects of online shopping. This theory posits that when an environmental stimulus has both positive and negative aspects, it precipitates the approach and avoidance behavior (Khan et al., 2022; Kelly et al., 2018). Customers evaluate both these aspects and make decisions on the basis of the importance they assign to these aspects (Khan et al., 2022; Kelly et al., 2018). For example, customers experience many positive (variety of product choices, ease of comparison) and negative (struggle with cyber security issues, lack of touch and feel experience, uncertainty about the quality of the product) aspects of online shopping. The tenets of the approach-avoidance theory can be used to understand the perceived relative importance that online customers give to various positive and negative aspects. Pragmatic strategies can be recommended to strengthen the most important positive aspects and overcome the most critical negative aspects of online shopping.

## Context

The findings of the current SLR indicate that although empirical research on the ESCA domain was conducted in 14 countries, the majority of the studies (66%) were carried out in three countries, i.e., USA, India, and China. Therefore, the majority of findings in the ESCA domain are based on data collected from these three countries, thereby questioning the generalizability of the results. Hence, this exhibits a huge scope for research on this domain in other developed and developing countries. Studies can also be conducted in cross-cultural settings to compare the findings across people with different cultural backgrounds. Furthermore, empirical studies on this domain are highly focused on online shopping websites in a general context. Future researchers can examine cart abandonment across product categories, such as travel, food, and service websites. Additionally, future researchers can compare ESCA behavior between products and services or between convenience goods and luxury goods. The outcomes of such studies will help e-retailers in designing pragmatic strategies specific to their product domain.

## Characteristics

Some characteristics-specific directions for future research on ESCA are discussed below.

### Role of augmented reality in mitigating ESCA

The biggest challenge of online shopping is that, unlike a brick-and-mortar store, online stores do not provide customers with a complete sensory product experience (e.g., how customers will look in attire or a piece of jewellery). However, augmented reality (AR) can help overcome this challenge. AR offers a more immersive and engaging product experience that presents products with real-time effect and gives customers a deeper understanding of the products they are looking for. Today, retailers use AR to enhance customer engagement and satisfaction in shopping contexts (Jiang et al., 2021). E-retailers have started adopting this technology. For example, retailers, such as Sephora and L'Oreal, introduced AR software as an AR mirror, allowing customers to apply makeup without actually applying it (Jaekel, 2016). Similarly, eBay and IKEA launched various AR interfaces allowing their customers to have a realistic experience of their products (Archer, 2016). Nike launched Nike fit app with augmented reality which measures customers' feet and recommends them the correct size of Nike shoes. However, there is a lack of research on how AR technology can mitigate ESCA or the impact of AR technology on ESCA. Therefore, it would be interesting to investigate this relationship.

### Role of online behavioral tracking advertising

Websites or webpages are glutted with advertisement popups based on the recent browsing activity of users (Jebarajakirthy et al., 2023). This innovative type of advertising is based on tracking users' online behavior using cookies (Maseeh et al., 2023). Web 3.0 allows e-retailers to track customers' online activities and develop personalized online advertisements based on customers' preferences and their online behavior. For example, when users log into their social networking sites like Facebook, they receive advertisement popups for the products and services they browsed on other websites like Amazon. The impact of such online advertising on the ESCA is still unexplored. Thus, future studies can investigate whether such an advertisement increases ESCA due to customers' security or privacy concerns related to invasive tactics or persuades them to complete the purchase and decreases ESCA by acting as an instigating measure.

### Role of loyalty programs

The competitive nature of the business environment has encouraged companies to adopt lucrative tactics to attract

customers to purchase and re-purchase from them. Lucrative loyalty programs can encourage customers to purchase more and engage in positive word-of-mouth (Lin & Bowman, 2022; Hua et al., 2019). Therefore, e-retailers have initiated loyalty programs, such as Flipkart Plus and Amazon prime membership which enable customers to earn superCoins and avail of its benefits in the future to buy gift vouchers or other products on Flipkart. However, the effects of such loyalty programs on reducing ESCA have not yet been investigated. Future researchers can investigate this idea.

### Differential retargeting strategies depending on customer profiles and attributes

The findings of lexicometric analysis indicate that retargeting strategies are an enthralling area in the ESCA domain. The retargeting strategies (e.g., messages and reminders) help in mitigating ESCA (Jiang et al., 2021). Customer shopping expectations and behaviors may differ according to their attributes, such as gender, experience with the seller/ website (first-time vs experienced buyers), time spent on shopping websites (number of pages browsed), and age (generation X, Y, and Z) (Rausch & Brand, 2022). However, none of the studies in ESCA literature have explored how the efficacy of these retargeting strategies can vary across customers with different demographic profiles and attributes. Future researchers can attempt to investigate this idea. For example, the impact of retargeting strategies, such as discounts/offers, scarcity messages, confirmation calls, and chatbot conversations can be compared between males and females, various generations, as well as between first-time and experienced buyers (Lim et al., 2022a, 2022b). Such comparative studies can help retailers design pragmatically apt retargeting strategies depending on customers' demographic profiles and attributes.

## Methods

This section highlights some method-related avenues for future research on ESCA.

### Longitudinal study

The method-wise synthesis (Table 4) of ESCA literature highlights that various methods have been employed in this domain, including survey methods, experiments, qualitative approaches, mixed methods, and conceptual studies. However, all the empirical studies in this domain are cross-sectional in nature which means they used the data collected at a single point in time. Thus, in the future, longitudinal studies can be conducted in this domain that present more

reliable findings over time suggesting some possible cause-and-effect relationships for this domain. For example, future research can use the interview method to study the changes in ESCA behavior in terms of frequency and amount, over the years, and the reasons for the changes.

### Textual analysis

Future researchers can use the textual analysis method to understand the reasons for ESCA. Some researchers have used big data analysis for understanding customers' behavior during online shopping through time spent on a webpage, number of clicks, number of products viewed, and number of logins (Rausch et al., 2020). However, it is noteworthy that none of the studies has used this technique to analyze how prior customers' feedback on their purchase experience leads to ESCA. Customers share their purchase experiences in the form of reviews and ratings on online shopping websites and social media pages. These reviews help understand customers' experiences and responses to products and brands (Alzate et al., 2022; Filieri et al., 2015). As such, online reviews are considered a trustworthy and reliable source of information providing insights into customer behavior (Chopra et al., 2022; Ismagilova et al., 2020). However, none of the studies in the ESCA literature has used customer reviews to understand ESCA. Textual analysis of customers' reviews and ratings would help find out the reasons for disappointment with the products and services offered by e-retailers. Hence, it can help e-retailer build their retargeting strategies and update their websites depending on customers' preferences and expectations.

### Mixed method approach

Table 4 indicates that the mixed-method approach did not receive adequate attention in the ESCA domain. Thus, future researchers can use a mixed-method approach that combines qualitative and quantitative data to understand a problem comprehensively. For example, consumer behavior literature indicates that consumers experience various types of risks, i.e., functional, social, psychological, time, physical, and financial risks (Kotler & Keller, 2021). The effects of only two dimensions of risk, i.e., risks related to product quality and online payment (i.e., functional and financial risk), have been studied in ESCA literature (Kapoor & Vij, 2021). Hence, using a qualitative approach, researchers can explore consumers' concerns about other types of risks in the ESCA context. Further, the effects of these risks on ESCA can be measured using a quantitative approach. The results of such a mixed-method study will help e-retailers to develop pragmatic strategies to mitigate these risks and reduce ESCA.

### Online experimental study

Finally, there is room for more online experimental studies in the ESCA domain as they currently account for merely 20.93% of the total studies. Future researchers can conduct experimental studies by manipulating one or more independent variables and can measure their impact on ESCA. For example, an experimental study can be performed to explore the impact of augmented reality (AR) on ESCA as none of the studies in this domain has investigated this aspect. A website can be created with AR features that provide a real-time experience of the products to customers and an experimental group may be exposed to it. Another group, i.e., the control group, may be exposed to a regular website without AR features. If ESCA is significantly less in the experimental group than in the control group while other features in both websites are identical, then the reduction in ESCA can be attributed to AR features. Hence, companies can use such AR features as a tool to mitigate ESCA.

## Academic and practical implications

### Academic implications

This review meets all the three important criteria for a valuable and impactful SLR as suggested by Lim et al. (2022a, 2022b), thereby indicating that this review makes a substantial contribution to the ESCA literature. As per the criteria set out by Lim et al. (2022a, 2022b), SLR should present the state of art of knowledge, unfold the knowledge gap, and provide future research directions. This SLR systematically reviewed and synthesized ESCA literature to examine its development over the years in terms of number of publications per year, citations, methods, publication outlets, and constructs. Although ESCA literature has been gradually growing for more than two decades, it is highly rambling in terms of constructs studied and theories and methods used. Thus, an SLR is highly desirable to synthesize the extant ESCA literature. Hence, this study provides state-of-the-art ESCA literature by summarizing it in terms of contexts, constructs, and methods. Thus, this review meets the first criterion set out by Lim et al. (2022a, 2022b) for an impactful SLR.

Further, this study examined the widely applied theoretical underpinnings in the ESCA domain. The extant ESCA literature is largely developed on the tenants of three theories, i.e., stimulus organism response theory, theory of buyer behavior, and cognitive dissonance theory. The limited theoretical applications to this domain indicate that the theoretical perspectives of ESCA research are still evolving. Further, there is room for theoretical development as only a small number of studies have used a theory. Thus,

this review suggests some alternative theories that can be applied to future research in this domain. These are technology threat avoidance theory, reinforcement theory of motivation, actor-network theory, and approach-avoidance theory. Synthesizing the theories used in this domain and recommending theories for future application will help enrich the theoretical base of ESCA research.

Moreover, this SLR synthesizes the extant literature to suggest a comprehensive conceptual framework integrating widely studied variables in ESCA literature. The conceptual framework includes antecedents, mediators, and moderators influencing ESCA and provides a nutshell view of the ESCA phenomenon. The antecedents were classified into two sets of factors: customer-related factors and website-related factors. This framework demonstrates factors leading to ESCA (customers' attributes and website features). Further, it highlights the factors mediating (role of research and comparison) and moderating (wait for the sale, current purchase intent, availability of the product, and choice of mode of payment) the effect of the antecedents on ESCA.

Lastly, in line with the suggestions of Lim et al. (2022a, 2022b), this review paper uncovers the knowledge gaps and provides future research directions to cover these gaps and advance knowledge in this domain. The rapid advancements in technology and e-commerce have significantly affected customers' online purchase experience. Consequently, the changing market environment, growing competition among e-retailers, and ESCA behavior of customers have posed new challenges for e-retailers. Hence, it is crucial to study future research directions to enrich ESCA literature. Therefore, we have explored the gaps in ESCA literature in terms of theories, contexts, characteristics, and methods. Overall, this review makes a substantial contribution to the ESCA literature because it meets all the important criteria for a valuable and impactful SLR as suggested by Lim et al. (2022a, 2022b).

### Practical implications

This study provides some managerial implications to overcome ESCA. This review synthesized all the antecedents of ESCA and broadly categorized them into two categories, i.e., customer-related and website-related factors. Additionally, this study elucidates the role of mediating and moderating factors in the ESCA domain. Such a synthesis of the antecedents, mediators, and moderators will help e-retailers in understanding the interplay of the key factors influencing ESCA and guide them in formulating strategies to mitigate ESCA.

The proposed conceptual framework (Fig. 4) shows that advice from acquaintances leads to ESCA. This indicates that the paucity or non-availability of reviews makes customers skeptical about products and increases their perceived

risk and probability of ESCA. Thus, it is highly recommended that e-retailers manage, increase, and monitor the online reviews on their website for tailoring trust and credibility among potential customers and curbing ESCA. For example, e-retailers can send messages to buyers after the delivery of the products asking them to post video messages or rate their recent purchases in the form of star ratings. This will help increase the number of reviews and build trust among potential customers thereby curbing ESCA.

Further, the conceptual framework and lexicometric analysis indicate that website attributes, such as transaction inconvenience, navigational design, and informational design lead to ESCA. When customers feel exhausted due to transaction inconvenience (e.g., lengthy registration forms, queuing, and slowing down of web pages), they leave the shopping website without making a purchase. Hence, it is recommended that e-retailers make the purchase process smooth with easy browsing options. Retailers can opt for guided selling techniques. For example, Canon (a leading camera company) uses a camera selector quiz to navigate their customers directly to the product they are searching for. Moreover, retailers can provide guest check-in options or a direct sign-in option with a Google account or any recognized social networking account like Facebook. This will help customers to get rid of account fatigue and save the time and effort involved in a purchase session. To improve the informational design of their website, e-retailers can enable customers to compare similar products through a comparison window. For example, Apple provides a comparison window for every product on its website.

Literature synthesis (Fig. 4 Conceptual Framework) indicates that poor visual designs, i.e., the absence of appealing and supporting visual design, turn dispassionate customers from buying a market offering, leading to ESCA. Thus, it is recommended that marketers adopt augmented reality techniques or metaverse technology to enable customers to virtually try products before purchasing. With the help of augmented reality and metaverse, marketers can bridge the gap between physical and online shopping. This nascent technology enables customers to have real-time, more immersive, and interactive experiences of products through a 3D fitting room, digital avatars, and a 360-degree view.

Further, the conceptual framework and lexicometric analysis indicate that research and comparison play an important role in ESCA. Thus, to make research of products and browsing customer-friendly and effortless, e-retailers can use virtual chatbots. Virtual chatbots act as support agents and provide 24/7 support to customers and help them find desired products in a few clicks (Lim et al., 2022a, 2022b; Adam et al., 2021). Moreover, e-retailers can help customers in comparing products in a hassle-free manner by giving pop-up messages, such as "*customers who viewed this item also viewed*" and "*customers who bought this item also bought*."

Such pop-up messages help customers compare products and make purchase decisions judiciously and quickly. Further, e-retailers can highlight add-on benefits (loyalty points, easy returns, and faster delivery) beneath/beside the product options to highlight comparative advantages over other sellers. This will help customers in the research and comparison stage of online purchases to reduce their ESCA.

Literature synthesis indicates that perceived cost and waiting for sale play a crucial role in ESCA. They perceive higher value for market offerings when they have no hidden costs and are offered discounts. Thus, it is recommended that e-retailers charge no extra or hidden costs at checkout or payment stages. Further, marketers should inform customers about various schemes that add to their perceived price value, such as free shipping/ delivery, bundle pricing (i.e., offers that motivate customers to buy complementary products/services together at a reduced price), discounts, and special deals through advertisements and personalized messages. Moreover, they can adopt decoy pricing (similar products offered at different prices with different qualities and features) and anchor pricing (crossing out the initial price with a discounted price). These measures might be useful in reducing ESCA among price and cost-concerned customers.

Synthesis of the ESCA literature (Fig. 4 Conceptual Framework) also suggests that the choice of mode of payment plays a crucial role in ESCA. Nowadays, customers use multiple online payment methods and expect e-retailers to provide them with convenient and compatible payment options. Thus, to reduce ESCA, e-retailers should provide multiple payment options on their shopping websites, such as a unified payments interface, wallet interface like Amazon pay, net banking, cash on delivery, and pay later (like Paytm post-paid).

## Limitations and conclusion

This SLR has a few limitations that should be acknowledged. Firstly, this study adheres to inclusion/exclusion criteria for selecting articles on ESCA for this review. Accordingly, the findings and discussions of this SLR are restricted to articles that satisfy the defined criteria. Thus, the study's findings cannot be generalized to the entire ESCA literature. Further, this study considered research work published only in English. Therefore, the studies published in other languages remain out of scope of this review.

To conclude, the present study aims to conduct an SLR on ESCA and provide future research directions on this domain. Accordingly, this study attempts to achieve three research objectives. Firstly, this study systematically synthesized the extant literature on ESCA and analyzed its development over time in terms of publication year, publication outlet, citations, methods, and theoretical underpinnings. Subsequently,

in line with the second objective, a conceptual framework was proposed by integrating the widely used antecedents, mediators, and moderators that influence ESCA. Lastly, to accomplish the final objective, some insightful directions were proposed for future research in ESCA literature using the TCCM framework. These proposed directions for future research provide pathways to advance ESCA literature from multifarious perspectives, i.e., theories, contexts, constructs, and methods. Overall, our review is a silver line in ESCA literature.

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