

**Exploring Scarcity Tactics and Impulsive Buying Behaviour in Live Stream E-commerce:
A Systematic Literature Review**

Alexandra Hanley 17975028

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Exploring Scarcity Tactics and Impulsive Buying Behaviour in Live Stream E-commerce: A Systematic Literature Review

Abstract

Live stream e-commerce, emerging as both a shopping and marketing method, has quickly gained attention among brands for promoting and selling products and services. In the past five years, live stream e-commerce has experienced exponential growth, demonstrating its effectiveness in targeting and influencing consumers to make purchases during these live events. Scarcity tactics have emerged as a strategic approach, capturing the attention of both marketers and researchers. The literature on live stream e-commerce is also expanding in tandem with the growth of live streaming. However, existing research on live streaming is inconsistent and fragmented. This study aimed at conducting a comprehensive review of scarcity tactics influencing consumers during live streams, providing scholars and practitioners with insights into identifying impulsive buying behaviours in the context of live stream e-commerce. A systematic literature review was carried out to examine a total of 14 articles in the live streaming context that examined scarcity tactics and/or impulsive behaviour; themes were identified following a systematic literature review procedure. This systematic literature review highlights a strong and consistent link between scarcity tactics in live stream e-commerce and heightened impulsive buying behaviour among consumers. The majority of surveyed academic articles affirm the significant impact of scarcity techniques, offering valuable insights for marketers to strategically influence consumer groups in the dynamic landscape of live stream e-commerce. The limitations of this study include a predominantly Asian-focused research context and a scarcity of research exploring live stream e-commerce across diverse industries, warranting caution in generalising findings beyond the examined scope. This systematic review identifies the scarcity factors that include tactics related to time, quantity and perceived price, while the impulsive buying factors encompass celebrity endorsement, entertainment and perceived enjoyment. Recognising these factors and their links to consumers making impulsive decisions will enable practitioners to incorporate them when designing a live stream e-commerce plan to maximise their stream engagement and profitability.

Keywords: Live streaming e-commerce, live streaming, impulsive buying behaviour, systematic literature review, scarcity tactics

1. Chapter 1 – Introduction

Live stream e-commerce shopping, as it exists today, is the mix of e-commerce technology, social networking, and a live and entertaining presentation of a specific brand or product. This platform enables consumers to learn about the product or service and then effortlessly make purchases with a simple touch of a button (Pang et al., 2021). Live stream e-commerce is characterised by real-time interaction among consumers through live video and has quickly become a compelling avenue for businesses to promote and sell their products and services (Chen et al., 2022). Since the establishment of live stream e-commerce in 2015, the sector has experienced exponential growth, demonstrating its effectiveness in targeting and influencing consumers' purchasing decisions (Ming et al., 2021). Within this context, the deployment of these scarcity tactics influencing this purchasing behaviour stand out as a strategic imperative, captivating the attention of both marketers and researchers. Within the expanding area of academic literature on live streaming e-commerce, impulse buying and scarcity tactics, this systematic literature review seeks to address significant research gaps, highlighting the imperative for a holistic understanding of their collective impact on consumer behaviour, particularly concerning scarcity tactics. While extant studies have separately investigated live streaming e-commerce and impulse buying, there is limited research examining the intricate interplay between these factors and the influence of scarcity tactics on consumer responses. This study bridges this gap by systematically investigating how live streaming affects impulse buying within the context of scarcity tactics. Furthermore, an additional gap in the literature identifies the necessity for further exploration into the psychological aspects of consumer behaviour during live stream e-commerce sessions, particularly emphasizing emotional triggers. This comprehensive approach aims to offer valuable insights for practitioners, brands, and marketers. In essence, this systematic literature review offers an analysis of the relationship between live streaming e-commerce, scarcity tactics, and impulse buying, thereby providing a foundation for the design of effective strategies in the realm of live stream e-commerce sales.

The rapid development of e-commerce has transformed it into an essential aspect of the consumer shopping journey (Li et al., 2020). Live stream shopping combines elements of entertainment and

advertising, rapidly emerging as the newest frontier in online shopping (Chen et al., 2022). Originating from a blend of social media, television shopping commercials, and online e-commerce, this business model contributes to establishing a brand's presence in the digital landscape (Chen et al., 2022). Live stream shopping provides businesses with the opportunity to present and demonstrate products in real-time, offering consumers an immersive experience aimed at evoking emotions typically associated with in-person retail environments (Pang et al., 2021). With two-way communication, consumers can ask questions, receiving immediate responses, thereby enhancing the shopping experience to mirror the atmosphere of traditional retail environments (Chen et al., 2022). The landscape of live stream e-commerce has undergone a significant transformation with the widespread adoption of live streaming in countries such as China, India, the United States, and the United Kingdom (Chen & Lin, 2018). Recent data indicates a substantial market growth of live e-commerce in India, experiencing a surge of 21.5%, and there are expectations that it will evolve into an \$11 billion dollar industry by the end of 2024 (Salunkhe, 2023). Similarly, China's live commerce sector has already achieved a remarkable milestone, reaching \$200 billion in 2023, and anticipates a further 19% growth over the next 12 months (Chen & Lin, 2018).

The transformation in consumer lifestyles induced by the COVID-19 pandemic is likely a contributing factor to the growth in live stream e-commerce. The pandemic has accelerated the prevalence of technology-mediated business environments, specifically fostering the popularity of live stream e-commerce. This, in turn, has empowered sellers to leverage buyers' impulsive purchasing tendencies through scarcity-induced sales promotions (Bashar et al., 2022). Live stream e-commerce, characterised by its interactive, immersive, informative, and entertaining nature in real-time selling situations, serves to diminish perceived distance and information opacity barriers (Chen et al., 2022).

Live-stream e-commerce encapsulates a deliberately structured buying context, utilising personalised selling techniques to impact the emotions of the stream viewers (Chen & Lin, 2018). Scarcity tactics,

which leverage the principle of limited availability and urgency, have gained recognition as an effective strategy to stimulate consumer action in live stream e-commerce (Li et al., 2021). The amalgamation of these techniques raises many questions for research around the psychological dynamics, the impact on consumer behaviour, ethical considerations, and the role of entertainment in shaping perceptions of scarcity.

Research has responded to the rapid increase in live stream e-commerce by focusing research towards understanding the unique building blocks constituting the framework of live stream e-commerce channels. The academic research on this topic is still in its early stages and is inconsistent and fragmented. This is evident in the limited number of studies that have been conducted on the topic, as well as the gaps in the literature that have been identified. For example, existing research predominantly concentrates on Asian settings, necessitating a deeper understanding of cultural variances between Asian and Western contexts as found by Lu and Chen (2021). Another critical area for examination revolves around the global rise of live streaming, urging an exploration of the sustained effectiveness of scarcity tactics on consumer purchasing decisions. As live streaming becomes a ubiquitous channel for information consumption and online shopping, the evolving consumer response and potential diminishing novelty warrant marketers' exploration of innovative approaches to stand out and stimulate consumer purchases. While live stream e-commerce has gained notable attention in specific industries, particularly for clothing and makeup, its exploration across various sectors remains underdeveloped. Future research should extend the investigation beyond these commonly explored industries, delving into how live stream e-commerce can be applied to different product categories. These gaps in the literature provide opportunities for future research to expand our understanding of live stream e-commerce and its impact on consumer behavior.

This study aims to review scarcity tactics and impulsive buying behaviour in live stream e-commerce context, focusing on relevant theories, and factors that influence this consumer behaviour. A systematic

review was used to collect, analyse, and synthesise the current studies on live stream e-commerce. This systematic literature review holds significance as it contributes to the expanding body of research on live streaming. Furthermore, this review contributes to addressing gaps in the existing literature by examining the limited research that has explored the interconnected dynamics of live stream e-commerce, scarcity tactics, and impulsive consumer buying behaviour within this platform.

The following objectives for the literature review are outlined below:

1. Analysis of Current Literature to Define Live Stream E-commerce:

- Investigate existing literature to establish a comprehensive definition of live stream e-commerce.

2. Analysis of Research Methods for Studying Scarcity Tactics and Impulsive Buying

Behavior:

- Explore the research methods utilized to study scarcity tactics and impulsive buying behavior in the context of live stream e-commerce.

3. Analysis of the Stimulus-Organism-Response (SOR) Framework:

- Conduct an analysis of the Stimulus-Organism-Response (SOR) Framework, widely recognized for studying scarcity tactics and impulsive buying behavior in live stream e-commerce.

4. Examination of Primary Scarcity Tactics and Influential Factors:

- Investigate the primary scarcity tactics and influential factors contributing to impulsive buying within the realm of live stream e-commerce.

5. Development of a Framework for Scarcity and Impulsive Buying:

- Develop a framework derived from identified factors of scarcity and impulsive buying in live stream e-commerce to provide insights informed by the reviewed literature.

6. Highlighting Research Gaps and Suggesting Future Studies:

- Identify research gaps and propose areas for future studies on scarcity and impulsive buying behavior in live stream e-commerce.

By exploring these objectives this study can help scholars and marketers gain a better understanding of the live streaming e-commerce and the scarcity tactics that stimulate consumer impulsive buying behaviour. Furthermore, the exploration of scarcity strategies and impulsive buying introduces a novel dimension to our understanding of how live stream e-commerce goes beyond traditional marketing approaches. Additionally, it provides marketers insights to implement scarcity techniques to strengthen their competitiveness in the live stream market, with the goal to increase their sales and profitability,

To present the findings of this systematic literature review, Snyder (2019) guidelines were followed to conduct the review with a meticulous approach, adhering to well-defined methodological steps. The review synthesised, collected, and analysed 14 studies relating to impulsive buying and scarcity tactics in the context of live stream e-commerce published between 2015 and 2023. The systematic literature review used peer-reviewed academic journals and the results presented will be valid to both the business and academic fields.

2. Chapter 2 - Literature background

This section provides an overview of livestream e-commerce, impulsive buying, and scarcity tactics.

2.1 The definition of live stream e-commerce

Shopping for products online has never been easier, and the online e-commerce market has seen exponential growth around the world. Choice for consumers online is abundant, with the ability to shop for products and services conveniently with the touch of a button. The rapid progression in the online landscape has led traditional online shopping to be developed, upgrading text and image to multimedia video channels (Li et al., 2021). A new social commerce model emerged in 2015 called live stream e-commerce, which is a blend of live broadcasting, social networking and e-commerce (Lee & Chen, 2021). Live stream e-commerce is defined as the delivery of e-commerce transactions in a live, interactive environment, blending entertainment with instant purchasing (Lee & Chen, 2021). Live stream e-commerce has become a global economic phenomenon as brands adopt this marketing method to increase their online presence in the saturated online market. Live stream formats enable consumers to partake in real-time video viewing. The notable appeal for many consumers, as acknowledged in current literature, lies in the ability to watch, and engage in the stream in real-time, fostering interaction during the broadcast.

Major retailers, including renowned brands such as Gucci, Amazon, Walmart, and Nike, have utilised various live stream platforms as a marketing method to promote their products. A study conducted by Lee and Chen (2021) identified three primary online locations where live stream e-commerce may be carried out, but not limited to:

1. Live stream platforms that integrate commercial selling activities, for example TikTok and Twitch.

2. E-commerce websites equipped with built-in marketplaces for streaming, such as Tabo Live and Tmall in the Chinese context.

3. Social networking sites incorporating live streaming features, including YouTube, Amazon Live and Facebook Live.

Live streaming e-commerce is reshaping the way consumers carry out online shopping transactions (Cai et al., 2018). Prior to live streaming consumers could only learn about products online through images and text. Live streaming is a marketing strategy that allows for real-time video, and it facilitates direct interaction with customers, mirroring the instore shopping experience (Zhang et al., 2019). Research shows that many successful live stream e-commerce events are hosted by well-known online public figures “influencers” or a key stakeholder of the corporation (Bhattarai, 2021). A Cai et al. (2018) study shows that using a reputable host helps to build trust among viewers during live streams. The study also presented findings that when trust in consumers is perceived as higher there is a direct influence on sales (Cai et al., 2018).

Live streaming e-commerce encompasses four essential features: entertainment, interactivity, visualisation, and professionalisation. The entertainment aspect of e-commerce live streaming is measured by the degree of enjoyment and engagement experienced by consumers as they participate in the online experience. Empirical research indicates that consumers who engage in live streaming e-commerce and partake in direct interactions with the seller perceive the overall encounter as being pleasant (Widodo, 2023).

Interactivity, another critical factor, refers to the extent of engagement between consumers and sellers during the live stream. In the context of live stream e-commerce, participants can engage in real-time communication through chat boxes, often facilitated by Q&A sessions (Widodo, 2023). Visualisation, defined as the process by which individuals acquire information, plays a pivotal role in the efficacy of live

streaming e-commerce (Widodo, 2023). Individuals tend to comprehend and process information more easily and distinctly when they have visual access to a product. Live streams serve as a platform that enables real-time product demonstrations, presenting products in diverse settings or on various models, thereby allowing consumers to envisage themselves using the product or aligning with a specific brand (Widodo, 2023). Professionalisation refers to how sellers present their products or services during live streams. The perceived expertise of sellers in product knowledge and their persuasive abilities in influencing customers to make a purchase significantly impact the level of trust customers place in them. In-depth research on live streaming, conducted by Friedländer (2017), aimed to enhance our comprehension of this emerging phenomenon. Friedländer identified six driving forces behind consumer engagement in live stream e-commerce platforms, encompassing the desire to alleviate boredom, establish social connections, find a sense of community, express oneself, derive enjoyment, and communicate specific needs. Similarly, Hamilton et al. (2014) identified two primary reasons for consumer engagement in these live platforms: a desire for unique content and the opportunity to interact and participate with the hosts of the live streams. The research conducted by both studies, involving over 1,500 viewers, contributes to a better understanding of the motivations behind live stream engagement. Recognising the motivations of consumers participating in live streams is imperative for both scholars and practitioners, enabling a more targeted approach to engage this specific audience effectively. Researchers have started to shift their attention to impulsive buying behaviour in live stream e-commerce. This study focusses on synthesising the current literature to thematically identify common themes occurring in the live stream e-commerce space.

2.2 Scarcity tactics

Scarcity tactics play a prominent and essential role in marketing strategies aimed at enhancing consumer engagement and influencing purchasing decisions. Scarcity, as defined by Walras (2013), is "something that is useful but of limited quantity/time". There are two recognised types of scarcity - product, and resource. Product scarcity refers to a "lack of quantity" and resource scarcity is referred to as

a “lack of capital and product inputs” (Walras, 2013). Within live streaming e-commerce, scarcity tactics are typically presented as constraints on both time and quantity (Yi et al., 2023). The implementation of scarcity in marketing strategies instills a sense of urgency and tension among consumers. Research indicates that such tactics can lead to heightened purchasing intentions and reduce the time consumers spend researching a product (Yi et al., 2023). Understanding the dynamics of scarcity tactics in live streaming is crucial for marketers, as it not only fosters increased consumer engagement but also prompts quicker decision-making processes among consumers.

Impulsive buying behaviour becomes more spontaneous when individuals make purchase decisions under scarcity. A scarcity-induced sales promotion carried out in live stream e-commerce can trigger consumers' purchasing decisions in real-time, with enhanced platform visibility and increased buyer-seller interactivity. Live stream e-commerce possesses the capability to create the illusion of scarcity, accelerate demand, and prompt viewers to make purchases sooner to avoid missing out. The use of scarcity-related promotions in live streaming e-commerce has been recognised to appeal to consumers actively engaging in the live stream, encouraging more immediate purchases.

Scarcity has been studied in a wide array of academic journals as an independent variable (Guo et al., 2017) and a mediating factor (Li et al., 2021). The studies indicated that perceived scarcity positively influences panic buying and indirectly influences panic or impulsive buying through previewed arousal. Perceived scarcity is shown to strongly predict online buying behaviour in social commerce (Akram et al., 2018). A commonly employed tactic to encourage scarcity-related impulsive buying is the imposition of a time limit, with live streams restricted to a duration set by the brand. For instance, a brand may choose to host a live stream limited to two hours. Consumers making swift, impulsive purchase decisions are critical for the operation and success of live stream e-commerce, making scarcity tactics a favoured sales promotion strategy (Yi et al., 2023). Another frequently discussed tactic in current literature involves the utilisation of product quantity. The study conducted by Du et al. (2023) revealed that a limited quantity

significantly influenced consumers' purchase intentions. When a product is presented with limited availability, consumers tend to perceive its value as higher, thereby increasing their inclination to make a purchase. This phenomenon suggests that the strategic utilisation of limited sales can effectively influence consumer perceptions and enhance their willingness to buy. Overall, a comprehensive understanding of these scarcity tactics is crucial for marketers seeking to optimise consumer engagement and drive success in live streaming e-commerce platforms.

2.3 Impulsive buying

Impulse buying is defined as "a purchase that is unplanned, resulting from exposure to a stimulus and decided on the spot" (Prion, 1991). This phenomenon has received significant research attention in consumer psychology and marketing disciplines. Studies have highlighted both internal and external factors influencing impulsive purchasing behaviour. Internal factors, such as an individual's personality traits, emotional appeals, and impulsivity, can influence unplanned purchases (Rodrigues et al., 2021). External factors, such as marketing strategies like price promotions, product displays, and considerations of time and quantity also play a role (Chen et al., 2022).

Impulsive buying behaviour in consumers is characterised by a lack of judgement, wherein decisions are predominantly influenced by emotions (Verhagen & Van Dolen, 2011). This behaviour is primarily driven by emotional states, and research suggests that emotions associated with pleasure and excitement play a significant role in impulsive purchases (Abdelsalam et al., 2020). Furthermore, impulsive purchases arise because of spontaneous behaviour or diminished cognitive control, guiding consumers towards products or services that appear "appealing". This prompts impulsive buying tendencies without due consideration of financial responsibility or a comprehensive assessment of the actual necessity for the product (Rahman & Hossain, 2022).

Research on impulsive buying has predominantly investigated the factors and mechanisms underlying impulsive purchasing behaviours. Within the e-commerce domain, researchers have concentrated on the impact of website interfaces on impulsive buying behaviour in the online landscape. However, several factors associated with online shopping contribute to consumers' impulsive purchasing decisions. Studies have identified that pricing, visual elements, social influence, and creativity can all serve as catalysts for impulsive purchases (Yong et al., 2013). In a study conducted by Khan et al., (2015), it was concluded that consumers are more prone to making impulsive purchases when experiencing enjoyment and actively engaging with the shopping environment.

In the context of live stream e-commerce, the platform cultivates an interface distinguished by elements of entertainment, interactivity, and visible affordances for instantaneous online transactions and seamless payment methods. This creates a compelling association with impulsive purchasing behaviours (Khan et al., 2015). Impulsive buying among consumers is seen as one of the most important shopping behaviours to understand, as it frequently happens in the live stream e-commerce landscape and distinguishes itself from other forms of e-commerce (Li et al., 2021). Acquiring comprehension of the associations with impulsivity in live stream e-commerce is imperative from both academic and marketing perspectives. Understanding the factors that drive such behaviour holds the key to the success of live streams. Simultaneously, it is crucial to discern the ethical considerations associated with this phenomenon to protect the interests of all consumers.

The literature found on live stream e-commerce has provided an overview of the concepts of live stream e-commerce, impulsive buying, and scarcity tactics. To further build on this foundation, this systematic literature review has formed research questions that it aims to address. These research questions will guide the exploration of the intricate interplay between live stream e-commerce, scarcity tactics, and impulsive buying behaviour.

3. Chapter 3 - Research questions:

This systematic literature review addresses gaps in current research on live stream e-commerce, scarcity tactics, and impulsive buying behavior. Although the current literature provides definition and an overview of live stream e-commerce, scarcity tactics and impulsive buying behaviour, there are identified gaps in the literature which provide three research questions for this systematic literature review:

1. What are the specific scarcity tactics employed in live stream e-commerce, and how do they influence consumer behaviour, in the context of impulse buying?
2. How does the integration of scarcity tactics in live stream e-commerce impact consumer perceptions regarding product availability and urgency, and to what extent does it shape their impulsive buying decisions?
3. In live stream e-commerce, what additional factors beyond scarcity tactics contribute significantly to impulsive buying behaviour?

4. Chapter 4 - Methodology

4.1 Search strategy

To identify scarcity tactics and impulsive buying behaviour in the context of live stream e-commerce, a systematic literature review procedure adhering to the PRISMA guidelines were followed to provide a transparent, objective, and clear systematic report (Siddaway et al., 2019) see Figure 1.

A search was conducted of English-language, peer-reviewed academic articles that were published between 2015 and 2023. Only live streaming studies in the e-commerce sector were selected excluding live streaming in other contexts (e.g., gaming). Three databases (Scopus, Taylor and Francis and ScienceDirect) were searched using the following terms: “impulsive purchase” “impulsive buying” OR “scarcity” AND “Live stream e-commerce”. Table 1 presents the databases searched and articles found..

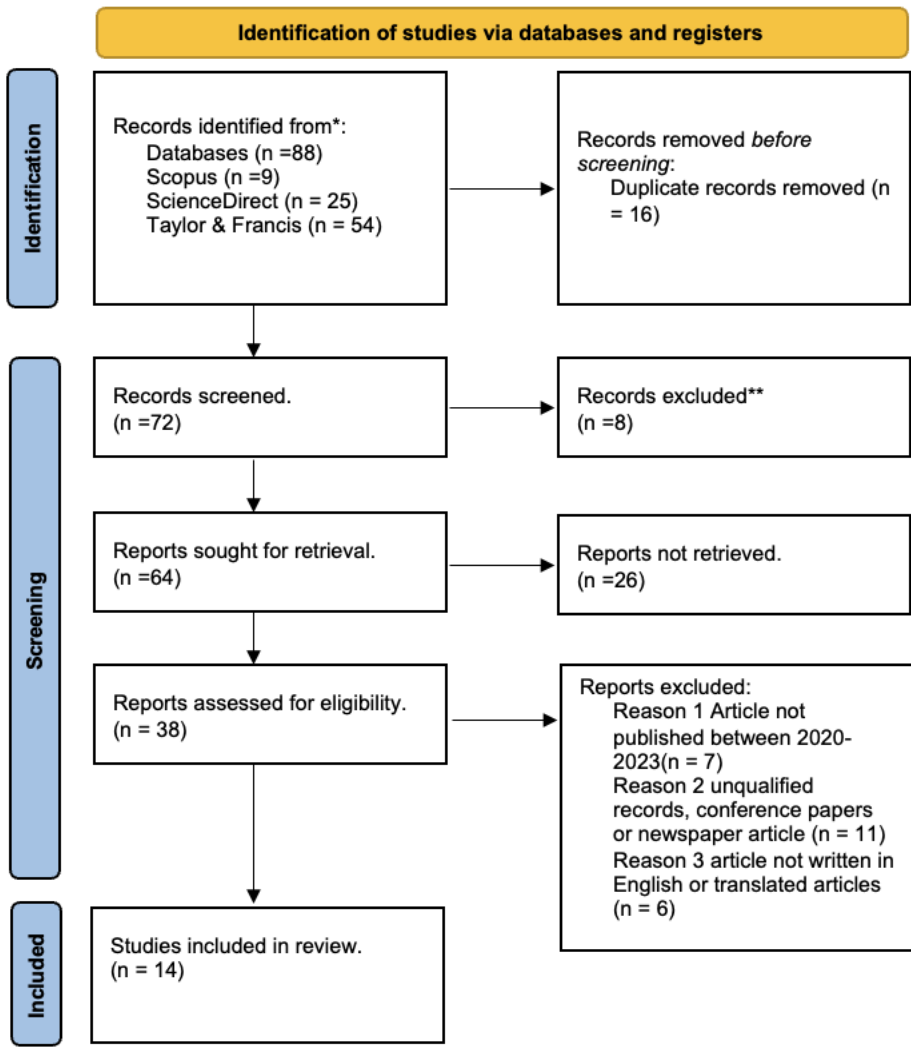
Table 1.

Database search

Database	Number
Scopus	9
ScienceDirect	25
Taylor & Francis	54

Figure 1.

PRISMA Flow Diagram



4.2 Inclusion and exclusion criteria

The combined searches of the three databases identified 88 articles that were imported into an Excel document. After removing duplicate records, 72 articles remained. All articles then went through a screening process with all titles and abstracts being read to apply the inclusion criteria that was created to be able to identify impulsive buying and scarcity tactics in live stream e-commerce. The inclusion criteria for this systematic literature review encompassed only English-language, peer-reviewed journal articles, published between 2020 and 2023 in the electronic databases. Confining this systematic literature review to articles published between 2020 and 2023 was a deliberate choice aimed at ensuring the incorporation of the most recent and pertinent studies. This approach enabled the study to focus on exploring current trends, perspectives, and the latest technological innovations, as live streaming e-commerce is a relatively new marketing tool but rapidly evolving. As technology is constantly evolving, ensuring the identification of the most recent advancements is key to providing the most up-to-date information for the most beneficial results, particularly for those seeking insights into venturing into live stream e-commerce. To ensure the quality impact of the sample, articles chosen will focus on scarcity tactics and impulsive buying from academic journals that have received A* and A rankings according to the Australian Business Deans Council (ABDC). Considering that live streaming e-commerce is a new research area for academics, the articles chosen for this systematic literature review will encompass A*, A, and B rankings according to ABDC. This approach aims to broaden the pool of academic papers available for our study. This review excluded papers not written in English and papers that have been translated into English, it also excludes book chapters, news articles, non-peer-reviewed articles, and editorials. Any remaining articles were then sought for retrieval and 26 of these could not be found (n=26).

Articles were checked to ensure they were published between 2020 and 2023, and 38 articles were removed (n=7). Articles were then checked for any unqualified records, conference papers, or newspaper articles and a further 11 articles were removed from the article selection (n=11). The remaining articles were checked to make sure they were written in English and not translated: this results in 6 articles being removed from the review (n=6).

Table 2 presents all the criteria included in this review. After this process was applied, 14 articles presenting impulsive buying behaviour and scarcity tactics in live stream e-commerce were identified.

Table 2.

Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Full text paper Papers written in English Papers within specific period 2020-2023 Academic journals that have received A*, A, or B ranking according to ABDC	Uncompleted studies Papers not written in English Papers translated to English from another language Book chapters, news articles, non-peer reviewed articles and editorials

4.3 Review protocol

The review protocol establishes the methodology for conducting the systematic review. Defining the review protocol before commencing the systematic review is crucial to mitigate potential biases. This paper's review protocol encompasses several components: it provides contextual information regarding scarcity tactics and impulsive buying behavior in live stream e-commerce, details the employed search strategy, elucidates the study selection process and quality assessment criteria, and finally, outlines the data extraction and synthesis procedures. The preceding section has already covered the background research on scarcity tactics and impulsive buying behaviour in live stream e-commerce.

4.4 Data sources and search terms

Electronic systematic searches were conducted using three electronic academic databases. Scopus, ScienceDirect and Taylor & Francis were used to find academic journals. In this research, Scopus, ScienceDirect and Taylor & Francis were selected due to their ability to get results from a wide range of academic journals and their provision of filters for refining articles based on specific criteria. The

databases selected are recognised by the academic industry for their extensive coverage across multiple disciplines. They provide a comprehensive range of peer-reviewed journals, guaranteeing the inclusions for the review to be of high quality and from credible research sources. Scopus, ScienceDirect, and Taylor & Francis regularly update their online databases, enabling this systematic review to have access to the latest research in the field. This aligns with the date range selected to ensure the article captures the most recent advancements and trends in live stream e-commerce. Lastly, all selected databases are online sources, including studies from researchers worldwide. With live streaming being a new area of research, having access to international journals strengthens this research as it provides results from different cultural perspectives. As live streaming is still emerging, international journals provide a further selection of articles that could be used. For this study, they were selected if they were published in English.

The exploration for academic articles to be included in this systematic literature review took place from July to August 2023. The search for relevant papers was narrowed down to those published from 2020 to 2023, aligning with the goal of referencing the latest literature on the topic. This paper employed the subsequent procedures to gather and compile existing literature on live stream e-commerce. The initial step encompassed the collection of various illustrations of scarcity tactics and impulsive buying behaviour evident in live streaming e-commerce. Following this, we advanced to identify the keywords for retrieval: "live streaming", "live streaming e-commerce", "impulsive buying", and "scarcity tactics", allowing for the creation of multiple combinations of these key words. Webster and Watson (2002) highlighted the importance of incorporating diverse sources of academic research to encompass a board spectrum of academic papers. Table 3 presents the databases that were searched, and the queries used, including the updated queries. Each row represents the refinement of the search term until the final query is used to retrieve the relevant article.

4.5 Journals of publication

The subsequent step in the systematic literature review involved examining published articles on live stream e-commerce with a focus on scarcity and impulsive buying. *The Journal of Retailing and Consumer Services* has contributed the highest number of articles to the review, with four out of the 14 selected articles, constituting 28% of the total articles under review. The second-highest number of publications comes from *Electronic Commerce Research and Applications*, with two articles. Additionally, the journals selected for this systematic literature review were identified using the ABDC 2022 *Journal Quality List Review Report*, which ranks journals and categorises them into their respective research fields. This study identified 13 articles, all ranked A or A*, for review. Journals that were absent from the ABDC listing (1 article) were categorised based on the article's aim, scope, and main findings to be included in this systematic review.

4.6 Research design

The articles presented in this systematic literature review identified that, of the selected articles, 71% constitute quantitative studies. This underscores a gap in academic research, indicating a scarcity of conceptual articles crucial for a deeper comprehension of live streaming e-commerce. The qualitative studies are made up of surveys, and text analysis and the quantitative studies are made up of PLS SEM, and regression analysis.

Among the selected articles, one utilised a mixed-methods approach, incorporating both qualitative and quantitative research methods. Another article was identified as employing a systematic literature approach. To enhance our understanding of the live stream context, further longitudinal studies will be necessary. These studies will help validate and extend the proposed models developed in current research.

Table 3*Keyword and database search*

Database	Query
Scopus	Live stream e-commerce AND impulsive buying OR Scarcity Tactics Peer reviewed in English
ScienceDirect	Live stream e-commerce OR Live stream shopping AND Impulsive buying OR scarcity tactics Peer reviewed in English
Francis & Taylor	Live stream e-commerce OR Live stream shopping AND Impulsive buying OR scarcity tactics Peer reviewed in English

5. Chapter 5 - Analysis

The process of selecting academic articles for the purpose of constructing this systematic literature review was conducted meticulously and systematically. This procedure involved multiple stages, commencing with an initial review of abstracts, followed by the careful selection of full-text articles for further examination (Snyder, 2019). Subsequently, this method facilitated the selection of the articles to be included in the review. Once the requisite articles had been gathered, a thorough screening process was undertaken to ascertain their adherence to predefined inclusion criteria (Snyder, 2019), which were established for the systematic literature review. Any articles that were either incorporated or excluded during this evaluative phase were documented on a spreadsheet for future reference and transparency. With a final list of selected articles, a standardised protocol was employed to extract pertinent information from each article. An Excel spreadsheet was created for the purpose of coding and distinctly labelling the data extracted from the chosen articles. This procedure was implemented to contribute to addressing the research topic. Each paper underwent coding according to the subsequent categories: 1) authors, 2) year of publication, 3) journal name, 4) article title, 5) theme, 6) theory, 7) methodology and data, 8) variables, 9) findings, and 10) future research. There were 14 articles selected for the systematic literature review after meeting the inclusion criteria and to ensure the quality and reliability of the chosen articles, the extracted data underwent a thorough examination by supervisory personnel from Auckland University of Technology. This stringent review process was implemented to uphold the academic integrity and robustness of the literature review's findings. The review then employed a thematic analysis approach to group and present the findings around key themes that emerged from the data. This approach allowed for the identification of common themes and patterns in the data, providing a comprehensive and organized presentation of the findings. By systematically categorizing the data, thematic analysis facilitated the synthesis of evidence from multiple studies, enhancing the overall clarity and interpretability of the review. Additionally,

this method ensured that the analysis was transparent and reproducible, improving the credibility and reliability of the results.

6. Chapter 6 - Findings

Upon completion of the article search, a total of 14 academic articles were identified for inclusion in the systematic literature review. The limited number of finalised articles reflects the new area of research live stream e-commerce, a new area of social commerce that is still evolving. The primary reason for eliminating studies from consideration was duplication, and an additional 6 articles were excluded due to non-English publication. In this section, the selected articles are analysed and discussed, and present the results of reviewing the published articles on live stream e-commerce with links to scarcity tactics and impulsive buying behaviour systematically. The research methods, research context, and scarcity tactics and impulsive buying in live stream e-commerce have been discussed as well as future research directions for live stream e-commerce.

6.1 Development of live stream e-commerce

The first step of the systematic literature review process is to break down the articles in terms of their year of publication. Breaking down articles into period-based distribution allows us to examine the growth of research topics over a specific time frame. Additionally, it helps the author identify and monitor developments in the literature. The first paper in this literature review was developed in 2020 (Wongkitrungrueng & Assarut, 2020). Although live streaming e-commerce was established in 2015, the COVID-19 pandemic accelerated its growth and it quickly gained the attention of academic researchers, as live stream e-commerce rapidly changed the way consumers could view and purchase products (Lo et al., 2022). Accordingly, 2020 is considered the starting year for this systematic literature review. Hence, this paper includes research published between 2020 and 2023.

Live stream e-commerce, a marketing model developed in 2015, had limited literature until 2020, with only a handful of papers published between 2015 and 2020. At the onset of the COVID-19 pandemic, there was a significant shift in how consumers obtained information and shopped during lockdowns. This

abrupt change in the online retail landscape explains the rapid growth in academic research on live streaming e-commerce, with a surge in academic papers being published between 2020 and 2023. This sudden growth trend may be attributed to the impact of the COVID-19 pandemic and technological developments in the e-commerce space. The rapid advancement in live stream e-commerce resulted in 28 articles on the subject being published between 2021 and 2022. Overall, the consistent growth of live stream e-commerce literature indicates an increasing number of research avenues available for academics to focus their research domains on.

6.1.1 Stimulus-Organism-Response (SOR) theory

Proposed by Mehrabian and Russel (1974), the S-O-R theory model posits that ‘S’ signifies material and social stimuli present in the external environment. The ‘O’ represents the individual’s internal state or response, and ‘R’ denotes the behavioural response from the consumer in reaction to ‘O,’ encompassing emotions, motivations, attitudes, and reasoning (Kang et al., 2021). The SOR framework is popular in consumer behaviour studies, and in this systematic literature review, the SOR framework is the most used. Eight out of the 14 selected articles (57% of the total) adopt the widely accepted Stimulus-Organism-Response paradigm. This result is attributed to the SOR framework, which emphasises the examination of antecedents, internal processes, and commercial outcomes. In the study of livestream e-commerce, the SOR framework is a key model adopted by academics to comprehend streaming interactions, stimuli, and responses. These articles aim to develop a framework as a theoretical foundation for their research. This theoretical framework has found extensive application in numerous studies within the realm of e-commerce. Consequently, its utilisation in the investigation of consumer behaviour, specifically in the context of live streaming e-commerce, appears pertinent, especially concerning impulsive buying and scarcity. This framework enables scholars to simultaneously apply multiple theories. For instance, Qu et al. (2023) explored scarcity-induced purchasing decisions through the SOR framework, investigating the mediating role of viewing frequency in the relationship between past

purchases and impulsive buying tendencies by examining the mediation of anticipated emotions. Kang et al. (2021) investigated the dynamic effects of interactivity on customer engagement behaviour. The framework they employed was structured around interactivity as the social stimuli, tie strength as the organism, and customer engagement as the response. The SOR framework, as recognised in this study, was used to examine a range of external stimuli that academics can utilise to analyse the relationship between different factors and how these factors affect states and final outcomes in the live stream context. The analysed literature assessed various external stimuli influencing consumers' purchase intentions in live stream e-commerce. Zhang et al. (2023) investigated the effects of celebrity endorsement and influencers, while Qu et al. (2023) examined the emotions of regret and rejoice. Khoi et al. (2023) explored personalisation and vividness, and Lo et al. (2022) analysed scarcity persuasion, price perception, and para-social interaction. Lin et al. (2023) examined multiple factors, including demand, convenience, interactivity, playfulness, and perceived enjoyment. Lastly, Chen et al. (2023) investigated customer involvement and perceived scarcity. The S-O-R framework, employed across various articles, enables the capture of distinctive elements inherent to live streaming e-commerce and facilitates the reflection of behavioural responses to this specific form of e-commerce.

6.1.2 Scarcity tactics

Scarcity is derived from the constraints of being able to get or experience a resource, and it can be brought on by a lack of many types of resources such as time, quantity, and money (Tang et al., 2022). Scarcity taps into psychological principles, triggering a fear of missing out (FOMO) and motivating consumers to act swiftly to secure the scarce resource. This can lead to increased demand, higher perceived value, and a sense of exclusivity among consumers (Tang et al., 2022). Additionally, scarcity can be leveraged to differentiate products or services in a competitive market, driving interest and engagement. Live streaming e-commerce involves a deliberately created

purchasing environment that depends on the application of personal selling techniques to impact the emotions of viewers (Qu et al., 2023).

Scarcity tactics were identified across the reviewed articles in this systematic literature review. The literature suggests that there are three categories of scarcity persuasion that have been used across live stream e-commerce. These categories include limited time (Chen et al., 2022), limited quantity (Du et al., 2023), and price perception (Lo et al., 2022) (Qu et al., 2023). Chen et al., (2022) article investigated perceived scarcity and the effect this has on consumer purchase behaviour. The research suggested that perceived scarcity significantly affects panic buying and influences consumer decisions (Chen et al., 2022). There is a strong relationship between these scarcity tactics and impulsive buying in live stream e-commerce.

6.1.2.1 Limited time

One of the most critical characteristics of live stream e-commerce is time scarcity. Live stream e-commerce stands out from other forms of e-commerce and s-commerce because a key feature is that the streaming lasts for a limited time only. Consequently, shopping activities typically only occur during the duration of the stream, imposing a time constraint on consumers' potential consumption of the product or service. Since consumers engaging in live stream e-commerce are limited to buying products within a set time frame - the duration of the live stream - the limited time may facilitate their purchasing decisions (Hao & Huang, 2023). As defined by Hao et al. (2020), time scarcity is when the time available to conduct a purchase or activity is less than the required time. In addition, live stream e-commerce employs various factors to promote impulsive purchases. A factor commonly discussed and addressed in the literature by Hao et al. (2023) is the messaging on remaining time. Strong marketing messages like "Ends soon!" or "30 minutes left" create a sense of time constraints for customers, urging them not to miss out on the presented opportunity (Hao et al., 2023).

The imposed time constraint induces urgency, prompting impulsive tendencies and hasty decision-making (Qu et al., 2023). Time pressure serves as a catalyst, intensifying purposeful decision-making and

emotions. Qu et al. (2023) affirm that scarcity sales promotions initiated by live streamers contribute to influencing individual viewers' moods, playing a crucial role in escalating impulsiveness and fostering impulsive buying. The limited availability of time resources in the live stream e-commerce context for shopping jeopardises consumers' purchasing freedom and compels them to expedite their purchase decisions (Hao & Huang, 2023). This is supported by Chen et al. (2020), who stated in the literature that time scarcity is a significant predictor of consumer involvement and impulsive purchases. In practice, creating a limited-time promotion atmosphere in live stream e-commerce is key, as consumers are led by the idea that "what is scarce is valuable" (Chen et al., 2022). Chen et al. (2020) literature also states that perceived scarcity increases the desire to buy and enables the goal of product promotion to be achieved. In addition to this, Lo et al.'s (2022) article examines scarcity persuasion and delves into limited-time promotions. This article reflects that such promotions stimulate scarcity effects in live stream e-commerce, as time pressure fuels individuals' emotional desire to engage in competitive behaviours linked to impulsive purchasing. To further support time as a scarcity tactic in live stream e-commerce (Sun et al., 2023) explore time pressure as a scarcity tactic in live stream e-commerce and examined the relationship between them. As defined in the article, time pressure is the subjective perception of a limited or scarce amount of time available to facilitate the decision-making process (Sun et al., 2023). The result of this study demonstrated a link between consumers, impulsive buying, and time-linked scarcity. Limited time is a significant predictor of impulsive buying in live stream e-commerce. As consumers are exposed to this scarcity persuasion technique, they are influenced and motivated to make quick and impulsive purchasing decisions, driven by the fear of missing out on exclusive deals or time-limited offers. The psychological impact of limited time as a scarcity factor in live stream e-commerce is evident in heightened emotional responses and heightened desire for competitiveness among consumers. This not only emphasises the urgency and exclusivity associated with time-constrained promotions but also underscores the effectiveness of leveraging scarcity persuasion techniques in shaping consumer behaviour within the dynamic environment of live streaming platforms.

6.1.2.2 Limited quantity

Throughout the literature examined limited quantity was noted and presented as a commonly used scarcity tactic in live stream e-commerce; however, the literature on this topic is a new and expanding area for academics in live stream e-commerce. Limited quantity operates on a mechanism like limited time, emphasising that the amount or unit of goods is restricted (Qu et al., 2023). The article by Du et al. (2023) revealed that limited quantity significantly affected consumers' purchase intention. The limited availability of the product led consumers to perceive its value as higher, thereby increasing their willingness to buy. The results demonstrated a noteworthy effect, indicating that the restriction on product availability positively influenced consumers' purchase intention. Qu et al. (2023) suggested that when a consumer purchases an advertised item within a specific time frame, as the available number of purchasable items diminishes, it generates quantity pressure, impacting customers' inclination towards impulsive buying. A distinctive aspect of quantity scarcity is its ability to elevate the perceived value of the offering. The perceived scarcity of the product heightened its value, thereby increasing consumers' willingness to make a purchase. Du et al.'s (2023) study suggests that brands may strategically adjust quantity limits to induce more pressured purchases, leveraging the fear of missing out. However, it also highlights the possibility of redirecting customers to traditional channels for subsequent purchases, ultimately enhancing the brand's overall profitability. This understanding provides valuable insights for brands navigating the dynamic landscape of live stream e-commerce.

Limited quantity as a scarcity tactic in live stream e-commerce, focusing on Du et al.'s (2023) article, revealed a positive impact on consumer purchasing intention. The study suggests brands can strategically adjust quantity limits to induce urgency while acknowledging the potential redirection of customers to traditional channels for subsequent purchases.

6.1.2.3 Price perception

Price perception is a scarcity tactic in live stream e-commerce, defined as the perceived monetary value of a product or service (Lo et al., 2022). This perception is influenced by limited time offers, exclusive deals, and comparative pricing against market value. In live streams, price perception extends beyond actual cost to the value consumers believe they are receiving, heightened by the urgency and interactivity of the format. The scarcity effect, combined with influencer endorsements and real-time engagement, drives consumers to make quick purchasing decisions, making price perception crucial in this shopping environment. Research consistently shows that price has a positive impact on impulsive buying in the e-commerce context, serving as a significant driver of purchase intention among consumers and influencing their perceived value. Although the impact of price perception in live streaming e-commerce is still emerging, a systematic review analysed Lo et al.'s (2022) article, and themes on price perception were also presented in Qu et al.'s (2023) articles. Lo et al. (2022) revealed that price promotional tactics like bundle offers or discounts can arouse individuals and have strong links to impulsive buying in consumers. It was also noted in the context of live streaming e-commerce that price perception influences the evaluation of utilitarian value, gauging its ability to deliver functional benefits and cost reductions (Lo et al., 2022). Price perception strategically employs exclusive discounts to drive sales within the limited stream-time, emphasising the heightened role of price. Lo et al.'s (2022) study suggests that brands in live stream e-commerce can strategically manipulate price perception, such as through exclusive discounts, to induce a sense of urgency. The study also acknowledges the potential redirection of customers to traditional channels for subsequent purchases. Qu et al. (2023) presented that as live stream time can be limited to less than 12 hours a day, a quick and impulsive purchase is critical for the live stream operation, and brands input price sales promotions as a tactic to encourage this buying behaviour among consumer groups. Live streamer hosting has the ability to create the illusion of price scarcity, which accelerates demand and encourages viewers to buy sooner (Qu et al., 2023). While the impact of price perception as a scarcity factor in live stream e-commerce is not yet fully established

within the existing literature, the reviewed articles demonstrate that this pricing strategy positively influences impulsive buying behaviours.

6.1.3 Impulsive buying as an outcome to scarcity tactics

Impulsive buying is defined as the possibility of making an unplanned, instant, spontaneous purchase, the opposite of deliberate, planned purchase behaviour (Qu et al., 2023). Impulsive buying intensifies when consumers are making purchase decisions under scarcity tactics. The literature reviewed in this systematic review highlighted key factors that influence impulsive buying from the consumer perspective. Identifying these factors in the review is crucial for academics and marketers to understand how to make the most successful live streams.

6.1.4 Additional factors of impulsive buying in live stream e-commerce

6.1.4.1 Celebrity effect

This systematic review identified the celebrity effect as an emerging and pivotal theme, featured in three out of the 14 selected articles (Du et al., 2023), (Yan et al., 2023), and (Luo et al., 2024). This underscores its prominence in live stream e-commerce, emphasising the crucial role of hosts and their direct impact on consumer impulsivity toward purchases. Celebrities are widely recognised among consumers for their popularity, and the celebrity effect refers to the ability of celebrities to influence others. Yan et al. (2023) demonstrated that celebrity attractiveness, trustworthiness, and expertise could impact purchase intention through favourable brand attitude and credibility. Firms are actively competing for market share through influencer advertising (Kim and Kim, 2021), leveraging the celebrity effect to enhance their brand visibility and appeal. Within the scope of celebrity streamers, this researcher identified two distinct categories that garnered attention: celebrity credibility and celebrity trust. In this systematic review celebrity effects refer to the ability of celebrity influences to influence consumer purchasing through their credibility or trust. These dimensions provide an understanding of the

multifaceted ways in which celebrities influence consumer behaviour in the dynamic context of live stream e-commerce. The recognition of celebrity endorsements as a recurrent theme in the selected articles points to its significance as a focal point in the live stream research. As live stream environments continue to evolve, understanding the dynamics between celebrities, credibility, trust, and consumer impulsivity becomes increasingly important for businesses and marketers navigating the field of e-commerce. According to the findings presented in an article (Du et al., 2023), celebrity streamers exhibit heightened popularity and influence, ultimately leading to an increased attraction of consumers towards purchasing products within the live streaming channel.

6.1.4.2 Celebrity credibility

The significance of celebrity credibility in interactive marketing is highlighted in the study by Yan et al., (2023). This crucial aspect of consumer behaviour emerged as a key factor across two articles within the scope of this systematic literature review (Yan et al., 2023;Luo et al., 2024). Yan et al. (2023) provided a comprehensive definition of celebrity credibility, describing it as the extent to which a consumer believes in the claims made by an identified source. Celebrity credibility stands out as a pivotal element that consumers rely on to navigate through marketing messaging and recommendations, shaping their perceptions and decisions (Yan et al., 2023). When consumers perceive a celebrity as credible, it significantly influences their decision-making process, leading to a higher likelihood of incorporating the celebrity's endorsement or recommendation into their choices. This shows the substantial impact that celebrity credibility holds in steering consumer behaviour could have on the impact of decision-making in live stream e-commerce. In addition to Yan et al. (2023), Luo et al. (2024) further investigated into the pivotal role of celebrity credibility, investigating its influence as a mediating factor on impulsive buying behaviours. The study found that celebrity streamers have the power to impact consumption patterns, particularly contingent on their perceived credibility (Luo et al., 2024).

The research findings revealed a compelling connection between consumer engagement during live streams, their perception of the host's credibility, and subsequent impulsive purchasing tendencies. Specifically, when consumers perceived the host as credible, it instilled a greater sense of confidence and trust. This heightened confidence and trust, in turn, contributed to increased impulsive purchasing, as engaged customers were found to be more likely to experience immersion in the live stream environment. The implications of these findings suggest that the interplay between celebrity credibility, customer engagement, and impulsive buying is a complex yet integral aspect of live stream e-commerce. Acknowledging the significance of celebrity credibility shows the intricate relationships that form the foundation of consumer behaviour within the interactive marketing, live stream e-commerce.

6.1.4.3 Celebrity trust

In this systematic review, the theme of celebrity trust emerges as a crucial factor influencing consumer decision-making within the context of live stream e-commerce. The significance of trust was noted by Yan et al. (2024), emphasising its critical importance in online shopping. Trust serves as a mitigating factor against perceived risks, reducing consumers' apprehension about falling victim to opportunistic behaviour.

Yan et al. (2023) offered a comprehensive definition of trust as a "psychological state comprising the intention to accept the vulnerability of influencer ads based on favourable assumptions of influencers' intentions or conduct". This definition highlights the nature of trust, acknowledging the psychological aspect involved in consumer perceptions of influencer advertising within the live stream environment. The perceived trust that consumers place in live stream e-commerce is a pivotal factor influencing their decisions to make online purchases. Consequently, the level of trust a customer has in an influencer ad shapes their overall attitude toward the live stream. It is posited that a customer who trusts an influencer ad is more likely to develop a favourable attitude, thus the intricate relationship between trust, consumer

perceptions, and the success of influencer-driven marketing strategies within the dynamic landscape of live stream e-commerce.

6.1.5 Entertainment

In contrast to traditional social media ads, live streaming e-commerce places a significant emphasis on providing entertainment while simultaneously engaging in the selling process (Yan et al., 2023). The success of live stream e-commerce events relies on the charisma and presentation skills of celebrities involved (Yan et al., 2023). The interplay between entertainment and impulsive purchases stands out as a notable theme, resonating across three articles reviewed in this systematic literature analysis. The articles delve into the concept of engagement in live stream e-commerce, demonstrating a profound impact on consumer behaviour, explores the connection between perceived enjoyment and impulsive buying, and investigates the role of interactivity in live stream e-commerce. Across these studies, a consistent finding emerges: a higher level of entertainment during live stream events correlates with increased instances of impulsive buying throughout the duration of the broadcast. Recognising the critical role of entertainment in live stream e-commerce is imperative for both academic researchers and marketing professionals. Entertainment within a live stream plays a crucial role in enriching the communication experience between sellers and consumers. By fostering such an environment, this experience has the potential to cultivate a robust emotional connection between sellers and consumers, ultimately leading to heightened emotional responses, feelings, and moods (Yan et al., 2023). The design of a live stream should be approached with careful consideration, incorporating various elements of entertainment to elevate consumer engagement levels and, subsequently, to maximise impulsive purchases. This understanding shows the importance of infusing entertainment into the live stream e-commerce experience to enhance profitability and overall consumer satisfaction.

6.1.6 Engagement

Customer engagement is often perceived as a three-dimensional concept, comprising cognitive, emotional, and behavioural facets (Luo et al., 2024). In the context of live stream e-commerce, it facilitates the formation of a social-relationship-based online community, fostering multilateral relationships between customers and streamers (Luo et al., 2024). Customer engagement and consumer interaction with the brand can foster their impulsive purchasing behaviour (Luo et al., 2024). In live stream e-commerce, the tone employed by streamers has the potential to evoke excitement among customers towards a brand (Luo et al., 2024). It can heighten the emotional responses of consumers, leading to increased engagement and impulsive tendencies (Luo et al., 2024). The emotional engagement with both the streamers and consumer may also induce a flow state, wherein individuals become absorbed in the content, momentarily forgetting their surroundings. Essentially, customers who are actively engaged are more prone to experiencing a sense of immersion, thereby facilitating unplanned purchases results in impulsive buying across live stream e-commerce (Luo et al., 2024).

6.1.7 Perceived enjoyment

In the findings of this systematic literature review, the theme of entertainment in live streaming emerges as a significant driver for consumers' active participation in live stream e-commerce events. The entertainment element within these events has been noted to evoke positive cognitive and affective advertising values (Yan et al., 2023). Research suggests that consumers' perceived entertainment value in live streaming or advertising plays a pivotal role in influencing their emotional response toward the content (Yan et al., 2023). Perceived enjoyment, defined as "the degree to which a person feels good, happy, or satisfied" during live streams (Lin et al., 2023), is a subjective experience, varying among individuals even in the same environment (Lin et al., 2023). The research demonstrates that an increase in perceived enjoyment positively correlates with the purchase intention of innovative consumers, emphasising its significant association with impulsive buying behaviour (Lin et al., 2023). The interactive

and entertaining nature of live streaming, coupled with hosts' lively presentations and a diverse range of showcased products, creates an environment conducive to eliciting perceived enjoyment among consumers. As a result, as consumers derive enjoyment from the content of the live stream, they are more inclined to make impulsive purchases, highlighting the profound impact of entertainment on consumer behaviour within the live stream e-commerce platform (Lin et al., 2023).

6.1.8 Interactivity

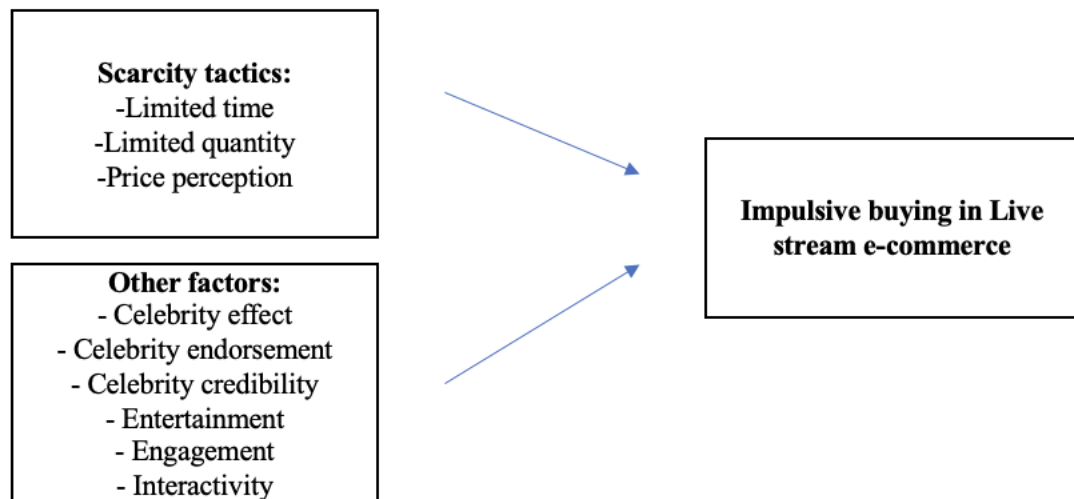
As live stream shopping experiences rapid development in the e-commerce industry, research has identified a notable transformation in consumer behaviour, indicating a growing dissatisfaction with conventional shopping methods (Lin et al., 2023). Consumers are increasingly directing their shopping interests towards more interactive avenues, including TV and live stream e-commerce, leading to a heightened willingness to make purchases. The key factor attributed to this observed shift is the growing emphasis on interactivity. This systematic literature review focused on the concept of interactivity, particularly emphasises in the article by Lin et al. (2023), where the examination of consumer interactivity was coupled with perceived enjoyment in the context of live stream shopping. The significance of perceived enjoyment in relation to impulsive buying was previously established in the articles by Yan et al. (2023), prompting a keen interest in the Lin et al., (2023) study, as it offered insights into the role of interactivity as a crucial factor in live stream e-commerce, a theme corroborated by other research papers. The results of Lin et al.'s (2023) study demonstrated that interactivity significantly influenced the intermediary psychological response of perceived enjoyment. This implies that the level of interactivity during live stream shopping directly impacts the psychological experiences of consumers, affecting their overall enjoyment during the process. Furthermore, the findings validate that interactivity is a substantial factor influencing both the psychological responses of consumers and their likelihood of engaging in impulsive purchases throughout the live streaming shopping experience. In essence, the systematic literature review substantiates the pivotal role of interactivity as a significant explanatory and

predictive variable for leveraging live streaming as an effective tool for product promotion. The findings contribute to the validity of interactivity as a key theme in understanding and optimising the live stream e-commerce environment.

7. Chapter 7- Conceptual framework

Figure 2 encapsulates the main ideas and themes from the systematic literature review. This figure easily demonstrates the key themes that emerged during our review, offering a straightforward overview of the research topic.

Figure 2.



8. Chapter 8 - Discussion

The primary objectives of this systematic literature review were to unravel the intricacies of live streaming e-commerce environments and to identify scarcity techniques and consumers' impulsive buying behaviour. The analysis reveals a compelling pattern, with most of the identified academic articles consistently indicating that scarcity tactics employed in live stream e-commerce exert a significant influence on impulsive buying behaviour among consumers. This alignment across various studies lends strength and credibility to the notion that scarcity tactics wield a notable impact within the live streaming e-commerce landscape.

Scarcity tactics in live stream e-commerce shows insights into the influence of limited time, limited quantity, and price perception on consumer behaviour (Tang et al., 2022). The findings emphasise the significance of time scarcity in live stream e-commerce, where the limited duration of streaming sessions creates a unique environment for consumer decision-making (Du et al., 2023). The reviewed articles consistently demonstrate that time pressure induces urgency, prompting impulsive tendencies and quick decision-making among consumers. The psychological impact of limited time on consumers is evident in heightened emotional responses and a desire for competitiveness, emphasising the effectiveness of leveraging scarcity persuasion techniques in shaping consumer behaviour within the dynamic environment of live streaming platforms (Qu et al., 2023).

Furthermore, the exploration of limited quantity as a scarcity tactic in live stream e-commerce shows its positive impact on consumer purchasing intention. The restriction on product availability not only increases the perceived value of the offering but also enhances consumers' willingness to make a purchase (Qu et al., 2023). The studies suggest that brands can strategically adjust quantity limits to induce urgency, leveraging the fear of missing out (FOMO). This tactic creates a sense of immediacy and exclusivity, which can significantly boost sales during live stream events. However, they also highlight

the potential redirection of customers to traditional channels for subsequent purchases, offering valuable insights for brands navigating live stream e-commerce (Qu et al., 2023).

The implications for brands include the ability to create excitement around product launches, thereby increasing engagement and driving higher conversion rates. Brands can use this tactic to manage inventory effectively, minimizing overstock and maximizing revenue (Qu et al., 2023). Additionally, limited quantity offers can help in building brand loyalty, as consumers who successfully purchase the limited items may feel a stronger connection to the brand.

For consumers, the adoption of limited quantity tactics can lead to enhanced shopping experiences by providing a sense of exclusivity and urgency (Qu et al., 2023). However, it also poses the risk of consumer frustration if they are unable to secure the desired product. This frustration can sometimes lead to negative perceptions of the brand if not managed properly (Qu et al., 2023).

Overall, the strategic use of limited quantity tactics in live stream e-commerce requires a balance between creating scarcity to drive demand and ensuring customer satisfaction to maintain a positive brand image. By carefully managing this balance, brands can harness the power of scarcity to enhance their marketing efforts and achieve greater success in the competitive e-commerce landscape.

Price perception as a scarcity tactic introduces another dimension to the analysis. While the impact of price perception in live streaming e-commerce is still emerging, the reviewed articles also consistently demonstrated that price promotional tactics, such as bundle offers or discounts, can have strong links to impulsive buying (Lo et al., 2022). The ability of live streamers to create the illusion of price scarcity accelerates demand and encourages viewers to buy sooner (Lo et al., 2022). This strategic manipulation of price perception within the limited stream-time further supports the role of pricing in influencing impulsive buying behaviours. Collectively, these findings suggest a strong relationship between scarcity

tactics and impulsive buying in live stream e-commerce. The interplay between limited time, limited quantity, and price perception creates an engaging purchasing environment, where consumers are driven by the fear of missing out on exclusive deals or time-limited offers. Understanding these aspects of live streaming e-commerce is crucial for both academics and marketers to navigate and utilise opportunities presented by live stream e-commerce successfully. The systematic review not only identifies individual factors but also highlights the interconnectedness of these scarcity tactics in shaping consumer behaviour during live streaming events.

Celebrity effect in live stream e-commerce, emphasises the profound impact of celebrity influencers on consumer impulsivity toward purchases (Yan et al., 2023). The results of this systematic literature review demonstrate significance of celebrity credibility and trust as two distinct dimensions within the celebrity effect, contributing to an understanding of how celebrities influence consumer behaviour in the context of live stream e-commerce (Yan et al., 2023). Celebrity credibility is the perceived expertise and consistent endorsements, alongside the trust cultivated through emotional connections and social proof, significantly drives impulsive buying decisions. The interactive and engaging nature of live streams, combined with the charismatic appeal of celebrities, creates an emotionally charged environment that fosters immediate purchasing actions (Yan et al., 2023). The findings show that celebrities influence consumer behaviour in live stream e-commerce, highlighting the impact of celebrity credibility on customer engagement, and impulsive buying tendencies in consumers during live stream e-commerce events (Yan et al., 2023).

Gaining an understanding of this theme is important for businesses and marketers seeking to leverage the celebrity effect when designing or implementing a live stream. This dynamic not only enhances consumer engagement but also offers brands strategic advantages by reaching targeted demographics and differentiating products in a competitive market. Understanding and leveraging the celebrity effect can effectively enhance marketing strategies in the burgeoning field of live stream e-commerce (Yan et al., 2023).

Celebrity credibility in live stream e-commerce is a pivotal role in interactive marketing, as consumers rely on the perceived credibility of celebrity influencers to navigate through marketing messaging and recommendations (Yan et al., 2023). The findings reveal that when consumers perceive a celebrity as credible, it significantly influences their decision-making process, leading to a higher likelihood of incorporating the celebrity's endorsement or recommendation into their choices (Luo et al., 2024). This aspect becomes particularly crucial in live stream e-commerce, where the immersive nature of the platform can enhance the impact of celebrity credibility on consumer behaviour. The study by Luo et al. (2024) further assesses the mediating role of celebrity credibility on impulsive buying behaviours, emphasising the relationships that form the foundation of consumer behaviour within the interactive marketing in live stream e-commerce.

The theme of celebrity trust is another a critical factor influencing consumer decision-making in the context of live stream e-commerce. The literature emphasises the importance of trust as a mitigating factor against perceived risks, reducing consumers' apprehension about opportunistic behaviour (Yan et al., 2023). The definition of trust provided by Yan et al. (2023) underscores the psychological aspect involved in consumer perceptions of influencer advertising. The perceived trust that consumers place in live stream e-commerce becomes a pivotal factor influencing their decisions to make online purchases (Yan et al., 2023). This relationship between trust, consumer perceptions, and the success of influencer-driven marketing strategies highlights the complex yet integral nature of the celebrity effect in live stream e-commerce.

Customer engagement in live stream e-commerce can heighten their emotional and behavioural responses to the live stream. The study by Luo et al. (2024) demonstrated the role of customer engagement and the link between social-relationship-based online communities, resulting in impulsive purchasing behaviour. The tone used by streamers is identified as a potential trigger for excitement among customers, leading to a higher emotional response, increased engagement, and impulsive tendencies (Luo et al., 2024). In

addition to customer engagement, perceived enjoyment among consumers engaging in live stream activities was another significant driver for consumer participation (Lin et al., 2023). Entertainment within live stream e-commerce is thought to evoke positive cognitive and affective advertising values (Lin et al., 2023). The interactive and entertaining nature of live streaming, coupled with lively presentations and a diverse range of showcased products, creates an environment that is perceived as enjoyable among consumers (Lin et al., 2023). As consumers get enjoyment from the content of the live stream, they are more inclined to make impulsive purchases.

Lastly, interactivity was another identified theme that plays a crucial role in live stream e-commerce, particularly highlighted in the study by Lin et al. (2023). The research identifies a growing trend in consumers be less satisfied with conventional shopping methods, leading consumers to shift their interests towards more interactive avenues, such as live stream e-commerce. The findings validate that interactivity is a substantial factor influencing both the psychological responses of consumers and their likelihood of engaging in impulsive purchases throughout the live streaming shopping experience.

The evidence synthesised in our systematic literature review demonstrates the role of scarcity tactics as a marketing technique, providing brands with invaluable tools and insights to strategically target consumer groups and influence their purchase decisions. The identified themes in this review are all linked to impulsive buying in consumers. The conceptual framework that was created demonstrates the link between identified themes and their direct impact on consumers' impulsive buying behaviour. These identified themes are interconnected, and when used concurrently, they increase the chances of impulsive buying among consumers. For example, when the host is a reputable celebrity, this will trigger the celebrity effect on consumers. If the host is entertaining, it will further increase the engagement and interactivity of the consumer. All these aspects were identified as marketing techniques that increase impulsive buying. Therefore, it is important for marketers to assess this as a strategy and use multiple

themes together to increase their chances of creating an impulsive buying environment in their digital stream.

The recognition of the effectiveness of scarcity tactics in influencing consumer behaviour opens avenues for marketers to make targeted and impactful strategies in the rapidly developing area of live stream e-commerce. Furthermore, this systematic review not only identifies the prevalence of scarcity tactics but also contributes to a deeper understanding of how these themes can operate within the live streaming context. The insights gathered from the literature reviewed can guide marketers in tailoring their approaches to align with the distinctive features of live stream e-commerce, ultimately creating more effective engagement with consumers and increasing their impulsive buying tendencies. As live streaming continues to shape the e-commerce landscape, the knowledge gained from this review serves as a valuable resource for researchers, marketers, and businesses seeking to navigate and capitalise on the opportunities presented by this emerging form of digital commerce.

8.1 Theoretical implications

There are several theoretical implications arising from this systematic literature review. Firstly, the synthesis of live stream e-commerce literature conducted in this systematic review explores scarcity tactics and impulsive buying behaviour within live stream e-commerce. The review identifies overlooked areas in live stream e-commerce and proposes specific future research directions. The emergence and development of live stream e-commerce are reshaping how consumers engage with brands and make online purchases. Exploring the future research avenues suggested by this review will further expand the body of knowledge surrounding live stream e-commerce. In summary, this review makes a substantial contribution to the live stream e-commerce literature. The findings of this study should be considered in the light of several important limitations. There might be a publication bias, which could have led to an overrepresentation of studies that reported the significance of impulsive buying and scarcity tactics in live streaming e-commerce. The analysis presented is restricted to literature that was reported in the identified

studies. It considered only those that were published, written in English, peer reviewed and within a specific ranking according to the ABDC grading system that were available on the online databases that were searched for articles. The outcome of this review, which identified impulsive buying behaviour and scarcity tactics in live streaming e-commerce, meaning that studies that were excluded from this review could have missed articles that found other significant results on scarcity tactics and impulsive buying in live stream e-commerce. The impact of the bias of publications could mean that our findings are skewing the overall picture of the ability to influence shoppers purchasing decisions with marketing tactics.

This systematic review makes a substantial contribution to the literature by providing a comprehensive overview of identified scarcity tactics and their influence on impulsive behavior within live streaming e-commerce. The review identifies overlooked areas in live stream e-commerce and proposes specific future research directions. The emergence and development of live stream e-commerce are reshaping how consumers engage with brands and make online purchases. Exploring the future research avenues suggested by this review will further expand the body of knowledge surrounding live stream e-commerce.

8.2 Practical implications

This systematic literature review also offers practical implications for brands, marketing managers, influencers, and advertisers interested in conducting live streaming. The research supports decisions that should be investigated to achieve profitability if it aligns with their brand goals. First, this review identified specific scarcity factors and impulsive buying factors. The scarcity factors include tactics related to time, quantity, and perceived price, while the impulsive buying factors encompass celebrity endorsement, entertainment, and perceived enjoyment. Recognising these factors and their links to consumers making impulsive decisions will enable practitioners to incorporate them when designing a live stream e-commerce plan. The review critically discusses current identifiable tactics and impulsive behaviour as presented in academic literature. It reveals that scarcity tactics positively influence impulsive buying behaviour, emphasising that impulsive buying in live stream e-commerce is driven by factors

beyond scarcity-induced tactics. Consequently, the literature on live stream e-commerce is still evolving and remains highly understudied, considering that the platform emerged as a form of s-commerce only in 2015. Despite its relative novelty, numerous global brands are exploring it as a marketing tool, justifying the necessity for a synthesised literature review to comprehend the current landscape of live stream e-commerce. Thus, this review not only presents a widely employed theory but also highlights contextual factors found in the literature. To our knowledge this work presents the first systematic literature review on scarcity tactics and impulsive buying in live stream e-commerce. Thirdly, this review synthesises the theoretical perspectives employed in previous studies on live stream e-commerce, specifically emphasising the development of the SOR (Stimulus-Organism-Response) framework within this context. This research effort significantly contributes to strengthening the theoretical foundation of the live stream e-commerce literature. The themes identified in the research can be manipulated by marketers to carefully design their live stream e-commerce, utilising scarcity and impulsive buying methods. For example, the characteristics of hosts in live streams, such as celebrity credibility or higher trust in celebrities, will play a critical role in encouraging viewer consumption and impulsive purchases (Yan et al., 2023;(Luo et al., 2024). Therefore, businesses can strategically choose their hosts to attract the right audience, facilitating audience engagement and encouraging impulsive buying behaviour (Yan et al., 2023). In the context of live stream e-commerce, marketers aiming to enhance scarcity tactics in their streams must identify implementable strategies to encourage impulsive purchasing. As revealed in this systematic review, the most reviewed and identified methods for achieving this involve creating a sense of limited time, limited quantity, and manipulating price perception. However, it is important to note that not all businesses and business types have yet engaged with live streaming e-commerce. This review reflects on the scarcity tactics and factors that influence impulsive buying and capture in live stream audiences when these factors are implemented. However, we are yet to understand this link to different business and the products they sell. Another extension to this point is to ask, do these scarcity tactics only work across businesses with low-value products (e.g., clothing, make up) as opposed to high value products (e.g., cars, art).

8.3 Future research

This systematic literature review offers a comprehensive overview of identified scarcity tactics and their influence on impulsive behaviour within the realm of live streaming e-commerce. The review underscores the significance of brands strategically utilising these tactics to enhance impulsive buying, as the overall profitability of live streaming e-commerce hinges on their effective implementation. Additionally, the review explores other factors within live streaming e-commerce that positively impact consumers' impulsive purchases. Despite these insights, further research is deemed imperative particularly in under-explored areas, given the limited existing studies on live streaming e-commerce as an emerging form of s-commerce. Notably, existing research predominantly concentrates on Asian settings, necessitating a deeper understanding of cultural variances between Asian and Western contexts. Such differences may lead to distinct tactical approaches in encouraging impulsive buying or deploying scarcity tactics. Another critical area for examination revolves around the global rise of live streaming, urging an exploration of the sustained effectiveness of scarcity tactics on consumer purchasing decisions. As live streaming becomes a ubiquitous channel for information consumption and online shopping, the evolving consumer response and potential diminishing novelty warrant marketers' exploration of innovative approaches to stand out and stimulate consumer purchases. While live stream e-commerce has gained notable attention in specific industries, particularly in the realms of clothing and makeup, its exploration across various sectors remains underdeveloped. Future research should extend the investigation beyond these commonly explored industries, delving into how live stream e-commerce can be applied to different product categories. This avenue of research holds immense potential, providing an opportunity to understand the dynamics of live stream e-commerce in diverse contexts. For instance, it could investigate how scarcity tactics may vary or what proves more effective in promoting high-ticket items. Exploring these uncharted territories will not only contribute to a more comprehensive understanding of live stream e-commerce but will also offer valuable insights for businesses and marketers across a broader spectrum of industries.

9. Chapter 9 - Conclusion

Due to the rapid development within the live stream e-commerce landscape, this systematic literature review aimed to identify and comprehensively explore the interconnected themes of scarcity tactics and impulsive buying behaviour prevalent in existing live stream literature. The prominence of impulsive buying tendencies and scarcity techniques within the domain of live stream e-commerce has not only gained scholarly recognition but has also become an area of increasing interest. This review, therefore, goes beyond recognising these patterns and offers a set of implications for marketers aiming to design effective live streams that strategically leverage scarcity and impulsive buying behaviour. For businesses seeking to amplify impulsive buying in the live stream e-commerce environment, employing scarcity tactics is imperative. These tactics include introducing limited time offers, restricting product quantities, and incorporating price perception deals within the live stream. Such strategies aim to evoke emotional responses, specifically the fear of missing out, among consumers, consequently leading to heightened impulsive purchasing in live stream e-commerce. Given the distinctive nature of live stream e-commerce compared to traditional e-commerce and social commerce; this review identifies the critical factors pivotal in designing successful live streams for brands. By delving into the dynamics of scarcity tactics and impulsive buying, this systematic literature review not only provides valuable insights for scholars but also equips marketers with actionable strategies to navigate and capitalise on the unique features of live stream e-commerce.

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