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The role of elaboration likelihood model in consumer behaviour research and its extension to new technologies: A review and future research agenda

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Abstract

During the last decade, research on new technologies such as virtual reality and augmented reality in the context of marketing has gained notable attention from the marketing researchers. Researchers are trying to understand consumer behaviour with the aid of new technologies, but only a few consumer behaviour theories are being used in the context of marketing, for example, theory of planned behaviour, self-determination theory, technology acceptance model, uses & gratification theory and innovation diffusion theory. These theories can successfully predict consumer's motivation, behavioural intentions and technology adoption. However, they are unable to explicate the effectiveness of promotional messages and content marketing on consumer's change in attitude and decision making. Surprisingly, theories that are actually capable to do so, for example, elaboration likelihood model (ELM), have been overlooked by the researchers. This could be because classical theories are unable to comprehend the new technologies, and hence, it is pertinent to enhance the spectrum of the classical theories. Therefore, the goal of this theory-based systematic literature review is to assess the ELM literature to address the existing research gaps in the marketing literature. The research string used in this study was developed by using Boolean operators to search databases, and Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework was adopted to increase the efficiency of the searching process. A total of 762 suitable articles were considered for the initial screening, however, only 68 articles met the inclusion criteria and were included in the study. These articles were analysed to propose future research agenda by including the under-looked constructs and theories.

KEYWORDS

attitudinal change, augmented reality (AR), consumer behaviour, decision making, elaboration likelihood model (ELM), systematic literature review (SLR), theory-based review, virtual reality (VR)

1 | INTRODUCTION

The research on consumer behaviour constitutes a cornerstone of marketing practices (Dimanche & Havitz, 1995; Furaiji & Łatuszyńska, 2012). Recently, new technologies such as virtual reality (VR) and augmented reality (AR) have gained important traction in the field of marketing (Hinsch et al., 2020; Van Kerrebroeck et al., 2017). Researchers are trying to understand

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consumer behaviour with new technologies, but very few consumer behaviour theories are being used in the context of marketing (Dwivedi et al., 2020; Loureiro et al., 2019). Some of the theories that are generally used to address consumer behaviour are: theory of planned behaviour (Gabisch, 2011), self-determination theory (Huang et al., 2016), technology acceptance model (Herz & Rauschnabel, 2019; Huang et al., 2016; Li & Chen, 2019), uses & gratification theory (Ghazali et al., 2019a, 2019b; Kim et al., 2020; Rauschnabel, 2018; Rauschnabel & Krey, 2018) and innovation diffusion theory (Kim et al., 2020). These theories have been successful in predicting consumer's motivation, behavioural intentions and technology adoption. However, they fail to explicate the effectiveness of promotional messages and content marketing on consumer's change in attitude and decision making. Therefore, these research gaps still exist in the marketing literature related to the new technologies (Boyd & Koles, 2018; Dwivedi et al., 2020; Jung et al., 2018; Kim & Wang, 2018; Moreau et al., 2018; Pantano, 2018; Rauschnabel et al., 2019).

Recently, academicians have highlighted the lack of theory-based research in the context of new technologies and marketing (Dwivedi et al., 2020; Loureiro et al., 2019). Although several theories have been adopted in the field of marketing to study consumer behaviour, none of them is currently being used with new technologies. Some examples of these theories are: cognitive dissonance (Festinger, 1957), classical conditioning (Staats & Staats, 1958), cognitive response (Greenwald, 1968), the mere-exposure effect (Zajonc, 1968), information integration (Anderson, 1971), self-perception (Bem, 1972), expectancy-value (Fishbein & Ajzen, 1975), elaboration likelihood (Cacioppo & Petty, 1984), the use of heuristics (Chaiken, 1987) and affective priming (Murphy & Zajonc, 1993). One of the major reasons for the lack of theoretical research is that the new technologies are highly complex in nature, and the classical theories are unable to comprehend those technologies (Fischer et al., 2018). Thus, it is pertinent to enhance the spectrum of the classical theories so that they can be used effectively with the new technologies (Fischer et al., 2018).

Most of the above-mentioned theories focus on either higher or lower cognitive processing separately, but the elaboration likelihood model (ELM) is a unified model that deals with both the aspects simultaneously (Petty & Brinol, 2012), making it the most frequently cited theory in the marketing literature (Kerr et al., 2015). Most importantly, several researchers consider ELM as the most popular and widely used model in social psychology, consumer behaviour and decision-making studies (Cook et al., 2004; Stephenson et al., 2001; Teng et al., 2014, 2015; Verweij et al., 2015). Hence, ELM has the potential to address the critical research gaps that exist in the marketing literature.

Despite the importance of ELM in terms of its robustness in explaining consumer behaviour, there has been a paucity of efforts in extending the theoretical perspective of ELM with the new technologies. This research attempts to identify and connect the missing links in consumer behaviour studies with the new technologies by proposing future research agenda (propositions are presented at the end). We adopted a systematic literature review (SLR) approach to identify the critical research gaps by discussing the extant research in detail (Hao et al., 2019; Kumar et al., 2019). Thereafter, we propose future research agenda that could lead to a deeper understanding of consumer behaviour, and hence, enrich the field of marketing. Specifically, the current study employs a theory-based review according to the guidelines presented by Paul and Criado (2020), and several other classical theory-based reviews (see Gilal et al., 2019; Kozlenkova et al., 2014; Paul & Rosado-Serrano, 2019). This paper has five sections: the first section deals with the description of ELM; the second section discusses an impact of new technologies in the field of marketing, and identifies the research gaps within the literature of new technologies; the third section highlights the methodology to search and examine the literature of ELM; the fourth section presents an overview of all the articles and finally, the fifth section proposes the future research agenda along with the discussion.

2 | ELABORATION LIKELIHOOD MODEL

The elaboration likelihood model has dual routes that explain the reception and processing of a message through a communication medium and highlight the subsequent changes in the attitude of a person (Petty & Cacioppo, 1986). The main purpose of this model is to consider all the elements of a message since different people have different moods, abilities and motivations. Sometimes people do not see a complete message, or carefully think about it, and explore all of its contents before making a decision (Petty & Cacioppo, 1984a, 1986). Therefore, this model helps in constructing a persuasive message to target the consumers by taking their abilities and motivations into consideration (SanJosé-Cabezudo et al., 2009).

Petty and Cacioppo (1986) proposed the elaboration continuum after analysing the different types of information and its processing by individuals. They labelled one end of the continuum as the peripheral route which leads to low elaboration processing by the message recipients (Teng et al., 2014). The peripheral route ensues when a person is not motivated or does not have the ability to process a message. It follows cue-based judgements that are backed by emotions and visual attractions (Kerr et al., 2015). The constructs that influence the peripheral route processing are source credibility, attractiveness of source and number of arguments, along with any other construct associated with emotions and visual attraction, or an analogous variable suitable for the technological medium (Liang & Lin, 2018; Petty & Cacioppo, 1986; Teng et al., 2014). Attitudinal changes through the peripheral route are often short term, inconsistent and unpredictable of behaviour (Chang et al., 2015).

Petty and Cacioppo (1986) named the other end of the continuum as the central route. It ensues when a person is motivated and has the ability to process and analyse a message. Individuals with high elaboration likelihood follow the central route. In this scenario, an individual's attitude changes on the basis of detailed information processing through a cognitive/rational approach. The constructs influencing the central route processing are information

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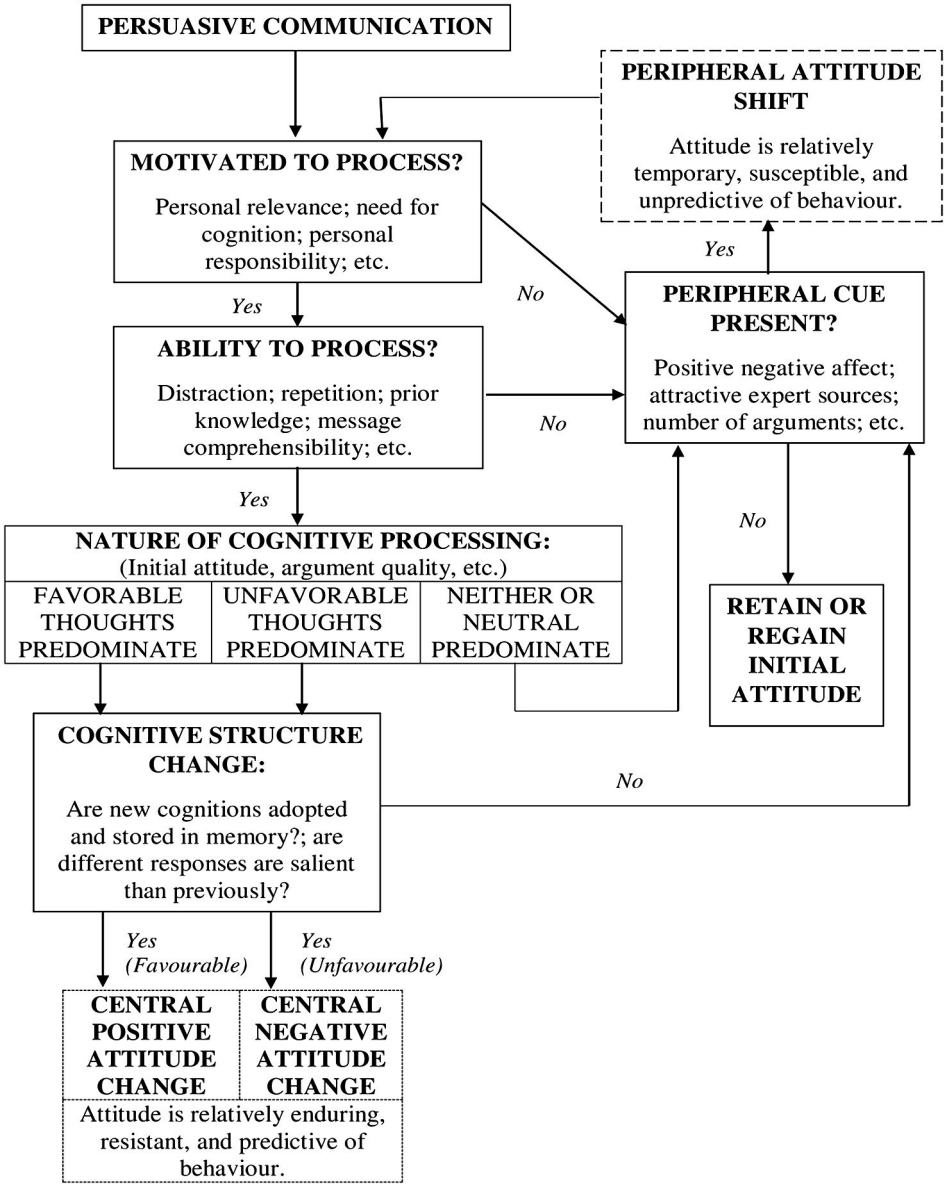

FIGURE 1 Schematic depiction of ELM adopted from Petty and Cacioppo (1986)

quality, argument quality and other appropriate variables in accordance with the technological medium (Liang & Lin, 2018; Petty & Cacioppo, 1986; Teng et al., 2014). Attitudinal changes through the central route are often long term, consistent and predictive of behaviour (Chang et al., 2015).

Another important aspect of ELM is to study the moderating role of 'elaboration likelihood' that determines an individual's abilities and motivations. As discussed earlier, individuals with low elaboration likelihood take the peripheral route and those with high elaboration likelihood take the central route (Chang et al., 2015). Due to this reason, researchers can also study the moderating role of elaboration likelihood to predict an individual's abilities and motivations rather than using a complete ELM (see Lee & Kim, 2016; Withers et al., 2002). The constructs that can measure the moderating role of elaboration likelihood are personal relevance, need for cognition, personal responsibility and other suitable constructs according to the nature of the research (Petty & Cacioppo, 1986). The schematic depiction of ELM provided by Petty and Cacioppo (1986) is given in Figure 1.

3 | NEW TECHNOLOGIES IN THE CONTEXT OF MARKETING

The advent of modern technologies has enabled marketers to align their marketing strategies according to the technological shifts in order to attract, satisfy and retain customers (Colby, 2016). The last decade was largely dominated by social media marketing (Infinitdatum, 2015), but recently, a substantial potential has been observed for virtual or augmented reality marketing (Dwivedi

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et al., 2020; Jung et al., 2016). Facebook founder, Mark Zuckerberg, highlighted the importance of VR and AR in 2014 by stating that 'every 10 or 15 years, there's a new major computing platform … And now we're starting to get ready for the platforms of tomorrow … When you put on their goggles, you enter a completely immersive computer-generated environment, like a game, or a movie scene …' (Yung & Lattimore, 2017, p. 1). Nonetheless, there is a significant difference in both the technologies: VR is a completely computerized environment, whereas, AR is the projection of a computerized environment on the real physical world (Dwivedi et al., 2020). Therefore, the impact of both technologies in the context of marketing is discussed separately.

3.1 | Virtual reality marketing

Virtual reality is not a new technology for the 21st century. It was first described as 'stereopsis' in 1838 by Sir Charles Wheatstone (Barnard, 2019). It was also referred as 'cyberspace', 'synthetic environment', 'simulator technology' and 'artificial reality' before getting its final name 'virtual reality' in the mid-1980s (Onyesolu & Felista, 2011). In the early years of the 21st century, it existed as desktop VR that was also known as 'non-immersive VR' or 'window on world' (WoW). This desktop VR played a significant role in promoting the technology by providing VR experience that was not fully immersive, required less technological expertise, and most importantly, it was cheap. Because of these positive aspects, organizations wholeheartedly accepted it as a tool to train and develop the employees (Onyesolu, 2009a, 2009b). After receiving enormous success in training and developmental programmes, VR content creators introduced highly realistic and more immersive VR boxes that were named as 'head-mounted displays' (HMD) (Herz & Rauschnabel, 2019). Initially, HMDs were solely used for gaming and entertainment, but gradually, their usage broadened to marketing as well (Tussyadiah, 2014). Several businesses have shown a keen interest in the VR technology, hence, a lot of VR products are available in the market that are manufactured by Facebook, Sony, Samsung, Google and HTC (Yung & Lattimore, 2017). The usage of VR and its demand is increasing every day, and high-quality VR devices are now available at an accessible price (Lopez, 2016).

The researchers have also explored the usage of VR in several marketing fields like retail outlets and supermarkets (Krasonikolakis et al., 2018), virtual dressing rooms (Yaoyuneyong et al., 2018), product development processes (Manesh et al., 2011), creating revisit intentions (Wei et al., 2019) and generating a co-creation value between the customers and a company (Jung et al., 2017). A considerable number of organizations have also used VR for marketing purposes like Disney, Legoland Florida, Etihad Airways, Thomas Cook, New York Times, Viking City Waterford, British Museum, Europa Park, The Louvre Museum Virtual Tour, Marriot hotel and Australian VR Tour (Be there, 2017; Bevil, 2018; Hudson et al., 2019; Mbryonic, 2019b).

Despite of the tremendous efforts by the researchers, there are still some gaps in the literature of VR marketing. The most critical research gaps have been identified in research pertaining to changes in consumer's attitude and decision making through VR (Boyd & Koles, 2018; Kim & Wang, 2018; Moreau et al., 2018). Several other research gaps have been highlighted by Loureiro et al. (2019) in their literature review of 150 articles published in the context of VR marketing. For example, (a) S-O-R framework has been extensively used as a basic theoretical foundation, but very few consumer behaviour theories are employed in the extant literature, (b) researchers have sparsely explored the moderating and mediating role of constructs with VR, (c) lack of researches involving actual users as primary respondents and studies with big sample size, (d) lack of research on multi-sensory simulations and (e) lack of studies on technology-driven experience to measure psychological, emotional and cognitive dimensions.

3.2 | Augmented reality marketing

Augmented reality is not very old as compared with virtual reality. In 1968, Ivan Sutherland, an American scientist, developed the first head mounted display and named it 'Sword of Damocles'. The work of Sutherland opened the doors for further research and development of the upcoming technology. In 1990, Tom Caudell, a researcher from Boeing, gave this technology its current name 'augmented reality' (Blippar, 2018). The first immersive AR system for training was designed by the United States Air Force in 1992. AR was first introduced in the entertainment industry by an American writer-producer, Julie Martin in 1994, and NASA extended its usage for navigations in 1998. In the early 21st century, augmented reality was extensively adopted in games, sports, health, marketing and tourism (Blippar, 2018; Ghazali et al., 2019a; Poetker, 2019; Rauschnabel et al., 2019).

Apple CEO, Tim Cook, has described the future of AR by saying: 'I do think that a significant portion of the population of developed countries, and eventually all countries, will have AR experiences every day, almost like eating three meals a day. It will become that much a part of you'. He also stated 'AR is going to take a while because there are some really hard technology challenges there. But it will happen, it will happen in a big way, and we will wonder when it does, how we ever lived without it. Like we wonder how we lived without our phone today' (Raymundo, 2016). Because of this reason, several businesses have launched their own AR products like Apple, Google, Microsoft, North and Snapchat. Several other big companies such as Amazon, Facebook, Niantic and Qualcomm have also shown significant interest in the AR technology, and are in the development phase for their AR products (Technavio, 2020).

Marketing scholars have explored the enormous implications of AR in different fields like branding (Javornik, 2016; Rauschnabel et al., 2019), shopping centres (Olsson et al., 2013), retail (Heller et al., 2019), tourism (tom Dieck et al., 2018), online service experience (Hilken et al., 2017), analysing consumer spending behaviour (Rauschnabel et al., 2017) and studying customer satisfaction (Tsai, 2020). Several businesses have also used AR for marketing such

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as IKEA, BMW, Volkswagen, Audi, Lego, Vespa, Burger King, Strava, L'Oréal and U.S. postal service (Mbryonic, 2019a; Rauschnabel et al., 2019).

Despite the extensive research in the AR technology, there is a lack of research dealing with consumer's attitudinal changes (pre & post experience) and the repeated use of motivational theories. This has been argued by Rauschnabel et al. (2019) in their study where they wrote 'despite the important insights generated by previous research on AR, most studies have focused on attitudes, motivations or reactions toward the AR app' (p. 44). Furthermore, a recent narrative review of AR marketing published by Dwivedi et al. (2020) has also highlighted several important research gaps. Some of them are: (a) lack of research studying the effectiveness of promotional messages on consumer's purchase decision, (b) lack of research exploring the impact of content marketing on consumer behaviour and (c) lack of research understanding the reactions of consumers when their environments are continuously streamed, analysed and complemented by marketing messages.

4 | METHODOLOGY

The literature reviews are of different types (Paul & Criado, 2020). For example, structured reviews deal with widely used theories, constructs and methodologies (Dhaliwal et al., 2020; Rosado-Serrano et al., 2018). On the contrary, framework-based reviews deal with the usage of a specific framework to conduct reviews, for instance, ADO (antecedents, decisions and outcome) framework (Paul & Benito, 2018) or TCCM (theory, construct, characteristics and methodology) framework (Paul & Rosado-Serrano, 2019). The bibliometric reviews mainly focus on figuring out the trends and citations and/or co-citations for any specific research problem, method, theory, country, author or journal (Paul & Criado, 2020), for example, bibliometric analysis in the context of international business (Rialp et al., 2019). The hybrid reviews integrate frameworks to provide future research agendas (Kumar et al., 2019). Theory-based reviews deal with a specific theory in a particular domain or a specific research area (Gilal et al., 2019). Meta-analysis reviews provide detailed information about the findings and statistical tools used in previous researches (Frigerio et al., 2020; Knoll & Matthes, 2017).

This paper uses a theory-based review with a novel approach to extend the applications of a theory in the context of new technologies for addressing the existing research gaps in the marketing literature. The methodology was adopted from extant research (Gilal et al., 2019; Paul & Criado, 2020; Paul & Rosado-Serrano, 2019) to search databases like EBSCO, Emerald, JSTOR, SAGE, SCOPUS and Web of Science (WoS). We also searched Google Scholar to ensure that all the relevant articles were retrieved. Only papers published in high-quality journals with indexes in Social Science Citation Index/Sciences Citation Index (SSCI/SCI), and having an impact factor greater than 1 were included in the study. Since the initial version of ELM was published in 1984 (Cacioppo & Petty, 1984; Petty & Cacioppo, 1984a), the time period for this review was selected from 1984 to 2019. ELM is a basic marketing theory that not only deals with the persuasive/advertising message, but it can also be used in diverse research areas other than marketing (Jones et al., 2006). Therefore, articles from research areas other than marketing were also included in the study.

The research string was developed by using Boolean operators (Boland et al., 2017) to search for articles that had these specific key terms in either of their title, abstract or keywords *'(elaboration likelihood model OR ELM) AND (marke* OR advertis* OR consumer behavi*) AND (persuasi* model OR persuasi* communication)'*. In this string, 'or' denotes that one of the terms must be available, either 'elaboration likelihood model' or 'ELM'. The word 'and' indicates that both of the terms must be available, for example, articles having 'ELM' and 'marketing' in their text. The symbol * represents a wildcard pattern that can search for multiple terms. For example, advertis* represents advertising, advertisement and advertise(d). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2010) was used to increase the efficiency of our searching process (Figure 2).

A total of 762 suitable articles were considered for the initial screening, however, 93 of them were found to be duplicates, and had to be excluded from the screening. Hence, the initial screening was conducted on a total of 669 articles. During the initial screening, only those articles were selected which were published in peer-reviewed journals, and had the following key terms in either article's title, abstract or keywords: (a) advertising or marketing or persuasion, (b) argument/information quality or central route and (c) source credibility or peripheral route. A total of 571 articles were excluded during the initial screening. The remaining 98 articles were analysed thoroughly on the basis of the following eligibility criteria: (a) a link between the variables/stimuli was hypothesized and tested, (b) quantitative research design was used and described in the methodology section, (c) articles that were written in the English language and (d) articles published in a journal of impact factor greater than 1. A total of 30 articles were further removed, and only 68 research articles met the outlined criteria for the study.

5 | OVERVIEW OF ARTICLES

This SLR has analysed research articles in terms of the country of research, methodology, research area, communication medium, variables/stimuli and the use of other theories along with ELM.

5.1 | Publication outlets

Table 1 presents the list of all articles included in this study along with the publishing journals and their impact factors. Computers in Human Behaviour published six articles, followed by Psychology & Marketing with five articles. Journal of Business Research and Journal of Consumer Psychology published four articles each, while Journal of Computer Information Systems published three articles.

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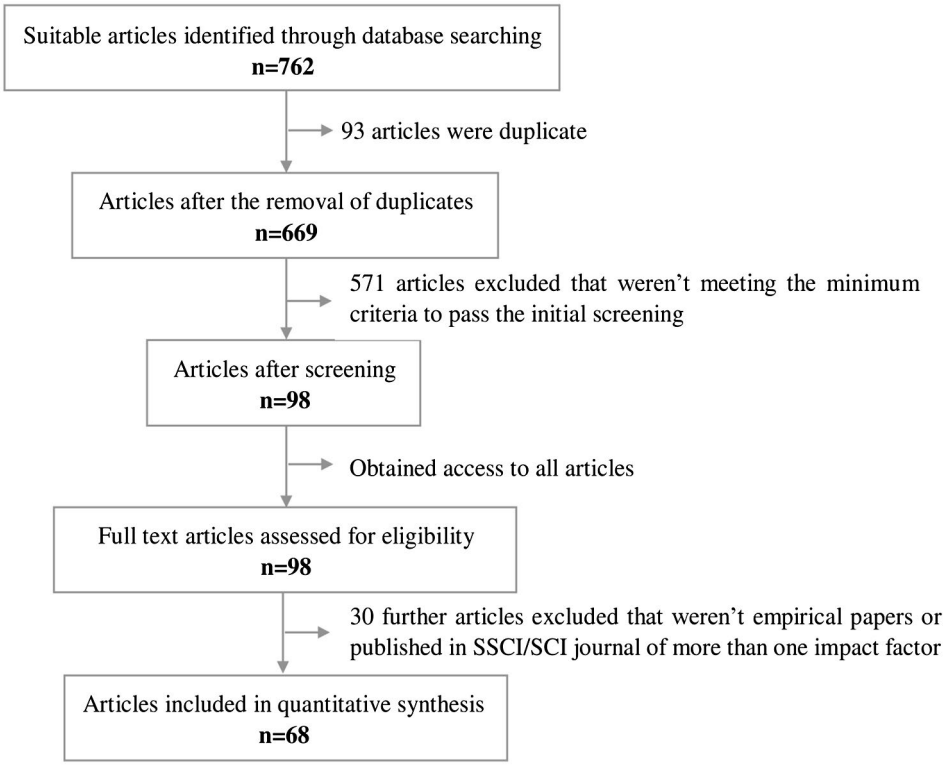

FIGURE 2 PRISMA framework

Other journals that have published either 1 or 2 articles each are also listed in Table 1. The publishing trends over time are given in Table 2. Only eight articles were published from 1984 to 2001, but the trend changed over time which resulted in the publication of 60 articles during 2002–2019.

A marked shift in researcher's preferences in terms of selecting a journal has also been observed with the passage of time. Four articles were published in psychology-related journals during 1984–1992, not a single article was published in information technology (IT)-related journals during that time period. However, after the IT sector boom, this publishing trend shifted from psychology-related journals to information technology-based journals. During 2011–2019, 21 articles were published in IT-related journals and only three articles came out in psychology journals (see Table 3). Therefore, almost 40% of the articles were published in IT journals. The third category in Table 3 has been named as 'others' which represents articles published in business, health, education and environment-related journals.

5.2 | Influential articles

Table 4 presents the top 10 cited papers that are considered the most influential research papers. Petty and Cacioppo's (1984b) research paper dealing with the impact of involvement on central and peripheral routes is the most cited paper with 2,254 citations, followed by Park et al. (2007) with 2,092 citations, and Bhattacherjee and Sanford (2006) with 1,182 citations. Furthermore, we calculated citations per year by dividing the total number of citations a paper has accumulated till the current year (2020) by the number of years it has been published. For example, 2,254 citations of Petty and Cacioppo (1984b) were calculated as 2,254/(2,020–1,984) = 62.6. Interestingly, Park et al. (2007) research is the most influential article with the maximum number of citations per year (160.9), followed by Angst and Agarwal (2009) with 92.1, and Bhattacherjee and Sanford (2006) with 84.4 citations per year.

5.3 | Research context

Table 5 highlights the prominent research context for ELM publications. We have classified the articles on the basis of their primary research area. For example, a publication in the health sector is classified as a health research context. In our reviewed articles, marketing is the most prominent research context constituting 30 research articles. The second most frequently researched context is psychology, followed by education, health, tourism, human resource management (HRM), information technology, entrepreneurship and environment.

5.4 | Research methodology

In this subsection, we have used the term 'studies' rather than research articles, because several articles have conducted more than

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TABLE 1 Journals disseminating ELM research

Journals	Impact factor	#	References
Computers in Human Behaviour	5.0	6	Gregory et al. (2013), Li (2013), Cao et al. (2017), Han et al. (2018), Zha et al. (2018), Wang et al. (2019)
Psychology & Marketing	2.37	5	Andrews and Shimp (1990), Areni et al. (2000), Yang et al. (2006), Trampe et al. (2010), Lee and Koo (2016)
Journal of Business Research	4.87	4	Dotson and Hyatt (2000), Sparks and Areni (2002), Matthes et al. (2014), Chang et al. (2015)
Journal of Consumer Psychology	2.95	4	Kirmani and Shiv (1998), Maoz and Tybout (2002), Priester and Petty (2003), Priester et al. (2004)
Journal of Computer Information Systems	1.58	3	Teng et al. (2017a, 2017b), Leong et al. (2019)
International Journal of Information Management	8.2	2	Wang and Doong (2010), Lu et al. (2019)
Journal of Personality and Social Psychology	6.3	2	Petty and Cacioppo (1984b), Briñol et al. (2007)
MIS Quarterly	5.37	2	Bhattacherjee and Sanford (2006), Angst and Agarwal (2009)
Decision Support System	4.7	2	Luo et al. (2013), Gu et al. (2017)
International Journal of Electronic Commerce	2.48	2	Park et al. (2007), Wang et al. (2009)
Behaviour & Information Technology	1.78	2	Lee (2012), Cho and Park (2014)
Psychological Reports	1.5	2	Chebat et al. (2003), Chatterjee and Hunt (2005)
Journal of Business Venturing	7.59	1	Allison et al. (2017)
Tourism Management	7.4	1	Tang et al. (2012)
International Journal of Hospitality Management	6.7	1	Kang and Namkung (2019)
Journal of Advertising	6.30	1	Coulter and Punj (2004)
Journal of Consumer Research	6.20	1	Malaviya (2007)
Technological Forecasting & Social Change	5.8	1	Yoo et al. (2017)
Information & Management	5.15	1	Cyr et al. (2018)
Environment and Behaviour	5.1	1	Manca et al. (2020)
Journal of Marketing Research	4.6	1	Macinnis et al. (2002)
New Media & Society	4.57	1	Lee and Kim (2016)
Social Psychological and Personality Science	4.38	1	Kredentser et al. (2012)
Telematics & Informatics	4.1	1	Kim, Chung, et al. (2016)
Journal of Travel & Tourism Marketing	4.09	1	Cheng and Loi (2014)
Electronic Commerce Research and Applications	3.82	1	Yang (2015)
Journal of Counselling Psychology	3.69	1	Heesacker (1986)
Studies in Higher Education	3.0	1	Zhang et al. (2019)
International Journal of Medical Informatics	3.0	1	Chen et al. (2018)
Journal of School Psychology	2.98	1	Andrews and Gutkin (1994)
Personality and Social Psychology Bulletin	2.96	1	Tormala and Petty (2004)
Journal of Psychosomatic Research	2.86	1	Withers et al. (2002)
PLOS One	2.7	1	Salerno et al. (2017)
Human Vaccines and Immunotherapeutic	2.6	1	Frew et al. (2016)
European Journal of Information Systems	2.6	1	Bansal et al. (2015)
Technology in Society	2.4	1	Wang and Yang (2019)
Journal of Marketing for Higher Education	2.37	1	Teng et al. (2015)
Journal of Advertising Research	2.3	1	Kerr et al. (2015)
Eating Disorders: The Journal of Treatment & Prevention	2.01	1	Withers and Wertheim (2004)
International Journal of Consumer Studies	1.53	1	Kim, Lee, et al. (2016)
Social Cognition	1.45	1	Tormala et al. (2007)
The Journal of Social Psychology	1.2	1	Gelinas-Chebat and Chebat (1992)
International Journal of Selection and Assessment	1.2	1	Jones et al. (2006)
International Journal of Sports Marketing and Sponsorship	1.1	1	Liang and Lin (2018)

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TABLE 2 Publishing trends 1984–2019

Year	Number of articles
1984	1
1986	1
1990	1
1992	1
1994	1
1998	1
2000	2
2002	4
2003	2
2004	4
2005	1
2006	3
2007	4
2009	2
2010	2
2012	3
2013	3
2014	3
2015	5
2016	5
2017	7
2018	5
2019	7

TABLE 3 Journal's selection trend

	Psychology	Information technology	Others[a]
1984–1992	4	0	1
1993–2001	3	0	1
2002–2010	9	5	7
2011–2019	3	21	14

[a]Others categorized as business, health, education and environment-related journals.

one study (see Table 6). Table 6 provides the list of articles according to the most frequently surveyed countries, selected population and methodology used for data collection. The data in the selected articles were collected from 13 different countries, with the USA constituting a total of 40% of all the studies. China and Taiwan together constituted a total of 28% of the studies. Rest of the studies were conducted in Korea, Canada, Australia, Malaysia, Spain, Ukraine, France, Italy, Netherlands and Singapore.

Furthermore, we divided the selected population into two broad categories: students and others (consumers, employees or actual users). Regardless of the vast categorization of 'others', its usage is still less as compared with students, as 60% of the studies have used students as their main respondents. One of the main reasons for collecting data from students could be the nature of ELM that considers technology & its persuasive impact on consumers, as it is evident that the younger generation is generally more interested in technology (eMarketer, 2015).

This SLR found that most of the articles used experimental and survey-based research designs, 61% and 35%, respectively. The remaining studies were performed using a mixed approach (see Table 6). A transition in the methodologies used along with ELM has also been observed over time. While the researchers previously preferred factorial design experimentation, the trend now a days has shifted to survey design (see Table 7).

6 | DISCUSSION AND SUGGESTIONS FOR FUTURE RESEARCH

This section was designed according to several previous reviews (Paul & Benito, 2018; Rosado-Serrano et al., 2018) to develop suggestions for future research by discussing the extant literature. While ELM has been studied extensively for more than three decades, there is still a lack of SLRs on ELM (Teng et al., 2014). The motivation of this research was to summarize the ELM literature in order to propose future research agenda for addressing the research gaps in the marketing literature with respect to the new technologies.

6.1 | Consumer behaviour

The articles reviewed by us have done a breakthrough contribution in the marketing literature to understand consumer behaviour through advertising or persuasive messages via different communication mediums. For example, computer-related mediums (web sites, e-brochures, videos and online reviews) are widely used with ELM that constitutes a total of 44%. Printed media has been used in 22% of the articles, and rest of the articles have used different mediums like mobile technology, social media, television commercials and others, as given in Table 8. Moreover, few of the articles have used different techniques using trainers and mock trials to study the impact of persuasion on consumer behaviour.

Consumer behaviour in terms of attitude, intention, loyalty, satisfaction and decision making has been generally explored in the reviewed articles (see Table 9). Interestingly, the most commonly used dependent variable in the ELM studies is 'attitude'. However, several researchers have also used 'intention' as a dependent variable because intentions develop as a result of consumer's attitude, and intentions guide consumer behaviour (Fishbein & Ajzen, 1975). The elaboration likelihood model features central and peripheral routes, moderating effect of elaboration likelihood and changes in customer attitude (see Figure 1). Human beliefs transform over time: their likes, dislikes, views and opinions are shaped by the external environment including the experience of innovative information

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TABLE 4 The 10 most influential articles

References	Total Citation[a]	References	Citations per year[b]
Petty and Cacioppo (1984b)	2,254	Park et al. (2007)	160.9
Park et al. (2007)	2,092	Angst and Agarwal (2009)	92.1
Bhattacherjee and Sanford (2006)	1,182	Bhattacherjee and Sanford (2006)	84.4
Angst and Agarwal (2009)	1,013	Petty and Cacioppo (1984b)	62.6
Priester and Petty (2003)	403	Chang et al. (2015)	52.8
Andrews and Shimp (1990)	362	Priester and Petty (2003)	23.7
Yang et al. (2006)	268	Briñol et al. (2007)	20.4
Briñol et al. (2007)	265	Yang et al. (2006)	19.2
Chang et al. (2015)	264	Maoz and Tybout (2002)	12.3
Maoz and Tybout (2002)	221	Andrews and Shimp (1990)	12.1

[a]Based on Google Scholar (November 16, 2020).

[b]Total citations divided by current year (2020) minus the publishing year.

TABLE 5 Research context studied using ELM

Research context	#	References
Marketing	30	Andrews and Shimp (1990), Gelinas-Chebat and Chebat (1992), Kirmani and Shiv (1998), Dotson and Hyatt (2000), Macinnis et al. (2002), Maoz and Tybout (2002), Sparks and Areni (2002), Priester and Petty (2003), Priester et al. (2004), Coulter and Punj (2004), Tormala and Petty (2004), Yang et al. (2006), Malaviya (2007), Park et al. (2007), Tormala et al. (2007), Wang et al. (2009), Trampe et al. (2010), Wang and Doong (2010), Luo et al. (2013), Chang et al. (2015), Yang (2015), Kerr et al. (2015), Lee and Koo (2016), Teng et al. (2017a), Liang and Lin (2018), Zha et al. (2018), Han et al. (2018), Leong et al. (2019), Lu et al. (2019), Kang and Namkung (2019)
Psychology	10	Petty and Cacioppo (1984b), Heesacker (1986), Areni et al. (2000), Chebat et al. (2003), Chatterjee and Hunt (2005), Briñol et al. (2007), Bansal et al. (2015), Gu et al. (2017), Salerno et al. (2017), Wang et al. (2019)
Health	8	Withers et al. (2002), Withers and Wertheim (2004), Angst and Agarwal (2009), Kredentser et al. (2012), Frew et al. (2016), Kim, Lee, et al. (2016), Cao et al. (2017), Chen et al. (2018)
Education	6	Andrews and Gutkin (1994), Lee (2012), Teng, Khong, and Chong (2015), Lee and Kim (2016), Teng et al. (2017b), Zhang et al. (2019)
Tourism	4	Tang et al. (2012), Cheng and Loi (2014), Kim, Chung, et al. (2016), Yoo et al. (2017)
HRM	3	Jones et al. (2006), Gregory et al. (2013), Li (2013)
Information technology	3	Bhattacherjee and Sanford (2006), Cho and Park (2014), Cyr et al. (2018)
Environment	2	Matthes et al. (2014), Manca et al. (2020)
Entrepreneurship	2	Allison et al. (2017), Wang and Yang (2019)

technology such as VR and AR. It is, therefore, necessary to study the initial attitude to arrive at an exact understanding of attitudinal changes in the consumers (Bhattacherjee & Premkumar, 2004; Petty & Cacioppo, 1986).

As discussed earlier, ELM is a dynamic model and researchers are also using it to study the decision-making behaviour of the consumers. Its central and peripheral routes deal with cognitive and emotional approaches, and it is also evident from the literature that decision making is based on the emotions and cognition of an individual (Verweij et al., 2015). Researchers have studied decision making in the context of audio recordings (Salerno et al., 2017), immunization (Frew et al., 2016), recruitment (Jones et al., 2006), peer-to-peer lending (Han et al., 2018), smart travel technologies and support satisfaction (Yoo et al., 2017), mobile purchases of tourist products or services (Kim,

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TABLE 6 Most frequently surveyed countries, selected population and methodology

Surveyed countries	#[a]	Selected population[a]	Methodology[a]	References
USA	29	Others[b]: 9 Students: 22	Experiment: 25 Survey: 4 Experiment and focus group: 1	Petty and Cacioppo (1984b), Heesacker (1986), Kirmani and Shiv (1998), Andrews and Shimp (1990), Andrews and Gutkin (1994), Areni et al. (2000), Dotson and Hyatt (2000), Macinnis et al. (2002), Maoz and Tybout (2002), Priester and Petty (2003), Priester et al. (2004), Coulter and Punj (2004), Tormala and Petty (2004), Chatterjee and Hunt (2005), Briñol et al. (2007), Malaviya (2007), Tormala et al. (2007), Angst and Agarwal (2009), Tang et al. (2012), Gregory et al. (2013), Matthes et al. (2014), Bansal et al. (2015), Kerr et al. (2015), Kim, Lee, et al. (2016), Frew et al. (2016), Lee and Koo (2016), Allison et al. (2017), Salerno et al. (2017), Cyr et al. (2018)
China	13	Others: 6 Students: 7	Experiment: 3 Survey: 10 Interview & survey: 1	Luo et al. (2013), Cheng and Loi (2014), Teng, Khong, and Chong (2015), Cao et al. (2017), Gu et al. (2017), Teng et al. (2017a, 2017b), Chen et al. (2018), Han et al. (2018), Zha et al. (2018), Zhang et al. (2019), Wang and Yang (2019), Wang et al. (2019)
Taiwan	8	Others: 4 Students: 5	Experiment: 5 Survey: 3	Yang et al. (2006), Wang et al. (2009), Wang and Doong (2010), Li (2013), Chang et al. (2015), Yang (2015), Liang and Lin (2018), Lu et al. (2019)
Korea	6	Others: 4 Students: 2	Experiment: 2 Survey: 4	Park et al. (2007), Lee (2012), Lee and Kim (2016), Kim, Chung, et al. (2016), Yoo et al. (2017), Kang and Namkung (2019)
Canada	5	Others: 1 Students: 4	Experiment: 4 Survey: 1	Gelinas-Chebat and Chebat (1992), Chebat et al. (2003), Jones et al. (2006), Kredentser et al. (2012), Cyr et al. (2018)
Australia	4	Students: 4	Experiment: 4	Sparks and Areni (2002), Withers et al. (2002), Withers and Wertheim (2004), Kerr et al. (2015)
Malaysia	3	Others: 2 Students: 1	Survey: 2 Interview & survey: 1	Teng, Khong, and Chong (2015), Teng et al. (2017b), Leong et al. (2019)
Spain	1	Students: 1	Experiment: 1	Briñol et al. (2007)
Ukraine	1	Others: 1	Survey: 1	Bhattacherjee and Sanford (2006)
France	1	Students: 1	Experiment: 1	Kerr et al. (2015)
Italy	1	Others: 1	Experiment: 1	Manca et al. (2020)
Netherlands	1	Others: 1	Experiment: 1	Trampe et al. (2010)
Singapore	1	Students: 1	Survey: 1	Cho and Park (2014)

[a]It exceeds the actual number because researchers have collected data from more than one country, population or methodology.
[b]Others mean consumers, employees or actual users.

TABLE 7 Change in methodology over time

	Experimentation	Survey
1984–1992	4	0
1993–2001	4	0
2002–2010	20	1
2011–2019	15	24

Chung et al., 2016) and backer's funding decisions (Wang & Yang, 2019). In the consumer research context, decision making consists of five stages: (a) identification of a problem, (b) information search, (c) evaluation of any alternatives, (d) selection of a product or a service and (e) outcome (Blackwell et al., 2006). In reality, a consumer cannot always employ a full cognitive approach to search for information and evaluate the alternatives. As reported by Simon (1955), human rationality is bound by either not having complete information or not having enough time. As a result, they use shortcuts to arrive at a decision regarding a product or a service (Gigerenzer & Gaissmaier, 2011), making ELM a suitable model for the study of decision making. The decision making in the context of new technologies can be of several types, for example, to purchase a product, to visit a tourist destination, to select a hotel or to purchase real estate. In order to address the previously mentioned research gaps, we propose the following proposition:

Proposition 1 *Central and peripheral routes, along with the initial attitude, will help in studying the effectiveness of promotional messages and content marketing on consumer's change in attitude and decision making.*

6.2 | Central & peripheral routes

It has been noticed that ELM is helpful in understanding consumer behaviour with all types of technologies. For example, recorded voice

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TABLE 8 Communication medium studied with ELM

Communication medium	#	References
Computer-related mediums like e-brochure, IT acceptance, video, online reviews, web site, social networking site, crowdfunding platforms, P2P lending platforms and so forth	30	Areni et al. (2000), Withers et al. (2002), Tormala and Petty (2004), Withers and Wertheim (2004), Yang et al. (2006), Briñol et al. (2007), Park et al. (2007), Tormala et al. (2007), Angst and Agarwal (2009), Wang et al. (2009), Trampe et al. (2010), Wang and Doong (2010), Lee (2012), Tang et al. (2012), Gregory et al. (2013), Luo et al. (2013), , Cheng and Loi (2014), Bansal et al. (2015), Yang (2015), Lee and Kim (2016), Allison et al. (2017), Cao et al. (2017), Teng et al. (2017a), Cyr et al. (2018), Han et al. (2018), Wang and Yang (2019), Wang et al. (2019), Kang and Namkung (2019), Leong et al. (2019), Manca et al. (2020)
Printed media	15	Andrews and Shimp (1990), Kirmani and Shiv (1998), Dotson and Hyatt (2000), Maoz and Tybout (2002), Chebat et al. (2003), Priester and Petty (2003), Coulter and Punj (2004), Priester et al. (2004), Chatterjee and Hunt (2005), Jones et al. (2006), Malaviya (2007), Kredentser et al. (2012), Matthes et al. (2014), Kerr et al. (2015), Lee and Koo (2016)
Mobile technology (Smartphone, tablet)	6	Cho and Park (2014), Kim, Chung, et al. (2016), Gu et al. (2017), Yoo et al. (2017), Chen et al. (2018), Lu et al. (2019)
Social media	5	Chang et al. (2015), Teng, Khong, and Chong (2015), Teng et al. (2017b), Zha et al. (2018), Zhang et al. (2019)
Persuasion through trainer, mock trials	4	Andrews and Gutkin (1994), Bhattacherjee and Sanford (2006), Li (2013), Salerno et al. (2017)
Television	3	Macinnis et al. (2002), Frew et al. (2016), Kim, Lee, et al. (2016)
Voice recorded	3	Heesacker (1986), Gelinas-Chebat and Chebat (1992), Sparks and Areni (2002)
Multi-channel media	1	Liang and Lin (2018)
Sources of first impression	1	Petty and Cacioppo (1984b)

media (Heesacker, 1986), print media (Andrews & Shimp, 1990), television commercials (Macinnis et al., 2002), computers (Briñol et al., 2007), social media (Chang et al., 2015) and mobile technology (Kim, Chung, et al., 2016). This could be because ELM has a lenient approach in accepting new and different variables according to the nature of a research (Petty & Cacioppo, 1986). Unlike other theories, it does not have specific independent variables that must be used in all the researches (see Allison et al., 2017; Cao et al., 2017; Gu et al., 2017; Liang & Lin, 2018). Therefore, most of the research articles have considered only some of these independent variables: involvement, argument strength, argument quality, information quality, source credibility and source attractiveness. However, several other researchers have also considered new independent variables for both the central and the peripheral routes: entrepreneur's education, entrepreneur's experience, product quality, product usefulness, portraying a dream, adopting a group identity, positive narrative tone (Allison et al., 2017), empathy, relevance of printed material, comprehension of printed material (Macinnis et al., 2002), presentation quality of audio advertisements and valence-thought indices for audio advertisements (Sparks & Areni, 2002). The details of other variables are listed in Table 9.

As stated earlier, new technologies are more complex, and old theories are unable to comprehend the new technologies (Fischer et al., 2018). However, new technologies like virtual and augmented reality can be studied with ELM by adopting constructs that are widely used in VR and AR literature, for example, telepresence, perceived augmentation quality, esthetic and entertainment (see Huang et al., 2016; Jung et al., 2016; Lee et al., 2020; Rauschnabel et al., 2019; Tussyadiah et al., 2018; Wei et al., 2019). Telepresence is being defined as a characteristic of a technology that generates a computer-mediated environment in which users feel themselves in an artificial environment by replicating a real scenario (Suh & Chang, 2006). Hence, consumer experiences the tourism destination while staying in a room through telepresence (Tussyadiah et al., 2018) or consumer feels about visiting a real shopping store by experiencing an artificial computerized store (Yaoyuneyong et al., 2018). Loureiro et al. (2019) conducted a review on VR in the context of marketing in which they discussed the wide usage of telepresence in experiential marketing. Another construct that is being widely adopted in AR studies is 'perceived augmentation quality' (Hilken et al., 2017; Javornik, 2016; Rauschnabel et al., 2019). 'It refers to the extent to which a user perceives the augmented content as realistic' (Rauschnabel et al., 2019, p. 45), and a consumer feels that the computerized environment is seamlessly merging with the real physical environment (Hilken et al., 2017). Any experience that gives a feeling of visiting a computerized environment deals with cognitive processing (Tussyadiah et al., 2018). Therefore, telepresence and perceived argumentation quality are suitable constructs for the central route.

Esthetic is an experience that a user senses passively through technology and leaves a sensory impact in user's mind (Oh et al., 2007). Esthetic is a combination of visual appeal in the form of graphics and fonts (Liu et al., 2013). Another construct is entertainment which is defined as a form of activity that provides amusement

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TABLE 9 Theories and constructs studied with ELM

References	Other theories	Stimuli, variables: Independent/processing	Mediator	Moderator	Dependent variable
Allison et al. (2017)	–	Entrepreneur's education, entrepreneur's experience, product quality, product usefulness, portraying a dream, adopting group identity, positive narrative tone	–	Funding commitment, crowdfunder experience	Crowdfunding performance
Andrews and Gutkin (1994)	–	Message quality, source credibility, involvement	–	–	Attitude
Andrews and Shimp (1990)	–	Involvement, argument strength, source characteristics	–	–	Cognitive responses, attitude
Angst and Agarwal (2009)	–	Argument frame, issue involvement, ability	–	Concern for information privacy	Attitude, Opt-In Intention
Areni et al. (2000)	Heuristic Systematic Model	Group opinion	Argument ratings	Need for cognition	Attitude
Bansal et al. (2015)	–	Adequacy, availability of company info., website info. quality, design appeal, reputation	Trust in the web site	Privacy concern	Intention to disclose private information
Bhattacherjee and Sanford (2006)	Technology acceptance model, Theory of planned behaviour	Argument quality, source credibility, perceived usefulness	–	Job relevance, user expertise	Attitude, IT usage intention
Briñol et al. (2007)	–	Argument quality, emotions, message focus, need for cognition	Emotional effect	––	Thoughts, attitudes, thought confidence, behavioural intention, distraction
Cao et al. (2017)	Service quality theory	Service quality, eWOM	–	Disease knowledge, disease risk	Consulting intention
Chang et al. (2015)	Innovation diffusion theory	Argument quality, post popularity, post attractiveness	–	Usefulness, relative significance	Like intention, share intention
Chatterjee and Hunt (2005)	–	Argument strength, message spokesperson, social character	–	–	Attitude
Chebat et al. (2003)	–	Information processing, empathy, advertising format lecture/drama	–	Self-relevance	Attitude, behavioural intention
Chen et al. (2018)	Technology acceptance model	Doctor's service quality, doctor's information quality, App's reputation, App's institution assurance, perceived usefulness, trust in app	–	Privacy concern	Continuance intention
Cheng and Loi (2014)	–	Brand trust	–	ELM routes, financial compensation outcome	Intention to purchase
Cho and Park (2014)	Technology acceptance model	Perceived usefulness, perceived ease of use, affect and feeling towards technology, subjective norm, descriptive norm	–	Need for cognition	Behavioural intention
Coulter and Punj (2004)	Cognitive resource matching theories	Argument quality, brand cognitions	–	Cognitive resource requirements, availability	Attitude
Cyr et al. (2018)	–	Argument quality, image appeal, navigation design, social presence, connectedness	Change in issue involvement	Prior knowledge	Attitude

(Continues)

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TABLE 9 (Continued)

References	Other theories	Stimuli, variables: Independent/processing	Mediator	Moderator	Dependent variable
Dotson and Hyatt (2000)	–	Product involvement, dogmatism	–	–	Brand recall, attitude towards the ad, attention to the ad, attitude towards the brand, purchase intention
Frew et al. (2016)	–	Affective and cognitive message	–	–	Vaccine behaviour
Gelinas-Chebat and Chebat (1992)	–	Involvement and voice cues	–	–	Attitude
Gregory et al. (2013)	Signalling theory	Website design, website content	–	Person- organization fit, person-job fit	Attitude, attraction to organization
Gu et al. (2017)	–	Perceived app popularity, perceived permission sensitivity, permission justification, privacy concerns	–	Mobile privacy victim experience	Download intention
Han et al. (2018)	–	Argument quality, source credibility	–	–	Funding success
Heesacker (1986)	–	Intervention quality, counsellor credibility, problem type, involvement	–	–	Attitude, cognitive responses
Jones et al. (2006)	–	Motivation and ability	–	–	Number of peripheral cue ads, number of higher quality ads
Kang and Namkung (2019)	Technology acceptance model	Information quality, source credibility, perceived usefulness, perceived ease of use, consumer trust	–	Purchase frequency	Attitude, behavioural intention
Kerr et al. (2015)	–	Involvement, argument strength, endorsers	–	–	Attitude, purchase intention
Kim, Lee, et al. (2016)	–	Food nutrition, visual and sound	–	–	Attitude
Kim, Chung, et al. (2016)	–	Argument quality, source credibility	Perceived usefulness, site attachment	Social network involvement	Continued usage
Kirmani and Shiv (1998)	–	Thought protocols, perceived congruity, ratings	–	Issue relevant	Attitude, beliefs
Kredentser et al. (2012)	–	Extra version, self-monitoring	–	Cognitive elaboration	Behavioural intention
Lee (2012)	–	Argument quality, source credibility	–	Time	Attitude, reuse intention
Lee and Kim (2016)	–	News elaboration, news acquisition, news evaluation	–	Prior knowledge, issue involvement	Education
Lee and Koo (2016)	–	Attractiveness-based congruence, expertise-based congruence	Attitude towards the brand	Product involvement	Attitude towards the advertisement, purchase intention
Leong et al. (2019)	Information adoption model	Positive eWOM, negative eWOM, eWOM credibility, eWOM user expertise, eWOM user involvement	–	–	Hotel booking intention
Li (2013)	Social influence theory	Source credibility, argument quality, normative social influence, affective responses, cognitive response, informational social influence	–	–	Behavioural intention

(Continues)

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TABLE 9 (Continued)

References	Other theories	Stimuli, variables: Independent/processing	Mediator	Moderator	Dependent variable
Liang and Lin (2018)	Schema incongruity theory	Perceived value, product congruence	–	Involvement	Purchase intention
Lu et al. (2019)	Expectation confirmation model	Interactivity confirmation, involvement	Perceived usefulness, satisfaction	–	Product loyalty
Luo et al. (2013),	–	Recommendation persuasiveness, Recommendation completeness, Recommendation credibility	–	Recommendation source credibility	Recommendation Adoption
Macinnis et al. (2002)	–	Affective, heuristic and rational cues, ad length, feelings, empathy, credibility, relevance, comprehension, interest	–	–	Ad success, ad attitude
Malaviya (2007)	–	Ad repetition, ad content, ad expertise	–	Advertising context	Evaluation
Manca et al. (2020)	–	Argument quality, source expertise, emotions	–	Involvement, past behaviour	Attitude, behavioural intention
Maoz and Tybout (2002)	–	Congruent brand extension, incongruent brand extension	–	Involvement, differentiation	Evaluation, recall, post-evaluation fit, task satisfaction
Matthes et al. (2014)	–	Functional appeal, emotional appeal, combined appeal, environmental concern, attitude towards green products, green purchase behaviour	–	–	Attitude
Park et al. (2007)	–	Review quantity, review quality, online consumer reviews	–	Involvement	Purchase intention
Petty and Cacioppo (1984b)	–	Issue involvement, argument quality, argument number	–	–	Attitude, thought listing
Priester and Petty (2003)	–	Endorser trustworthiness, argument quality	–	–	Attitude, cognitive responses
Priester et al. (2004)	–	Argument quality, brand congruity, sponsor brand	–	Need for cognition	Attitude
Salerno et al. (2017)	–	Persuasiveness, need for cognition	Credibility	–	Individual and group verdict accuracy
Tang et al. (2012)	–	Information quality, website design characteristics, website cognition, destination cognition	–	Involvement	Travel intention
Teng, Khong, and Chong (2015)	–	Online reviews	Central arguments, peripheral cues	–	Attitude
Teng et al. (2017b)	–	Argument Quality, Source; Credibility, Attractiveness, perception, style	–	–	Attitude, behavioural intention
Teng et al. (2017a)	–	Review quality, review valence, review credibility, review quantity	–	Personal involvement, emotional strength	Attitude, behavioural intention

(Continues)

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TABLE 9 (Continued)

References	Other theories	Stimuli, variables: Independent/processing	Mediator	Moderator	Dependent variable
Tormala and Petty (2004)	–	Counter-arguments, self-reported elaboration, perceived message strength, need for cognition	–	–	Attitude, attitude certainty
Tormala et al. (2007)	–	Source credibility, timing of credibility	–	–	Attitude, confidence in thoughts, perceived trustworthiness, thought favourability
Trampe et al. (2010)	–	Attractiveness, relevance	–	Elaboration likelihood	Attitude
Wang and Doong (2010)	Toulmin's model of argumentation	Argument form, spokesperson type argument quality, source credibility	–	–	Purchase intention
Wang et al. (2009)	–	Ad variation, appeal strategy,	–	Goal-directedness, Involvement,	Attitude
Wang et al. (2019)	Signalling theory	Central and peripheral signals	–	Personal factors	Behavioural intention
Wang and Yang (2019)	–	Product innovativeness, perceived product quality, creator ability, crowdfunding platform reputation, webpage visual design	–	Backer's product knowledge	Funding intentions
Withers et al. (2002), Withers and Wertheim (2004)	–	Receiver characteristics, personal relevance and need for cognition (NFC)	–	Receiver characteristics, personal relevance and need for cognition	Attitude, body dissatisfaction, drive for thinness, size discrepancy, current size, ideal size, intention to diet, knowledge
Yang et al. (2006)	–	Display of third party seals, product information quality, assurance perception, result demonstrability	–	Product involvement, trait anxiety	Trust towards an e-tailer
Yang (2015)	–	Fixation duration, elaboration	–	Peripheral cue	Purchase intention, eye movement
Yoo et al. (2017)	–	Information quality, source credibility, interactivity, accessibility	–	Self-efficacy	Travel decision support satisfaction
Zha et al. (2018)	Task technology fit theory	Information quality, source credibility, reputation of source	–	Focused immersion	Social media usage for getting information
Zhang et al. (2019)	Social media capabilities	Argument quality, source credibility	–	Concurrency, immediacy	Attitude

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or enjoyment to gratify intrinsic motivation (Venkatesh, 2000). Esthetic and entertainment are cue-based judgements that are suitable for the peripheral route. All these four constructs are discussed as an example, although researchers can focus on other constructs as well according to central and peripheral routes. Therefore, we posit the following:

Proposition 2 *Integrating constructs in (a) the central route (telepresence and perceived augmentation quality) and (b) the peripheral route (esthetic and entertainment) will enhance the spectrum of ELM to be used with the new technologies to study consumer behaviour.*

6.3 | Moderators & mediators

According to Petty and Cacioppo (1986), certain constructs that are related to motivation or abilities of a person play a moderating role in processing a message such as personal relevance, need for cognition and personal responsibility. Petty and Cacioppo (1986) also suggested studying other motivational variables to examine the mechanisms underlying the processing of a message. A handful of reviewed articles have explored the moderating role of constructs according to the nature of a research. For example, Allison et al. (2017) studied the impact of crowdfunding web sites using funding commitment and crowdfunder experience as moderators. Bhattacherjee and Sanford (2006) explored the acceptance of information technology among employees, consequently, using job relevance and user expertise as moderators. Cao et al. (2017) reconnoitred the online selection of a physician, thus, using disease knowledge and disease risk as moderators. The remaining articles that have used moderators in their research are listed in Table 9.

In perspective of the moderating role of the constructs, personal innovativeness and novelty seeking are often under looked by the researchers in the context of ELM. Personal innovativeness is a personality trait that plays an important role in studying the adoption behaviour of any new technology (Lu et al., 2005). Different individuals have different traits in terms of their personalities, motivations and willingness to use new technology. Individuals with low innovativeness will show weak intentions to adopt technology, and high innovators will show stronger intentions (Agarwal & Prasad, 1998; Yang, 2005). The usage of personal innovativeness as a moderating variable is evident from the literature (Krey et al., 2019).

Novelty seeking (NS) has been considered as one of the important moderators, and researchers have recommended its use in tourism-related studies (Assaker & Hallak, 2013; Kim & Kim, 2015). It is also a personality trait and motivation of a traveller to select a destination according to their likeness (Babu & Bibin, 2004). Demanding novelty is an innate quality of a traveller (Lee & Crompton, 1992), and is extremely helpful during decision making for visiting any destination (Petrick, 2002). Both personal innovativeness and novelty seeking constructs meet the criteria of a moderator as provided by Petty and Cacioppo (1986).

The systematic literature review of ELM conducted by Teng et al. (2014) in the context of social media has highlighted a lack of research in exploring the effects of the mediating variables. Only nine articles have explored the mediating effects of the variables (see Table 9). Some of the important mediating variables such as consumer inspiration, nostalgia and wow-effect (Hinsch et al., 2020; Rauschnabel et al., 2019) are missing from the ELM literature. However, it is evident from the literature that these variables are useful in understanding the underlying mechanisms. Consumer inspiration is a 'motivational state that compels individuals to bring ideas into fruition' (Oleynick et al., 2014, p. 1). According to Thrash and Elliot (2003), people get inspired when 'insights or ideas imbue a task with a sense of necessity and excitement' (p. 871). It is a construct that can foster exploration, new ideas, customer loyalty and change in attitude, resulting in increased demand of a product, service or technology (Böttger et al., 2017; Hinsch et al., 2020). Consumer inspiration is triggered by external stimuli rather than being initiated without any apparent cause or through an act of will (Thrash & Elliot, 2003). A consumer is usually inspired by the new technologies and it often helps in explaining the underlying mechanisms to predict consumer behaviour (Rauschnabel et al., 2019). Thus, we propose that consumer inspiration will play a mediating role between consumer behaviour and both the routes of ELM.

Nostalgia is a positive emotion that is related to memorable events, activities and possessions from an individual's past (Rauschnabel et al., 2017). It is defined as 'longing for the past, a yearning for yesterday, or a fondness for possessions and activities associated with days of yore' (Holbrook, 1993, p. 1). Recently, nostalgia has been reconceptualized as a mainly affirmative emotion invigorating positive psychological resources (Sedikides & Wildschut, 2018). Nostalgia is linked to old positive emotions, and new technologies like VR and AR can replicate the real scenic views of a tourist destination or childhood games that will ultimately enhance the intentions to visit that destination or lead to purchase intentions of those nostalgic products. Another important mediating variable is wow-effect, which is associated with a positive valence emotional experience that is characterized as feelings of amazement and wonder or awe-inducing information (Williams et al., 2018). Wow-effect is different from other emotions, for example, natural wonders, spiritual retreats, musical performances, panoramic views and travelling to monuments create awe-inducing experiences (Shiota et al., 2007; Van Cappellen & Saroglou, 2012). Recently, researchers have explored the role of new technologies in awe-related research. For example, views of mountains and forests, views of the earth from the deep space (Chirico et al., 2018; Quesnel & Riecke, 2018) and branding (Rauschnabel et al., 2019) provoke awe-inducing experiences when seen through the new technologies. Therefore, we posit the following:

Proposition 3 *(a) The use of personal innovativeness and novelty seeking as a moderator and (b) consumer inspiration, nostalgia and wow-effect as a mediator will predict the actual consumer behaviour.*

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6.4 | Theories

Fourteen other underpinning theories have been adopted in the reviewed articles (see Table 9). This subsection discusses the theories that are already used with ELM and propose some theories that can be used in the future.

6.4.1 | Going backwards: Already used theories

Technology acceptance model (TAM) deals with two main constructs: perceived usefulness and perceived ease of use. The main purpose of this model is to study the acceptance of technology among users (Davis, 1989). TAM has been used as an underpinning theory in three research articles (Bhattacherjee & Sanford, 2006; Chen et al., 2018; Kang & Namkung, 2019). The researchers have used its perceived usefulness with independent variables of ELM to understand the acceptance of information technology among employees and to measure the continuance usage intentions of mobile phone applications (Bhattacherjee & Sanford, 2006; Chen et al., 2018). Kang and Namkung (2019) have used both perceived usefulness and perceived ease of use as an outcome of information quality and source credibility to study the customer's evaluation of online food purchasing.

Innovation diffusion theory (IDT) elaborates about a unique practice, idea or an object that is perceived 'new' by individuals and its diffusion among the members of a society. Therefore, IDT argues that potential users make decisions to adopt or reject an innovation based on the beliefs that they form about those innovations (Rogers, 1995). Chang et al. (2015) have used IDT along with ELM to explain that the usefulness and preference of a persuasive message determine the like and share intention.

Information adoption model (IAM) explicates how individuals are motivated to use the information posted in the context of computer-mediated communications (Sussman & Siegal, 2003). Leong et al. (2019) have used several constructs of IAM such as user's expertise, user's involvement and perceived electronic word of mouth (eWOM) credibility to study hotel booking intentions.

According to the *Task technology fit (TTF) theory*, information technology must be a good fit with the tasks it supports, so that the technology has a positive impact on an individual's performance (Goodhue & Thompson, 1995). Zha et al. (2018) have used informational fit-to-task construct derived from the TTF to study social media usage for amassing information.

Service quality theory or SERVQUAL is a discrepancy model between customer's expectations and their perception after receiving a service (Parasuraman et al., 1988). Cao et al. (2017) have used service quality as an independent variable in the central route and eWOM in the peripheral route to explore the online selection of a physician.

The *Heuristic systematic model (HSM)* of persuasion is useful for understanding the persuasive effects of an endorser on a consumer (Griffin et al., 2002). Areni et al. (2000) have used HSM and ELM to study the persuasive impact of reported group opinions on individuals having different levels of need for cognition, along with the mediating role of argument ratings.

Theory of planned behaviour (TPB) helps in predicting behavioural intentions on the basis of attitude, subjective norms and perceived behavioural control (Ajzen, 1985). Bhattacherjee and Sanford (2006) have used TPB as an underpinning theory to study the development of IT usage intentions among employees.

Social influence helps in understanding the influence of people's behaviour on an individual in order to conform to a community's overall behaviour (Venkatesh & Brown, 2001). Social influence has been characterized as 'informational' and 'normative' by Deutsch and Gerard (1955). They defined informational social influence as 'influence to accept information obtained from another as evidence about reality', and defined normative social influence as 'the influence to conform to the expectations of another person to group'. Li (2013) has used these two constructs from social influence theory with ELM to study the acceptance of information systems among employees.

The term *social media capabilities* refer to the IT-enabled functions provided by social media that influence how social media users can transmit and process information (Dennis et al., 2008). Zhang et al. (2019) have adopted immediacy and concurrency constructs from social media capabilities to study their moderating impact between argument quality, source credibility and attitude.

Toulmin's model of argumentation deals with the argument elements that are interrelated to each other. His proposed four arguments are: claim, data, warrant and backing. A strong justification for a claim will lead to a good quality argument (Toulmin, 1958). These four can be easily understood with the help of an example: a person saying that 'I am an American citizen' is a claim. If he further gives a justification by saying 'Given that I was born in Boston, Massachusetts', it is data. The warrant is 'Every person born in the United States is a legal citizen of the United States', and the backing is to provide the evidence with the help of constitution (Wang & Doong, 2010, p. 494). Wang and Doong (2010) have integrated Toulmin's model with ELM to study the impact of virtual salespeople on purchase intentions while specifically using Toulmin's model as experimentation.

Cognitive resource matching theory predicts that any message (strong or weak) will enhance persuasion if there is a 'match' between required and available cognitive resources (Keller & Block, 1997). Coulter and Punj (2004) have studied the moderating effects of cognitive resource requirements and availability on the relationship between brand cognition and attitude.

According to the *Signalling theory*, 'when individuals do not have complete data, or are uncertain of the position they should take on a matter, they will draw inferences based on cues from whatever information is available' (Gregory et al., 2013, p. 3). To predict the intentions to stop any cheating behaviour, Wang et al. (2019) used technical advantage and attitude of game providers as central signals. On the contrary, they used perceived risk, source credibility and critical mass as peripheral signals. Gregory et al. (2013) have

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used job information and organizational information as moderating constructs derived from the signalling theory to study the attraction towards an organization.

Schema incongruity theory explains the impact on consumer's attitude when any new information is received by the consumers that do not meet their expectations, whereas congruity occurs when the information is according to their expectations (Mandler, 1982). Liang and Lin (2018) explored the impact of product congruence and incongruence on consumer purchase intentions.

Expectation confirmation model (ECM) helps in predicting the consumer's repurchase behaviour, continued usage intentions and product loyalty (Oliver, 1980). Lu et al. (2019) have used the constructs of ECM such as interactivity confirmation and satisfaction to study product loyalty.

Researchers have borrowed numerous concepts as independent or processing variables or stimuli from the above-mentioned theories and have used them with ELM. Those theories are discoursed in detail to highlight the opportunities for other theories to be used with ELM.

6.4.2 | *Going forward:* Connecting ELM to other theories

Experience economy theory

The experience economy theory is also known as 'four realms of experience' as described by Pine and Gilmore (1998). They have characterized experience as a combination of active versus. passive participation, and absorption versus. immersion. For instance, active participation occurs when a consumer actively participates in a product trial, while passive participation is when a consumer only observes the product trial without indulging actively. Absorption is 'occupying customer's attention by bringing the experience into the mind', and immersion is 'becoming physically or virtually a part of the experience itself' (Pine & Gilmore, 1999, p. 31). Active participation with absorptive experience is termed as education, while active participation with immersive experience is termed as escapism. Passive participation with absorptive experience is entertainment, while passive participation with immersive experience is esthetic (Jeong et al., 2009). The implications of experience economy in different research fields is evident from the extant literature such as tourism, science festival, service innovation, film festival, broadband services, e-commerce and health (Beltagui et al., 2012; Chang et al., 2010; Jung et al., 2016; Lupton, 2014; Olya et al., 2020; Rahman et al., 2012).

Education is about learning new information and enhancing skills (Pine & Gilmore, 1999). From a technological perspective, it is about acquiring information and learning skills through technology (Jung et al., 2016). Several researchers have studied education with new technologies (Au & Lee, 2017; tom Dieck et al., 2018; Horne & Thompson, 2008; Jung et al., 2016; Olya et al., 2020). On the contrary, escapism needs more participation and immersion as compared with educational and entertainment experiences. It is an experience in which a person escapes from the real environment, visits a virtual environment, and then, comes back to the routine after experiencing the extraordinary. Simply, it is 'diverging to new self' (Oh et al., 2007, p. 121). The applications of escapism with new technologies are also evident from the literature (Jung et al., 2016; Lee et al., 2020; Olya et al., 2020). Both constructs deal with the cognitive aspects of a consumer, therefore, this research proposes education and escapism to be adopted in the central route.

Entertainment is defined as a form of activity that provides amusement or enjoyment to gratify intrinsic motivation (Venkatesh, 2000). From a technological perspective, it is concerned with the consumer's experience of technology to have fun, amusement and playfulness (Hausman & Siekpe, 2009). Several researchers have studied entertainment with new technologies (Huang et al., 2016; Jung et al., 2016, 2018; Bonetti et al., 2018; Olya et al., 2020). Esthetic is an overall unique physical design that a consumer feels passively by indulging in a computerized environment (Jeong et al., 2009; Oh et al., 2007). From a technical perspective, it is an experience that a user senses passively through technology which leaves a sensory impact in the user's mind (Oh et al., 2007). The applications of esthetic with new technologies are also evident from the ample literature (tom Dieck et al., 2018; Jung et al., 2016; Lee et al., 2020; Olya et al., 2020). Both constructs deal with emotions and visual attractions, therefore, this research proposes entertainment and esthetic to be adopted in the peripheral route.

Destination image model

Destination image has been used in tourism literature as the most popular research topic since the 1970's (Pike, 2002). It is defined as the collection of feelings, opinions, beliefs and impressions about a destination (Zhang et al., 2014). Bi-dimensional destination image model developed by Baloglu and McCleary (1999) has been a widely utilized model in the tourism literature (Lin et al., 2007). It has two independent variables, 'cognitive and affective images' that create an overall destination image. Cognitive image deals with the detailed information and rational knowledge about a destination, whereas, affective image is about the emotions and feelings for a destination (Pike & Ryan, 2004). Both these variables also have a tendency to be incorporated in the dual routes of ELM. Furthermore, it is empirically evident that new technologies create a positive destination image (Hassan, 2018; Lin et al., 2020). Therefore, we posit the following:

Proposition 4 *(a) Experience economy constructs such as education and escapism in the central route and (b) entertainment and esthetic in the peripheral route will have a positive effect on consumer behaviour.*

Proposition 5 *The constructs of destination image model such as (a) cognitive image in the central route and (b) affective image in the peripheral route will have a positive effect on consumer behaviour.*

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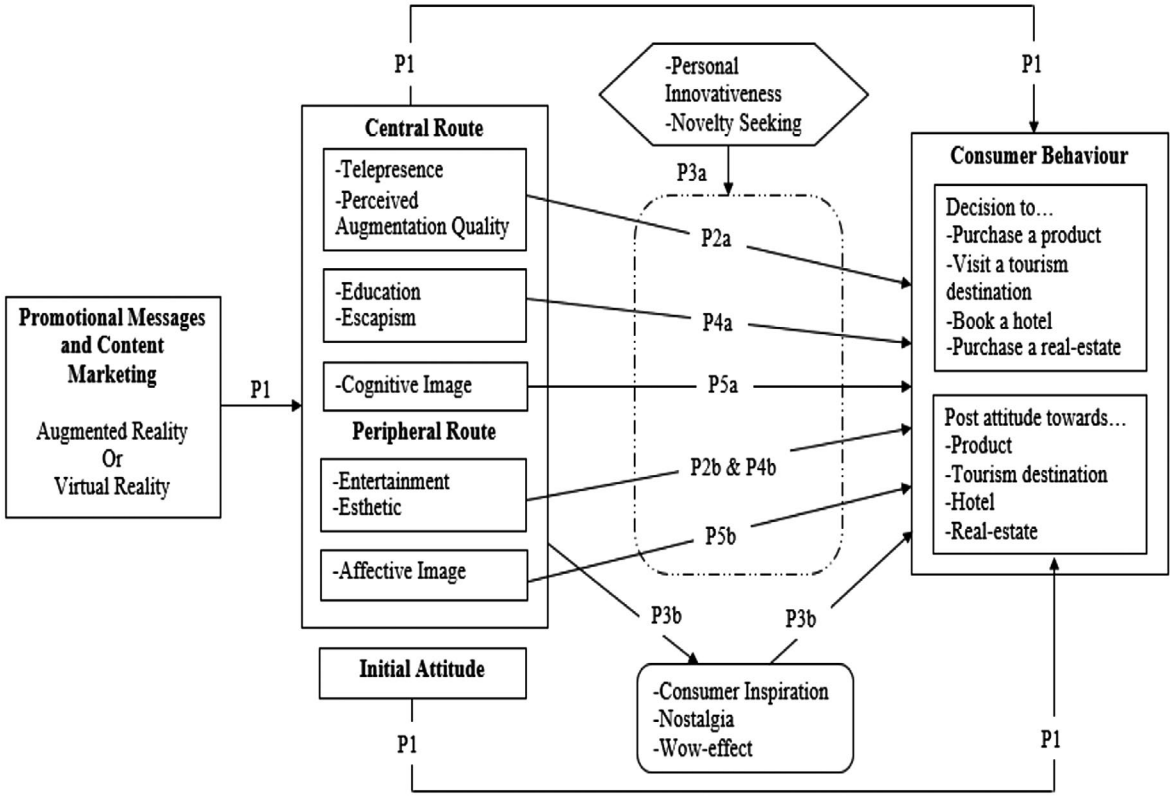

FIGURE 3 Summary of future research agenda

7 | CONCLUSION

To the best of author's knowledge, this is the first comprehensive review paper on ELM that summarizes the developments in consumer behaviour literature and proposes its extension to the new technologies. Usually, theory-based systematic literature is conducted by reviewing the role of a specific theory in a specific context such as resource-based theory in the context of marketing, role of self-determination theory in marketing and gradual internationalization versus. Born-Global models in marketing/international business (see Gilal et al., 2019; Kozlenkova et al., 2014; Paul & Rosado-Serrano, 2019). Several other future recommendations for theory-based SLR are provided by Paul and Criado (2020) such as 'Agency Theory in Franchising, or the Theory of Planned Behaviour in International Business/Marketing or Entrepreneurship' (p. 2). In our paper, we have used a novel approach to review ELM and extend its applications with the new technologies in order to address the existing research gaps in the marketing literature. The extant marketing literature does not highlight the effectiveness of promotional messages and content marketing on consumer's change in attitude and decision making. Our assessment concludes that ELM is a suitable model for addressing these critical research gaps. Until now, several constructs have not been utilized with ELM, but they can certainly be used in the context of new technologies. For example, telepresence, perceived augmentation quality, esthetic, entertainment, personal innovativeness, novelty seeking, consumer inspiration, nostalgia and wow-effect. Some other theories like experience economy theory and destination image model can also be integrated with ELM for future research (see Figure 3).

We have presented several propositions as future research agenda for the marketing scientists to apprehend consumer behaviour with new technologies such as virtual reality and augmented reality. Although this review extends the applications of ELM with VR and AR, the researchers can also use ELM with other latest technologies like smartwatches, location-based services and chat bots. Researchers can consult Table 9 in order to understand the developments in ELM over the last 36 years. Furthermore, testing of these propositions will uncover the better-suited route between central and peripheral that causes a positive impact on consumer's attitudinal change and decision making. It will ultimately help the marketers to create a better version of promotional messages for VR and AR.

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CONFLICT OF INTEREST

No conflict of interest reported by the authors.

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DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no data sets were generated or analysed during the current study.

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