Consumers' resistance to digital innovations: A systematic review and framework development

Shalini Talwar[a], Manish Talwar[b], Puneet Kaur[c,e], Amandeep Dhir[d,e,f,*]

[a] K. J. Somaiya Institute of Management, Mumbai, India
[b] Alkesh Dinesh Mody Institute for Financial and Management Studies, Mumbai, India
[c] Department of Psychosocial Science, University of Bergen, Bergen, Norway
[d] Norwegian School of Hotel Management, University of Stavanger, Stavanger, Norway
[e] Optentia Research Focus Area, North-West University, Vanderbijlpark, South Africa
[f] School of Business and Management, Lappeenranta University of Technology, Lappeenranta, Finland

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ABSTRACT

Consumer resistance is one of the major causes of failure of any innovation. Despite rising academic interest, the non-adoption of digital innovation or consumer resistance has received less scholarly attention as compared to the factors driving the adoption of digital products and services. The existing research on consumer resistance is also in siloes, running across multiple verticals, spanning from resistance to green products to the Internet of things (IoT). The current study provides a systematic review of the extant literature on consumer resistance to digital innovations by utilising the systematic literature review (SLR) methodology. A total of 54 studies were selected for content analysis to isolate thematic foci, identify research gaps, recommend future research avenues and develop a framework. Our analysis revealed that the extant literature could be grouped under broad research themes, namely resistance to digital innovations, organisational resistance to technological innovations, resistance to technological healthcare innovations and consumer resistance to innovations (offline). The results of this SLR study are expected to galvanise future research in this area from the theoretical as well as from a practice-oriented perspective by providing various actionable inputs to combat consumer resistance to digital innovations.

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CHINESE ABSTRACT

消费者的抵制是任何创新失败的主要原因之一. 尽管学术兴趣不断上升, 但与推动数字产品和服务采用的因素相比, 针对不采用数字创新或消费者抵制的研究学术关注较少. 现有的关于消费者抗拒的研究也是孤立的, 横跨多个垂直领域, 从对绿色产品的抗拒到物联网 (IoT) . 本研究利用系统性文献综述 (SLR) 方法, 对消费者抵制数字创新的现存文献进行了系统综述. 本文一共选择了54项研究文献进行内容分析, 以实现分离主题焦点,查明研究空缺,建议未来的研究途径和制定未来研究构架. 我们的分析显示, 现存的文献可以归类在广泛的研究主题中, 即对数字创新的抵制,组织对技术创新的抵制,对技术医疗创新的抵制以及消费者对创新的抵制 (离线). 该SLR研究的结果有望激励这一领域的未来研究, 从理论和实践导向的角度, 提供各种可操作的投入, 以对抗消费者对数字创新的抵制.

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1. Introduction

Consumer resistance towards innovation is an aspect of consumer behaviour that is as important as acceptance and adoption (Seth et al., 2020). In its simplest form, consumer resistance may be seen as the unwillingness among consumers to try newer innovations in the market (Tansuhaj et al., 1991). Consumer resistance to innovation is one of the main causes behind the market failure of innovations (Talke and Heidenreich, 2014). It is also a significant factor that can impede or delay the adoption of any innovation (Laukkanen et al., 2008). Empirical studies have documented a high failure rate of innovations, indicating that many innovations

* Corresponding author.
E-mail addresses: shalini.t@somaiya.edu (S. Talwar), talwars25@gmail.com (M. Talwar), puneet.kaur@uib.no (P. Kaur), amandeep.dhir@uis.no (A. Dhir).

fail due to consumer resistance (Heidenreich and Kraemer, 2016). Consumer resistance has remained a critical problem faced by organisations, and it will continue to be a threat in the future as well (Abbas et al., 2017). Scholars argue that firms need to understand the causes that lead to product failures for the effective management of innovation activities (Joachim et al., 2018). Consequently, consumer resistance is an important area of interest that cannot be ignored by scholars and practitioners who are interested in ensuring the fast diffusion and adoption of new innovations.

Despite its critical impact and importance, consumer resistance to innovations has received relatively little attention in the past; for example, mobile wallets (Kaur et al., 2020; Leong et al., 2020). Moreover, regardless of the fact that the decision not to buy is also a real consumption choice (Laukkanen and Kiviniemi, 2010), early research on consumer innovations focused mainly on the motives and factors related to their adoption with a distinct pro-change bias (Hew et al., 2019). In contrast, the factors that inhibited the diffusion of innovation or a clear status quo bias have been quite neglected by past studies (Heidenreich and Spieth, 2013). However, scholars now realise that the motivators catalysing the adoption of an innovation are not very useful when it comes to analysing the reasons behind non-adoption and resistance (Claudy et al., 2015). The study of adoption, as well as diffusion of innovation, is useful only in understanding the spread of innovation, whereas innovation resistance needs to be explored to explain why consumers are not willing to adopt a possibly useful new offering (Groß, 2015; Nel and Boshoff, 2019). As a result, studies examining consumer resistance to innovations are now growing. For instance, some scholars have examined consumer resistance to innovations in contexts such as organic food, mobile payments and so on (e.g. Kaur et al., 2020).

The increase in academic interest notwithstanding, our extensive review of the literature has revealed that studies on consumer resistance are few and far between. Furthermore, our examination of the background literature has also shed light on the fact that the existing studies are spread across a variety of areas and contexts in which resistance has been examined. Such fragmented literature makes it challenging for researchers to build upon the extant learning and take the research in the area forward. To help scholars overcome this challenge, we propose to systematically organise the literature in the area and critically synthesise it for future reference. Towards this end, the current study proposes to employ the systematic literature review (SLR) methodology, which offers one way the extensive evaluation of the related research, yielding multiple benefits as discussed by prior SLR studies (e.g. Behera et al., 2019; Seth et al., 2020; Sahu et al., 2020).

Notably, our preliminary search of the consumer resistance literature has revealed that the extant studies can be categorised into four broad areas based on the underlying products and services investigated. These areas are: (a) resistance to digital innovations (e.g. Hong, 2020), (b) organisational resistance to technological innovations (e.g. Chen and Kuo, 2017), (c) resistance to technological healthcare innovations (e.g. Gurtner, 2014) and (d) consumer resistance to innovations (offline) (e.g. Claudy et al., 2010). Within these areas, a wide variety of products and services, such as smartwatches (e.g. Mani and Chouk, 2017), organic food (e.g. Kushwah et al., 2019a), Internet banking (e.g. Laukkanen, 2016), green products (Claudy et al., 2010), mobile sales assistants (e.g. Cho and Chang, 2008) and so on have been investigated to understand consumer resistance. A review of the literature reveals that each of these areas and products offers insights that are unique and interesting. Therefore, we believe that the literature related to each of these four areas needs to be reviewed separately to guide future academic research. Consequently, this SLR proposes to focus on studies related to one of the four broad areas mentioned above, namely consumer resistance to digital innovations. Digital innova-

tions include products and services, such as mobile banking, online shopping, e-books, smart watches and so on.

The reasons behind the choice of digital innovations to examine consumer resistance are: (a) These innovations are revolutionising the lives of individuals in many ways (Mani and Chouk, 2019), (b) digital products and services offer immense potential for innovations but at the same time are difficult to manage (Nylén and Holmström, 2015), (c) innovations in the field of digital technology have been agile, which has shortened the innovation life cycle of existing innovations and created confusion in the minds of consumers about the frequent changes that challenge their status quo (Laukkanen, 2016), and (d) digital innovations, such as information and communications technology (ICT) applications, have a short shelf life, which requires firms to ensure quick diffusion of their products by overcoming resistance (Sun, 2016). However, fast diffusion of these innovations may face impediments, such as the negative attitude and resistance of consumers, leading to delayed adoption or complete rejection. Due to this, inputs from academic research related to overcoming resistance are essential to keep pace with the digital innovations. However, prior scholars have noted that this area has remained under-presented, with limited research on the resistance to wearables, smart services, convergence products, e-books, mobile social commerce and so on (e.g. Hew et al., 2019). There is also a lack of understanding about the issue of slow diffusion and late adoption of digital innovations (Jahanmir and Cavadas, 2018), which is eroding the profits of firms and impeding their growth. Hence, it is essential to evolve a better understanding of the causes and determinants of slow diffusion or outright rejection of digital innovations to aid the firms to overcome consumer resistance. Accordingly, the investigation of resistant behaviours towards digital innovations can be of great value to managers and researchers (Cao et al., 2015; Kaur et al., 2020; Talwar et al., 2020a). Therefore, our SLR intends to motivate and support future research in the area.

The current study aims to address the four main research questions: **RQ1**. What is the research profile of the extant studies in the area of consumer resistance to digital innovations? **RQ2**. What are the key themes of research on consumer resistance to digital innovations? **RQ3**. What are the gaps and limitations in the extant literature that need to be addressed? **RQ4**. What are the avenues of future research? We propose to answer the research questions through a critical synthesis of studies on consumer resistance to digital innovations identified through a robust search protocol. Consequently, this SLR presents a deep insight into two decades of related literature to serve as a platform to encourage academic research in the area of consumer resistance to digital innovations.

The study makes two novel contributions: First, the study classifies the consumer resistance literature into four distinct heads: resistance to digital innovations, organisational resistance to technological innovations, resistance to technological healthcare innovations and consumer resistance to innovations (offline). Second, the study goes beyond the narrative of the existing body of knowledge on consumer resistance to develop a framework to guide future research and practice.

2. The conceptual boundary of this review

Clarity about the concept of consumer resistance to innovations in general and digital innovations, in particular, is required before the search protocol for identifying studies can be defined and executed. This is essential because consumer resistance has remained side-lined as a concept for quite some time (Heidenreich and Spieth, 2013). Due to this, the concept of consumer resistance continues to be in its infancy, and it lacks well-articulated definitions (Claudy et al., 2010). However, few definitions are available in the seminal literature. To begin with, Ram and Sheth (1989) described

it as resistance towards any innovation that arises from potential threats to the status quo and the existing belief system of consumers. In addition to this, scholars have defined it as a tendency among consumers to maintain their status quo and avoid the use of new technology (Saga and Zmud, 1994), combined with resistance to change (Mani and Chouk, 2018). Similarly, the seminal literature has used diverse descriptions for consumer resistance, such as unwillingness to try innovations, negative response to innovations, lack of motivation to use innovation and complete non-acceptance (e.g. Antioco and Kleijnen, 2010; Tansuhaj et al., 1991).

On the whole, resistance has been argued to take varied forms and have different degrees of manifestations, depending on the innovation (rejection, postponement, opposition). To begin with, resistance can take the form of rejection, which is a straightforward refusal to accept the product, as contended by Kleijnen et al. (2009). Another form of resistance is postponement, which indicates a delayed decision on the acceptance of innovation and, finally, there is opposition, which represents strong negative feelings towards the innovation (Kleijnen et al., 2009). From the perspective of degrees of resistance, innovation resistance can be expressed by the consumer in the form of inertia (adherence to the status quo), active resistance (negative response to innovation on account of being perceived as being risky) and strong, active resistance (strong opposition to innovation as being perceived as being inappropriate) (Ram and Sheth, 1989).

Adding another dimension to the debate, the literature on innovation resistance has broadly divided resistance to innovations into two groups, namely, active and passive (Heidenreich and Kraemer, 2015). Active innovation resistance (AIR) may be described as the negative attitude towards a new product after its evaluation, and passive innovation resistance (PIR) may be described as the predisposition of consumers to resist innovation even before evaluating it (Heidenreich and Spieth, 2013). Active resistance has a more overt connotation, resulting in negative attitudes caused by psychological and functional barriers to the innovation at the evaluation stage itself (Heidenreich and Handrich, 2015). In comparison, passive resistance stems from an inclination to resist change and maintain the status quo that arises rather unconsciously, even before beginning to evaluate the innovation (Heidenreich and Handrich, 2015).

All the available definitions and descriptions have a general context and can be applied equally for digital as well as offline innovations. However, to clarify the conceptual boundary of the current study, we draw upon the seminal literature to define consumer resistance to digital innovations as: '*Consumer resistance to digital innovations represents barriers to the adoption of any innovation derived from the advances in information and communication technology, a resistance driven by varied personal, situational, contextual, regulatory, and product-related factors, such as age, innovativeness, pre-disposition to maintain the status quo, cultural aspects, governmental surveillance, innovation characteristics, and manifested in varying degrees such as rejection, opposition or postponement.*'

3. Methodology

3.1. Search protocol

A robust search protocol was devised to identify studies to be reviewed, which aligns with the SLR methodology used by prior scholars (Kushwah et al., 2019b; Sahu et al., 2020; Seth et al., 2020). Two well-known databases, Web of Science (WOS) and Scopus, were used for searching relevant studies for this review. Both these databases are considered reliable and frequently used in recent SLR studies (Mongeon and Paul-Hus, 2016). For the search protocol, first, the keywords were specified based on the conceptual boundaries of the SLR. These keywords were searched on Google Scholar, and the first 100 results were screened to update the keywords list. Next, the leading marketing and information system journals were searched to see if the list is exhaustive. Finally, the expert team of five (two professors and three researchers), well informed about consumer resistance, were consulted to finalise the list of keywords that were used on the two leading databases. In addition to keywords, inclusion and exclusion criteria were specified, along with quality evaluation questions. To ensure extensive and thorough coverage, articles were also included based on full text with citation chaining search, using both backward and forward approaches. A search was executed using the following keywords: 'consumer resistance*' OR 'innovation resistance*' OR 'new product resistance*' OR 'technology resistance*' OR 'consumer non-adoption' OR 'service resistance*' OR 'resistance to innovation*' OR 'user resistance*'.

Studies were shortlisted based on the following inclusion criteria (IC): IC 1, articles published in peer-reviewed journals; IC 2, articles published in the English language from January 2000 till March 2020; and IC 3, articles published in quantitative, qualitative and conceptual journals. The exclusion criteria (EC): EC 1, relevance (consumer resistance to digital innovations); EC 2, duplicate studies with matching titles and/or digital object identifier (DOI); EC 3, thesis, reviews, conference proceedings, editorials and short communication items; and EC 4, low-quality evaluation questions.

To ensure that the results of the study are relevant and unbiased, four quality evaluation (QE from now on) questions were formulated to evaluate the rigour of the candidate studies, in line with the recommendations of prior studies (e.g. Behera et al., 2019). QE 1: The study contains evidence that is quantitatively and/or qualitatively analysed. The possible answers are: 'quantitative research (+2)' and 'both quantitative and qualitative research' (+3.5). QE 2: The study explicitly examines the benefits and limitations. The possible answers are: 'yes (+2)', 'no (0)' and 'partially (+1)'. The score is partial when only one and not both are reported. QE 3: The output of the study is justifiable. The possible answers are: 'yes' (+2), 'no' (0) and 'partial' (+1). The score is partial when only the techniques used are explained in a very limited way, or one of the techniques used is not detailed. QE 4: The study has been published in a recognised and stable source of publication. The possible answers are as follows: (+2) if the summation of a number of citations and H Index exceeds 100, (+1.5) if the number lies between 50 and 99, (+1.0) if the number lies between 1 and 49 and (+0) if the number is 0 or data are not available. A random score to represent the relative importance of each aspect of QE is assigned as used by Behera et al. (2019) and added up across all QEs.

The search resulted in an initial dataset of 1421 articles, but not all were congruent with the topic at hand. Inclusion and exclusion criteria were applied to ensure that the studies' short-list conforms to the conceptual boundary of this SLR. Thereby, conference and other types of articles, articles in other languages and duplicate articles were excluded, resulting in a combined pool of 536 articles. To ensure that only the articles that are relevant to the area of focus are selected, analysis of the articles was undertaken by a thorough reading of the abstracts. As a result, 154 articles were excluded as not immediately relevant for consumer resistance to digital innovations. These articles were deleted as they were based on resistance in a medical and political context as well as anti-consumption and sustainability. A balance of 382 were coded, and the key themes on which the articles focused were the resistance of consumers to offline products, resistance in the organisational context, resistance to digital innovation, resistance to healthcare innovations, resistance to social change and so on. In consonance with our conceptual boundary, we selected studies related to the resistance of consumers to digital innovations, resulting in an initial pool of 89 articles. These were taken forward for detailed analysis, where the articles were analysed through a thorough reading of full articles and generation of quality scores. Thirty-five articles
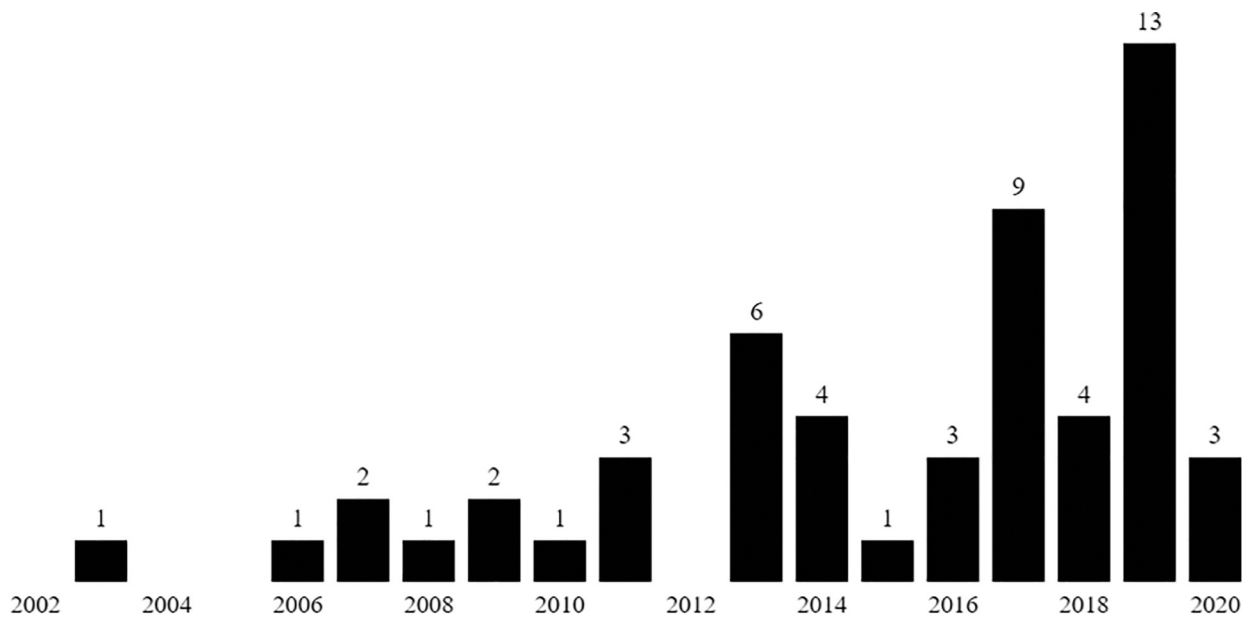
Fig. 1. Year-wise publications.

were further excluded on the grounds of not being related to the topic at hand or scoring low on QEs. Hence, a final list of 54 articles was selected for this review.

3.2. Research profiling

The research profile of the selected studies is presented through the year of publication, the publication source title, geographical scope, research methods and the digital products/services investigated. Such a descriptive summary of the reviewed studies can provide an overview of the momentum of publication and the focus of the extant studies for the reference of future researchers. Fig. 1 reveals that during the initial decade of the new century, only eight studies were conducted that investigated consumer resistance towards digital innovation, but the momentum of publication has increased in the current decade (2011–2020), confirming the rising academic interest in the area. Not only are publications rising, but there is also a broad acceptance of consumer resistance as an area of research. This is evident from the wide variety of journals in which the selected studies have been published (Fig. 2). The geographical scope (Fig. 3) shows that 45% of the studies are related to Asia and 30% to Europe revealing two key patterns: (a) resistance to digital innovations is probably higher in Asia, thereby attracting the attention of scholars, and (b) there is a skew in the geographical coverage globally, with limited or no studies focussing on countries in Africa, South America and so on. Amongst individual countries, the United States has the highest number of studies. In terms of digital products/services investigated, studies have examined resistance to digital payments, e-commerce, social media, smart products and so on, but 50% have focussed on only digital payments, e-commerce and m-commerce (Fig. 4).

4. Research themes

Content analysis was undertaken to distil the key themes of the reviewed studies. The content analysis of the selected studies suggests that research on consumer resistance to digital innovations can be categorised into seven broad dimensions: theoretical underpinnings, barriers against digital innovations, characteristics inhibiting or stimulating resistance, non-adoption (postponement, opposition and rejection), socio-demographic aspects, methodological perspectives and outcome variables of interest. An overview of

these areas of research and the key variables in consumer resistance to digital innovation studies is presented in Fig. 5.

4.1. Theoretical underpinnings

Most studies on consumer resistance towards digital innovations have utilised various consumer behaviour theories to explain the resistance and non-adoption of such innovations by consumers. Innovation resistance theory (IRT) was the most frequently used theory in the reviewed literature, and close to 55% of the studies from the current review also utilised IRT as the basis for the empirical evaluation of consumer resistance to innovations.

IRT was first proposed by Ram (1987) and later modified by Ram and Sheth (1989), and it describes consumer resistance through different barriers that obstruct the adoption of an innovation. IRT provides crucial insights into how consumers react to innovations. According to IRT, usage, value and risk barriers represent functional barriers, whereas tradition and image barriers refer to psychological barriers to innovation. A usage barrier is related to the usability of the service and the changes that consumers need to undergo to use it; a value barrier represents the comparative performance of the substitutes in terms of performance-to-price value; a risk barrier represents the consumers' perceptions of the risk in innovation; a tradition barrier is related to a habit of how things have been done so far; and an image barrier is related to the ease-of-usage (Laukkanen et al., 2007). Furthermore, in the digital context, a usage barrier represents time effort, and a risk barrier represents financial burden and uncertainty in choice (Heinze et al., 2017).

Notably, more than half (53%) of the selected studies that have employed IRT have actually used it in conjunction with other popular theoretical frameworks, such as the technology adoption model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (e.g. Oh et al., 2019; Soh et al., 2020). For instance, two important measures of TAM, perceived usefulness and perceived ease of use, have a significant association with resistance; for example, perceived usefulness exerts significant influence on resistance towards smart TV while perceived ease of use is influential in reducing resistance (Im et al., 2014). Similarly, a model based on the integration of UTAUT and IRT revealed that performance expectation and social influence impact online shop-

Others include Behaviour and Information Technology, Cogent Business and Management, Computers in Entertainment, Data Technologies and Applications, Electronic Commerce Research, First Monday, IEEE Access, Information Development, International Journal of Human-Computer Interaction, Journal of Ambient Intelligence and Humanized Computing, Journal of Communication Inquiry, Journal of Consumer Marketing, Journal of Electronic Commerce Research. Journal of Indian Business Research, Journal of International Consumer Marketing, Journal of Media Business Studies, Journal of Product and Brand Management, Journal of Product Innovation Management, Journal of Retailing and Consumer Services, Journal of Science and Technology Policy Management, Journal of Theoretical and Applied Electronic Commerce Research, Journal of Travel Research, New Media and Society, Psychology and Marketing, Social Science Computer Review, Sustainability, Technological Forecasting and Social Change, Total Quality Management and Business Excellence, Journal of Retailing and Consumer Services, International Journal of Managing Information Technology and International Journal of Business and Information

Fig. 2. Publication source title.
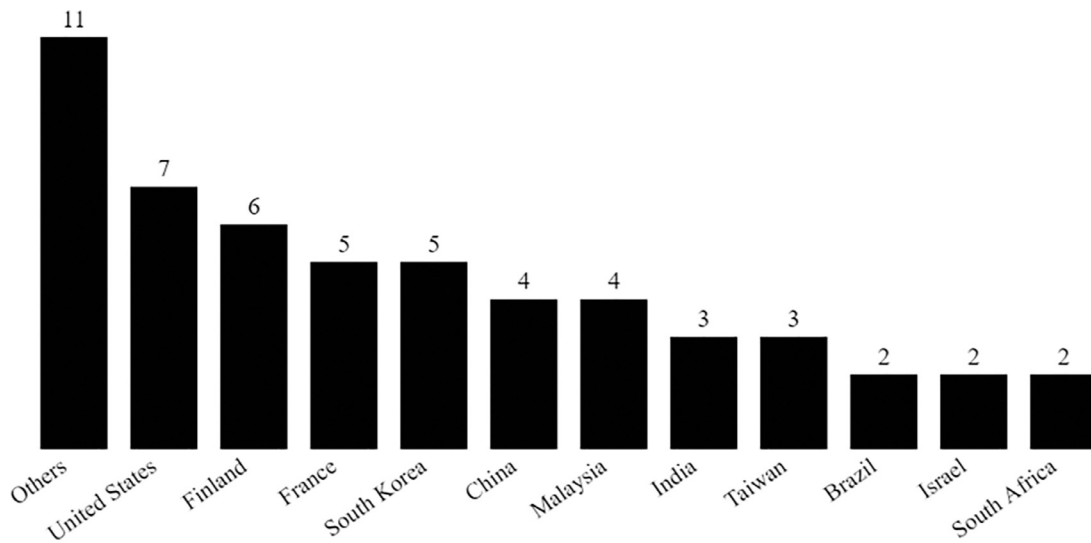
Others include Denmark, Germany, Greece, Japan, Netherlands, New Zealand, Pakistan, Egypt, Spain, Thailand and Tunisia

Fig. 3. The geographical scope of studies.

ping for both younger as well as older adults (Soh et al., 2020). Additionally, studies have also referred to seminal theories, such as status quo bias (SQB) (e.g. Mani and Chouk, 2018), behavioural reasoning theory (BRT) (e.g. Gupta and Arora, 2017) and the Big Five personality model (e.g. Lissitsa and Kol, 2019) to provide insights into the reasons for as well as reasons against the adoption of digital innovations. The remaining 45% of the studies of the review utilised various other theories to discuss intentions to adopt or resist innovations. These theories include the diffusion of innovation (DOI) (Jahanmir and Lages, 2016), means-end ap-

proach (Kuisma et al., 2007), dual-factor perspective (Chouk and Mani, 2019), Foucauldian theory (Humphreys, 2006), activity theory (Sun, 2016) and generational cohort theory (Lissitsa and Kol, 2019).

4.2. Barriers against digital innovations

As mentioned above, more than half of the selected studies used IRT as the theoretical lens. Within this group, nearly half used all five generic IRT barriers as antecedents to explain variations
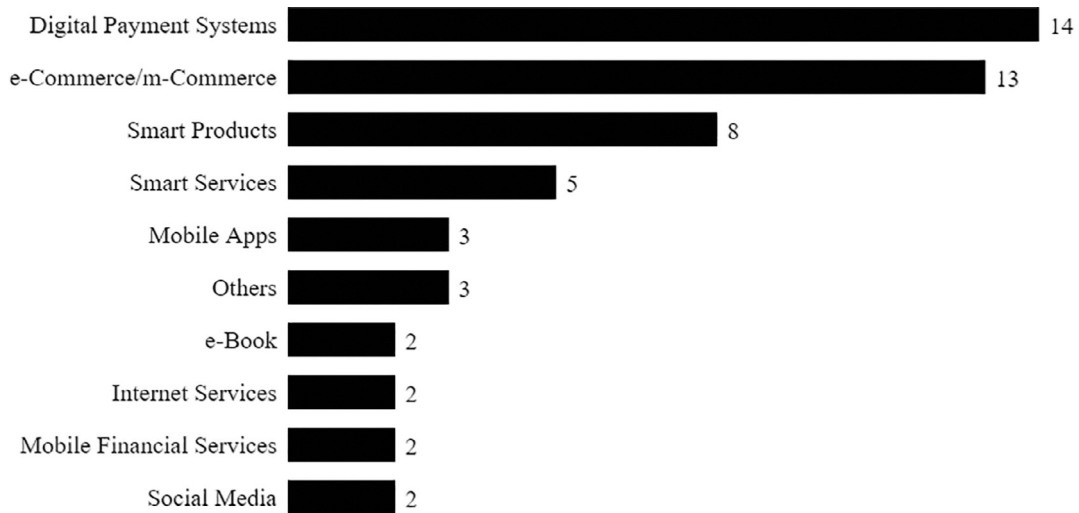
Others include convergence products, information and communication technology (ICT) applications and web browser
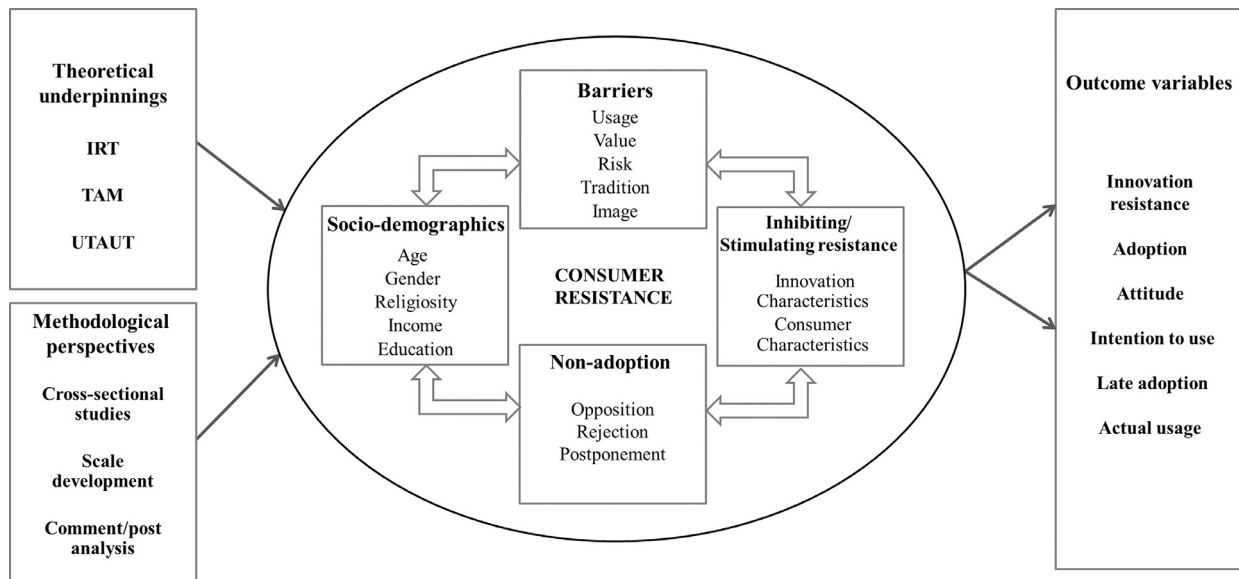
Fig. 4. Products investigated.

Fig. 5. Overview of emerging themes and key variables in consumer resistance to digital innovations research.

in the dependant variable. The accumulated findings reveal that the impact of barriers on resistance or intentions to adopt may vary with the type of digital innovation. For instance, in the case of mobile banking, psychological barriers, represented by tradition and image barriers, were found to be significant (Laukkanen, 2016; Gupta and Arora, 2017). On the functional side, value barriers had the most dominant effect on the adoption of both the Internet and mobile banking (Laukkanen, 2016). Notably, mature mobile banking consumers had higher risk perception as compared to younger ones, whereas value barriers were intense in both age groups (Laukkanen et al., 2007). Studies also examined the impact of information and guidance about innovation on the resistance in mobile banking and revealed that personal communication and guidance through one-to-one contact could vastly reduce usage barriers (Laukkanen and Kiviniemi, 2010). In comparison, impersonal communication through mass media can be used effectively in decreasing the value barrier (e.g. Laukkanen and Kiviniemi, 2010; Laukkanen et al., 2009). Chemingui and Lallouna (2013) revealed

the negative impact of tradition barriers and trust on use intentions towards mobile financial services.

Image, value and tradition barriers were found to be critical for online shopping by consumers with reference to different product categories (Lian and Yen, 2013). Furthermore, the possibility of the coexistence of resistance with intention was confirmed, along with the 'privacy paradox' phenomenon, which refers to a situation where privacy concerns do not hinder usage intentions (e.g. Hew et al., 2019). In comparison, psychological barriers have been found to be significant in the case of smart homes (Pal et al., 2019). In the case of mobile apps, such as brand mobile apps of service organisations, image, usage and value, representing consumers' active resistance are significant antecedents of resistance (Chen et al., 2019). Notably, in the context of digital innovations, perceived risk, including security risk, has been found to increase resistance to digital innovations (Chouk and Mani, 2019; Mani and Chouk, 2018).

Attempts have also been made to adapt the Ram and Sheth (1989) model to accommodate digital technologies by in-

cluding new categories of barriers, such as technological vulnerability, ideological and individual (inertia) barriers and mediators such as scepticism (Mani and Chouk, 2018). Similarly, extended IRT models were proposed by considering the perceived cost barrier (Moorthy et al., 2017) and individual mobiquity, technological innovativeness and government surveillance (Chouk and Mani, 2019).

4.3. Characteristics inhibiting or stimulating resistance

Scholars have investigated digital innovation resistance in terms of innovation and consumer characteristics. Innovation characteristics represent features of innovation as perceived by consumers. Perceived price, complexity, perceived enjoyment, social influence, perceived usefulness, economic benefit, perceived novelty and intrusiveness are examples of innovation characteristics (Abbas et al., 2017; Achadinha et al., 2014; Antón et al., 2013). In comparison, emotions, innovativeness, motivation, self-congruity, self-efficacy and dependence are examples of consumer characteristics (Abbas et al., 2017; Cha, 2011; Chouk and Mani, 2019; Mani and Chouk, 2017; Matsuo et al., 2018).

Around 51% of the studies included in the current review used this approach to apply innovation characteristics and/or consumer characteristics to the examination of resistance and intentions to adopt digital innovations. The key constructs used in the related studies include compatibility, perceived usefulness, complexity, perceived benefits, self-efficacy and innovativeness (e.g. Cha, 2011; Chouk and Mani, 2019). Jahanmir et al. (2018) discussed the role of innovativeness in the late adoption of digital innovations, whereas Pal et al. (2019) discussed innovativeness in the case of IoT-enabled smart homes. Similarly, the role of consumer characteristics in the form of self-efficacy was revealed to have a significant influence on risk perceptions about Internet banking (Laukkanen et al., 2009). Similarly, openness to change has a substantial influence on reasons for adopting mobile banking (Gupta and Arora, 2017), whereas personality traits drive m-shopping intentions (Lissitsa and Kol, 2019), while scepticism results in a preference for simpler products (Jahanmir and Lages, 2016). Additionally, general Internet apprehensiveness (GIA) and transactional Internet apprehensiveness (TIA) can be used to capture the effect of consumer characteristics on information searching and online buying (Susskind et al., 2003).

In their study on resistance to smartphone usage, Abbas et al. (2017) found that innovation characteristics such as price, complexity and social influence were the dominant predictors of resistance to smartphones. Similarly, Mani and Chouk (2017) found that innovation characteristics such as perceived uselessness, perceived price, intrusiveness and perceived novelty had a noticeable impact on the resistance to smart products. Additionally, privacy concerns influenced intrusiveness. Furthermore, perceived ease of use has the effect of reducing resistance in the case of smart products (e.g. Im et al., 2014).

4.4. Non-adoption (postponement, opposition and rejection)

About 10% of the articles included in this review discussed digital innovation resistance in terms of postponement, opposition and rejection, which represent varying degrees of resistance (Laukkanen et al., 2008). In the case of brand mobile apps, Chen et al. (2019) found that the effects of market competition and cross-channel factors were different for resistance behaviour, measured in terms of three different degrees of resistance (postponement, opposition and rejection). Differences in the antecedents of these three were also noted by Laukkanen (2016) in the case of mobile and Internet banking. Laukkanen et al. (2008) studied the difference in the response of postponers, opponents and rejectors to the five barriers in the context of Internet banking. The study revealed that the intensity and nature of innovation resistance im-

pact the decision to reject, postpone or reject any innovation. The three categories of non-adopters differed significantly in terms of all five barriers. Herein, postponers had lower resistance and rejectors had high resistance on account of all barriers. In the case of mobile banking as well, the three non-adopters differed in terms of image, value and usage barriers (Elbadrawy and Abdel Aziz, 2011).

Park and Koh (2017) confirmed the differences in degrees of resistance in the case of convergence products such as smartwatches. They revealed that rejection was driven by expectations related to better or higher quality as well as lower price, whereas postponement was affected by expectations related to lower price only. Similarly, while investigating these three non-adopter groups for online shopping, Lian and Yen (2013) revealed that opponents and rejectors had a higher level of barriers compared to postponers.

4.5. Socio-demographic aspects

A large part of the prior literature discussed consumer resistance to digital innovations in the context of consumer characteristics and their impact on intentions to adopt or reject a new digital product or service. Within this discussion, some studies presented findings related to the impact of demographic factors such as age, gender, income and education on an individual's resistance, which needs to be delved into separately (e.g. Laukkanen, 2016; Leong et al., 2020). Similarly, Elbadrawy and Aziz Aziz (2011) argued that resistance to digital innovations remained a less advanced model, particularly in the context of developing countries and cultural dimensions.

Gender and social norms have been found to predict intentions to buy virtual items (Cha, 2011). Similarly, age and gender drive adoption as well as rejection decisions related to mobile and Internet banking (Laukkanen, 2016), whereas gender and education influence the image, risk and usage barriers in the case of mobile banking (Elbadrawy and Aziz Aziz, 2011). Similarly, Leong et al. (2020) revealed the influence of the effects of education and income on resistance to m-wallets. Laukkanen et al. (2007) emphasised the importance of age-related factors in resistance to digital innovations. They found differences in the perceptions of mature and younger consumers towards mobile banking, where ageing was related to the risk barrier. Furthermore, psychological barriers were also higher among the older group compared to the younger group. These results were also confirmed in the case of online shopping, where older adults were found to have higher risk and tradition barriers as compared to younger adults, though gender was not found to play any role (Lian and Yen, 2014). The influence of age on the use of digital innovations was also confirmed by Lissitsa and Kol (2019), who revealed differences in the mobile shopping intentions of four generational cohorts, namely baby boomers and generations X, Y and Z.

Religion-related aspects have also been argued to influence the response to digital innovations. For instance, religiosity has been revealed to influence innovation resistance (Hong, 2020). Similarly, in one of the few studies associating Internet and online shopping adoption with religiosity, Lissitsa and Cohen (2018) confirmed that the chances of the adoption of the two were higher for the ultra-Orthodox community in comparison to other Jewish religiosity groups (secular, traditional and religious). Furthermore, gender and locality impacted the online shopping pattern of the ultra-Orthodox group, with men more likely to indulge in it.

4.6. Methodological perspectives

Nearly 65% of the studies reviewed in this SLR employed the cross-sectional approach of data collection, and the remaining studies are either conceptual or used a mixed-method approach to collect data (e.g. Pal et al., 2019; Shi, 2011) (Fig. 6). The selected
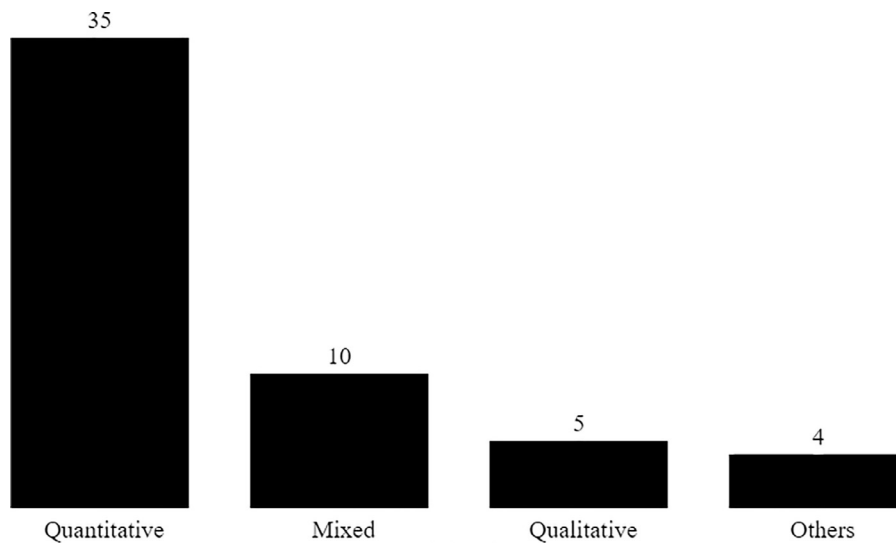
Fig. 6. Research methods.

studies focusing on empirical analysis utilised a variety of tools for statistics and econometrics for multi-variate analysis. The methods ranged from analysis of variance (ANOVA) (e.g. Elbadrawy and Aziz Aziz, 2011; Laukkanen et al., 2009), *t*-test (e.g. Laukkanen et al., 2007), discriminant analysis (e.g. Lian and Yen, 2013), logistic regression (e.g. Lissitsa and Cohen, 2018), exploratory factor analysis and confirmatory factor analysis (e.g. Chemingui and Ben Iallouna, 2013) and structural equation modelling, both the parametric covariance-based (CB) (e.g. Matsuo et al., 2018) and non-parametric, partial least square (PLS) (e.g. Chang et al., 2019; Nel and Boshoff, 2019) forms. Thus, most of the empirical studies have utilised common but popular methods of analysis. Some scholars have also applied less common methods, like the hierarchical value map (Kuisma et al., 2007; Heinze et al., 2017), artificial neural network (Hew et al., 2019) and two-staged structural equation modelling-artificial neural network (SEM-ANN) approaches (Leong et al., 2020). In addition, one of the studies used the method of post-analysis to examine the reaction of users to the implementation of algorithmic personalisation by Instagram (Skrubbeltrang et al., 2017).

Notably, most of the empirical studies evaluated the direct path, with only a limited number of studies (about 30%) considering the third variables in terms of moderating, mediating or controlling influences. Some key moderating influences considered by prior scholars include consumer innovativeness (Abbas et al., 2017), satisfaction with offline service (Chen et al., 2019), variety seeking (Kim et al., 2017), gender (Lian and Yen, 2014), experience (Matsuo et al., 2018), stickiness to cash payment (Sivathanu, 2019), attitude (Siyal et al., 2019), mobile shopping-service experience (Nel and Boshoff, 2019), voluntariness of use (Soh et al., 2020), task situations (Sun, 2016) and e-lifestyle (Yu et al., 2015).

The key mediating variables examined by the selected studies are attitude (Antón et al., 2013), innovation resistance (Hong, 2020; Im et al., 2014), perceived value (Kim et al., 2017), complexity barriers, performance risk barriers and existing usage patterns (Matsuo et al., 2018), scepticism (Mani and Chouk, 2018), perceived usefulness and perceived ease of use (Siyal et al., 2019). On the whole, the studies of utilised moderators focus on user characteristics and experience and mediators that capture barriers and resistance. With regard to control variables, demographic factors, such as age, gender, education, social class and work situation, have been utilised (e.g. Lissitsa and Kol, 2019; Wagner Mainardes et al., 2019).

Adding methodological variety to the area, Skrubbeltrang et al. (2017) analysed comments posted on In-

stagram and Twitter in response to the implementation of algorithmic personalisation by Instagram. Finally, contributing to methodological enrichment in the area, two studies have also developed scales to help future researchers. Out of these, the late-adopter scale comprises three dimensions, namely, slowness of adoption, resistance to innovation and scepticism (Jahanmir and Lages, 2016). Another developed scale consisted of two dimensions: general Internet apprehensiveness (GIA) and transactional Internet apprehensiveness (TIA) (Susskind et al., 2003).

4.7. Outcome variables of interest

All selected studies have been shortlisted on the basis of the fact that they have discussed consumer resistance in some other digital contexts. However, on the evaluation of the articles, we find that about 40% of the previous literature on digital innovation resistance has examined resistance as the outcome variable (Fig. 7). Within this limited number, a few used generic IRT barriers to represent resistance (e.g. Laukkanen and Kiviniemi, 2010) or measured it through the three degrees represented by rejection, opposition and postponement (e.g. Park and Koh, 2017; Chen et al., 2019). Some other studies have investigated resistance to change as a consequence (e.g. Chang et al., 2019; Zhou, 2014). In comparison, most studies measured resistance as a whole (Oh et al., 2019; Pal et al., 2019).

Notably, other empirical studies have focussed on outcome variables, such as adoption, attitude, intention to use, late adoption and actual usage, revealing a continued adherence to a positivist agenda of acceptance (e.g. Lissitsa and Cohen, 2018; Patsiotis et al., 2013; Sun, 2016; Goyal et al., 2013). A few studies have also investigated resistance as an intervening variable driven by hypothesised antecedents and, in turn, driving intentions (e.g. Hong, 2020; Sivathanu, 2019).

5. Research gaps and future research avenues

A systematic review of the selected studies revealed six major gaps in the prior literature. These gaps and associated avenues of future research are discussed here.

5.1. Limited theoretical advancement

The extant literature has exhibited limited theoretical advancement as well as the acknowledgement of consumer resistance as an area that requires individual focus. This gap has persisted de-

Others include adoption/non-adoption, attitude, facebook abstention, IRT barriers, and late adoption

Fig. 7. Outcome variables of interest.

spite prior scholars noting a dearth of related studies and a need for intensifying the investigations (e.g. Hew et al., 2019). For discussion in the research themes, about 55% of the studies utilised IRT to model resistance, and within this, more than half of the studies used IRT in conjunction with one or the other theories of adoption/acceptance (e.g. TAM). This adherence to a positivist agenda for investigating the factors increasing adoption has limited the accumulated knowledge available to assist decision-making in the face of resistance to digital innovations.

Avenues of future research: We recommend that in future research, scholars extend the classic tenets of IRT and identify newer barriers that may increase consumers' resistance, thereby slowing down the diffusion of innovations or leading to their complete rejection. Scholars should draw newer insights from SQB theory, which provides an interesting way of modelling post-adoption behaviour through inertia, as argued by Seth et al. (2020). Similarly, scholars have utilised behavioural reasoning theories such as BRT (Sahu et al., 2020) to study consumer resistance towards digital innovations. Prior research also contended that inertia, which also represents adherence to the status quo, like resistance, inhibits online buying (Nel and Boshoff, 2019).

5.2. An excess of action-oriented conceptualisations in research design

The current review suggests that more than 60% of the studies have relied on the cross-sectional data collection method, which indicates an excess of action-oriented conceptualisations without deeper investigation of the social and psychological aspects of consumer resistance. The cross-sectional study design also suffers from methodological issues, which may limit the generalisability and robustness of findings, as argued by several prior scholars (e.g. Talwar et al., 2020b).

Avenues of future research: We recommend that future research be driven by experiment-based studies that can provide a better perspective and interesting results on the thought processes of consumers. Furthermore, longitudinal studies can also be conducted to capture the change response of consumers who are constantly exposed to stimuli in the form of social and promotional influences, which may alter their resistant response to digital innovations.

5.3. Narrow range of digital innovations investigated

As described in Fig. 5, most of the existing studies related to consumer resistance are largely confined to the Internet or mobile banking (Elbadrawy and Aziz Aziz, 2011; Patsiotis et al., 2013), online shopping (Lian and Yen, 2013) and mobile shopping (Nel and Boshoff, 2019; Lissitsa and Kol, 2019). With existing resistance studies heavily skewed in favour of innovations in banking and shopping, gaps in the study of resistance exist in terms of the variety of digital innovations examined and sectors covered. This opens up areas for future research.

Avenues of future research: Scholars should explore resistance to new and upcoming innovations, such as wearables like Google glasses, artificial intelligence-driven solutions, smart services and so on. Such innovations represent a change in the existing habits and deviations from experiences of consumers. Due to this, they are likely to encounter consumer resistance and need to be examined in varying contexts.

5.4. Passive resistance remains under-explored

The reviewed studies have largely focused on the five barriers, namely, usage, value, risk, tradition and image barriers, as both independent and dependant variables. These barriers capture active resistance, though only one study included in the review made reference to active resistance (Chen et al., 2019), and no study examined passive resistance. We feel that the lack of knowledge related to passive resistance to digital innovations, which may manifest even before evaluating it (Heidenreich and Spieth, 2013), is a critical gap in learning as it limits the strategic inputs available for managers to plan for such a covert response.

Avenues of future research: We recommend that future studies in the area measure the inclination to resist change and maintain the status quo in prospective buyers. In this context, switching behaviour that examines impediments to moving from systems being used to new innovations/improvements can be evaluated through experimental studies that compare user responses to experiences obtained from different alternatives (e.g. Polites and Karahanna, 2012). The focus should be on evaluating the subconscious rejection of a digital innovation even before evaluation.

5.5. Limited findings on degrees of resistance

There is a paucity of studies in terms of investigating the three degrees of resistance, namely, rejection, opposition and postponement. Since prior studies have noted differences in the barriers for consumers exhibiting these three degrees of resistance (e.g. Laukkanen, 2016; Lian and Yen, 2013), the scarcity of perspectives is a gap that needs to be addressed. This is particularly important in the case of opposition or postponement, which can finally lead to either rejection or adoption.

Avenues of future research: We believe that the three degrees of resistance present a clearer picture of the resistant behaviour of consumers. Therefore, they need to be conceptualised in far more detail than has been done in the extant literature. We recommend that future studies measure differences in the degrees of resistance by considering the impact of not only the classic IRT barriers but also other variables. These variables could include product knowledge, technology readiness, governmental support, regulatory surveillance, service attributes, channel features and frequency of purchase. In addition, future researchers can also utilise various context-specific factors that can make a situation unique by enhancing the predictability of behaviour (Sahu et al., 2020). Furthermore, since opposition can turn either way, postponement or rejection, investigation of the dynamics through which one degree of resistance leads to another needs to be conducted through longitudinal studies.

5.6. Lack of socio-demographic insights

Despite the manifestation of consumer resistance as consumer behaviour, few studies have explored the impact of socio-demographic, geographic and cultural factors in highlighting the individual differences in consumers' resistance to digital innovations. Some of the selected studies have suggested the influential role of socio-demographic variables (age, gender, income, education and culture) in driving consumer resistance (e.g. Lian and Yen, 2014; Lissitsa and Kol, 2019). However, the findings are limited and cover a narrow spectrum of digital products/services. Similarly, there is a visible skew in the findings of the prior literature related to culture- and country-related findings in the prior literature. Most of the studies were related to Asia, Europe and the USA (Fig. 3).

Avenues of future research: Models accommodating socio-demographic factors can provide improved insight into the resistant behaviour of consumers towards digital innovations. Prior researchers have argued that the pattern and degree of resistance can vary from country to country (Joachim et al., 2018). Due to this, we recommend that scholars interested in the area should seek to incorporate socio-demographic factors, such as religiosity and collectivist versus individualistic culture, and political factors, such as the extent of the governmental promotion of digital innovations. Scholars should consider using Hofstede's cultural dimensions (Hofstede, 2001) to assess resistant behaviours since the individual response and attitude towards any innovation can be driven by traits such as risk-taking, and future researchers should consider using Hofstede's cultural dimensions (Hofstede, 1983) to assess resistant behaviours. Furthermore, studies should also measure differences in resistance across various generational cohorts to make available generation-specific findings that can serve as the basis for the personalisation of promotional campaigns, especially through social media platforms.

6. Framework development

Our systematic review revealed a dearth of comprehensive models offering multi-dimensional conceptualisations of consumer

resistance that can be applied to a variety of digital products/services and contexts. To bridge this gap in the extant literature, we have formulated a framework to guide future research. As a referent, this proposed framework uses the RAIC (Resistance adoption inertia continuance) framework proposed by Seth et al. (2020), which modelled pre-adoption barriers as well as the adoption/investment behaviour of retail investors. The proposed framework, the resistance communication adoption framework (RCA model), brings together the findings of the reviewed studies and our insights developed through an extensive review of the related literature (Fig. 8). The RCA model can be tested by future researchers in varied digital products and services.

The RCA model is conceptualised to capture the differences in the resistance of the three resistant groups, namely rejectors, postponers and opponents, and examine the mechanics of the translation of resistance into adoption/non-adoption by including the influence of communication. It draws upon the theoretical lenses of IRT (Ram and Sheth, 1989) and the dual-factor concept (DFC) (Cenfetelli, 2004) to provide grounding for the propositions. The model comprises four distinct blocks. Block one is based on DFC, and it includes digital innovation and consumer characteristics as two broad dual factors that act as antecedents of resistance. Resistance is modelled in block two, utilising the IRT barriers divided into two broad groups: functional and psychological. The third block comprises the three degrees of resistance, and the fourth block represents how consumers finally make the adoption/non-adoption decision under the influence of communication by the firm/service provider/marketer. Furthermore, all these associations are hypothesised to be moderated by a host of cultural and other socio-demographic factors.

The dual factors, digital innovation characteristics and consumer characteristics, have been discussed in detail as among the emerging themes in the preceding part of the SLR. Both of these contain inhibiting and exacerbating factors, as discussed by DFC. The digital innovation characteristics are represented by perceived complexity, intrusiveness, relative advantage, perceived risk, perceived novelty, price, trust, economic benefit, perceived control, perceived usefulness, compatibility, trialability, system quality and product quality. Similarly, consumer characteristics are perceived enjoyment, self-image, emotion, innovativeness, social influence, self-efficacy, lifestyle, self-congruity and dependence. We posit that these two factors act together to stimulate or inhibit the barriers that consumers may have towards the digital innovation under consideration.

The functional and psychological barriers represent the IRT barriers: usage, risk, value, image and tradition barriers. In addition to these generic barriers, other miscellaneous barriers can also be modelled in RCA depending on the digital product or service being investigated. We consider these barriers key because we feel that digital innovations have percolated enough globally for consumers to be attracted towards them, yet adopting them might still be challenging. This has also been emphasised by the reviewed studies. The framework hypothesises these barriers as the dependant variables impacted by digital innovation characteristics on the one hand and the consumer characteristics on the other.

The IRT barriers are further hypothesised to impact the degree of resistance, measured in terms of rejection, opposition and postponement. This implies that the barriers may lead to a different level of resistant response of consumers towards digital innovations. Prior scholars have discussed the varying degrees of resistant behaviour, particularly the fact that opposition or postponement can culminate as either rejection or adoption. To reflect the possibility of such a transformation, in the last block of the framework, we have presented the possibility of the role of communication that managers may utilise to influence the three non-adopter groups, namely, information and guidance provided through per-
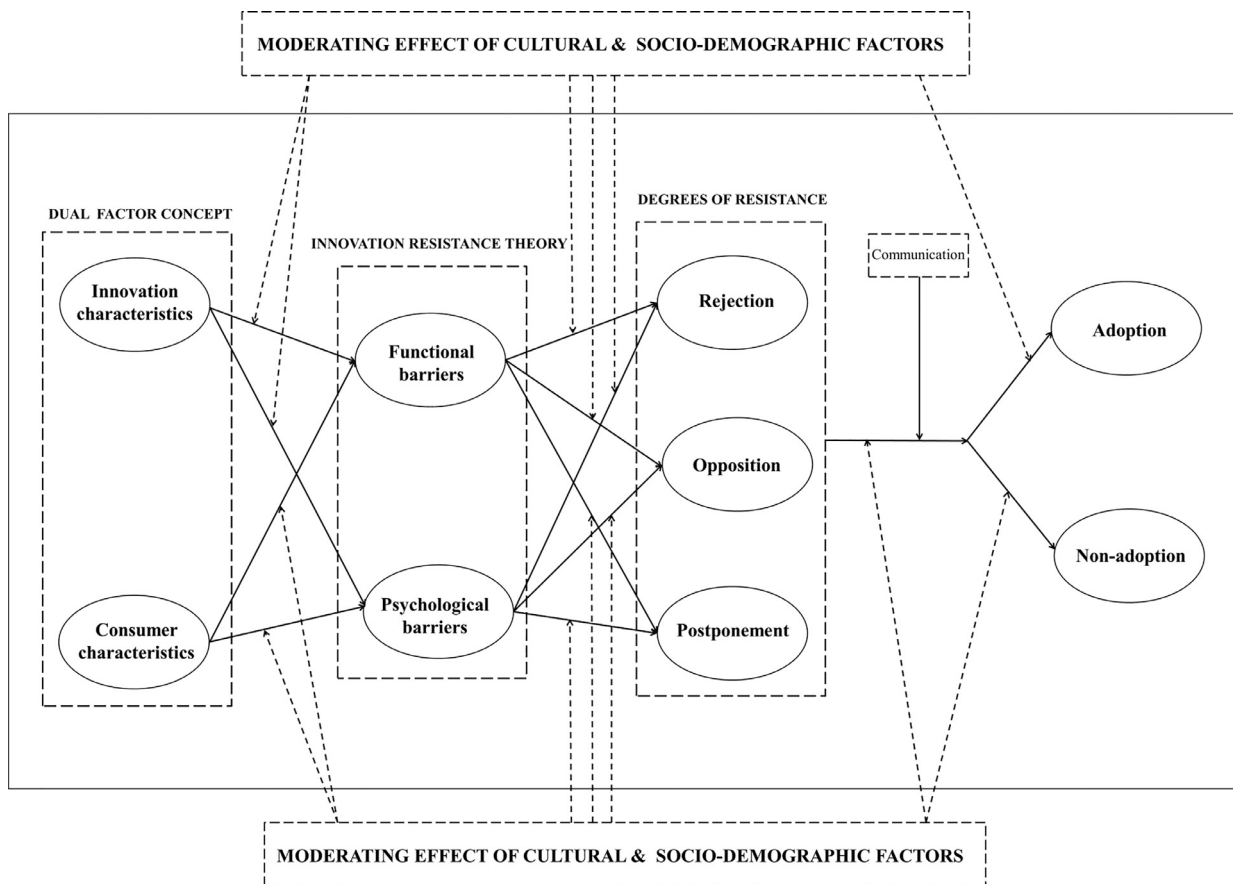
Fig. 8. Resistance communication adoption framework (RCA model).

sonal interaction and mass media. Information and guidance can lower resistance by addressing the apprehensions that prospective users may have in their mind. In addition to communication, as suggested by previous studies, other actions to motivate consumers to adopt, depending on the specific digital product or service under consideration, can also be included in the model. Finally, we hypothesise that under the influence of communication, opposition, rejection or postponement may transform into adoption. Additionally, we have also modelled the possibility of communication remaining ineffective, thereby causing consumers to take a non-adoption decision.

To accommodate the role of personal differences among consumers and their impact on resistance towards digital innovations, we have suggested the contexts that may be considered as moderating variables. The suggested moderators include cultural dimensions and socio-demographic factors, such as government, country, age, gender, income and education. The cultural dimension that the study proposes to use is one of Hofstede's dimensions, uncertainty avoidance.

Executing the framework: Researchers can use this framework in part or fully to empirically measure the hypothesised associations. The barriers and degrees of resistance representing non-adopter groups can be measured through the pre-validated scales available in the prior literature. To make the findings more robust, the scales can be adapted to the context of study through a qualitative approach in the form of open-ended essays or focus group discussions. Such an exploratory qualitative study can also help in the identification of additional barriers specific to the product or service under consideration. In addition, while collecting data for empirical analysis, future researchers can measure innovation and consumer characteristics as second-order constructs, in consonance with the approach utilised by Talwar et al. (2020c) to

measure the initial trust in mobile payments. Lastly, to examine the translation of varying degrees of resistance into adoption/non-adoption, we suggest a longitudinal study may be conducted by forming two groups of non-adopters, wherein the first group is the control group that is subjected to communication, and the second group is tested again through cross-sectional data collection without any such external influence. With regard to the moderating variables, the framework offers the flexibility of employing one or more of these moderators while controlling for others. For instance, the study can be conducted in a particular country while using age, gender and uncertainty avoidance as control variables.

7. Implications of the study

7.1. Theoretical implications

Our SLR uncovered several research-related patterns in the extant literature on consumer resistance to digital innovations and indicated several areas where academic researchers can undertake impactful research to influence practice. Specifically, our study makes theoretical contributions: First, it provides a deep insight into the theories and methods utilised by prior scholars. For instance, it reveals that IRT (Ram, 1987; Ram and Sheth, 1989) is the most popularly applied theory of consumer resistance in the existing literature on digital innovations, followed by the technology acceptance model (Davis, 1989) and innovation diffusion theory or diffusion of innovation theory (Rogers, 2003). Furthermore, it brings forth the continued use of an adoption lens in the evaluation of resistance and the narrowness of the research methods employed by the studies in the area. These findings can help in the advancement and enrichment of theory-based research by helping academicians identify the theories and frameworks that have

proven validity and are valuable enough to be taken forward for investigating the resistance to varied digital innovations.

Second, the study provides a close look at the mediating, moderating and control variables utilised by prior studies and underscores the key variables utilised, thereby spotlighting the significance of examining such variables to better elucidate consumer resistance.

Third, it identifies key geographies, academic articles and publication sources in the area for the reference of future researchers. Such profile-based research inputs can help scholars identify related geography to investigate and publications outlets that would be more receptive towards studies focused on consumer resistance to digital innovations.

Fourth, it critically analyses the literature to present gaps in findings and potential research areas based on these gaps to encourage academic research in the area. The proposed research paths and avenues, based on the appreciation of the fact that consumer resistance can doom the best of digital innovations to failure, will elevate the quality and depth of discussion in the area.

Fifth, it is the first SLR to define the conceptual boundaries in the area of consumer resistance by grouping past studies under the broad heads of resistance to digital innovations, organisational resistance to technological innovations, resistance to technological healthcare innovations and consumer resistance to innovations in offline space. Such conceptualisation is expected to help future researchers endeavouring to systematically review the literature in the area as well as advance research in groups that remain underrepresented so far. The SLR has also proposed a definition of consumer resistance in the specific context of consumer resistance. No other study has defined consumer resistance in this context before.

Lastly, motivated by the awareness that the accumulated findings are deficient in the context of comprehensive frameworks and models to examine consumer resistance, the study has built on the findings of the selected studies to present a multi-dimensional framework for assessing consumer resistance to digital innovations. This framework is quite versatile as it accommodates key constructs and barriers identified by past studies and incorporates the possibility of building in individual differences among the consumers being examined. Future research capturing all these aspects can be expected to yield robust results that can aid managerial decision-making.

7.2. Managerial implications

The findings of our study and the RCA model offer five inferences for practice: First, the findings suggested that for smart products and services, perceived security could be a major barrier, so emphasis should be placed on enhanced security to make consumers adopt these offerings. Simple set-up procedures should be formulated to overcome perceived complexity. Health risk concerns in the use of these devices can be overcome through safety labels certified by independent bodies. Advertisements to address the issue of perceived compatibility may be used to reduce this barrier by showing compatibility between the product and the self-image of consumers in terms of their habits and behaviour. Furthermore, technology anxiety can be reduced by communication strategies that enhance consumers' perception of power and control, and perceived usefulness can be enhanced by providing adequate support service, personalising services (e.g. nutritional advice with a smartwatch) and involving consumers at an early stage of product conception. Improvement in perceived usefulness can also decrease the perceived price barrier, which may be high, especially in the case of younger consumers. Any strategy to reduce resistance to smart products and services should address the perception of intrusion and privacy concerns by providing quick delete features and running awareness campaigns about data collected and disclosed (Abbas et al., 2017; Mani and Chouk, 2017, 2018).

Second, in the case of online shopping for physical goods, a value barrier may be overcome through discounts and tradition barriers through free samples and real-time online support. Furthermore, web-page design and multi-media tools can be used to promote products online. An image barrier in online shopping can be overcome by stimulating positive e-WOM (word of mouth) through a social community. In addition, as significant differences were observed within the non-adopter groups, postponers can be transformed into adopters by lowering usage barriers through friendly user-training material and online demos (Lian and Yen, 2013; Nel and Boshoff, 2019).

Third, since the majority of the studies were focused on mobile and Internet banking, some important implications for managerial strategies to counter resistance in this sector have emerged. The key implications for managers in this sector are related to the use of information and guidance to lower resistance. Meaningfully, such information and guidance may be one-to-one or through mass media, depending on the type of barrier. For instance, as the value barrier is an intense one to banking, most studies emphasise the role of marketing campaigns (mass media) that communicate the benefits of mobile banking as compared to its traditional form, whereas the usage barrier may be handled through one-to-one personal education from banking personnel. Similarly, non-adopters and postponers, who generally have risk-related barriers, may be handled through targeted market actions like assurances related to breaking in connection and error warnings to address safety issues. In the case of opponents, where the tradition barrier in terms of habit is high, in addition to the strategies used for postponers, managers can enhance the image of the service using both mass media and personal interaction. For rejectors, banks should use one-to-one communication more to convince them of the usefulness, safety and benefits of mobile and Internet banking. Mass media can play a supportive role.

Fourth, trust, another important consideration in the case of mobile and Internet banking, needs to be addressed through maintaining system quality. Further, since some studies found differences in the resistance offered by consumers in mature versus younger age groups, an innovation modification strategy is suggested for lowering the risk barrier of mature consumers. It is also suggested that information and guidance in both forms may be used along with trials to lower the barriers related to the negative image of this type of banking (e.g. Chemingui and Ben Iallouna, 2013; Laukkanen and Kiviniemi, 2010).

Lastly, from the managerial perspective, our proposed framework provides a 360-degree view of the aspects to be managed when launching any digital innovation. It suggests that the barriers, which are the outcome of the characteristics of digital products or services as well as those of consumers, can be lowered through information and guidance, which can be in the form of mass as well as personal communication. Furthermore, the framework underscores the importance of individual differences coming from the country of residence, age, gender and culture. This implies that, at the planning stage, the managers should design the product/service after defining the target geography and segment, as the innovation may need to be adapted to the specific context. The promotional material should also be designed keeping these aspects in mind. For instance, if the target segment is young consumers, the performance-to-price value should be emphasised more than ease-of-use while promoting the digital product/service.

8. Conclusion

Firms often incur high research and development expenditures to catalyse innovations, which, in turn, create pressure for speedy return on investment through the successful diffusion of innovation across markets. However, the failure rate of user innovations has been quite high in the past (Barczak et al., 2009) and

it continues to be dismal, ranging around 50% (Castellion and Markham, 2013). This SLR is motivated by the need to explore and elucidate the causes of consumer resistance to digital innovation that can lead to higher failure rates of innovation. We proposed to address four research questions. RQ1, which questions the research profile of the extant studies in the area of consumer resistance to digital innovations, was addressed through the generation of the summary statistics of 54 relevant studies identified through a robust search protocol. The details presented included the year-wise publications, publication sources, geographical scope and digital product categories investigated. RQ2, asking what the key themes of research on consumers' resistance to digital innovations were, was answered through the content analysis of identified studies. The analysis enabled us to classify the extant knowledge into seven dimensions: theoretical underpinnings, barriers against digital innovations, characteristics inhibiting or stimulating resistance, non-adoption (postponement, opposition and rejection), socio-demographic aspects, methodological perspectives and outcome variables of interest.

RQ3, seeking to identify the gaps and limitations in the extant literature that need to be addressed, was addressed through a critical synthesis of the extant literature. With the result, we uncovered six gaps that exist in the related literature, which were then used to indicate future research avenues to advance the knowledge in the area. RQ4, which asked how the research in the area could be advanced, was answered in two ways: first, by making recommendations for future researchers to bridge the gaps and deficiencies in the previous learnings, and second, by formulating a multi-dimensional framework to set the future research agenda. Research based on this framework can be expected to yield more generalisable findings with applicability in multiple contexts and geographies. The findings of such studies can also be anticipated to address the empirical and theoretical challenges faced by researchers in the area. The ideas provoked by the proposed framework can also be expected to impact the business community by presenting them with an array of inputs for relevant decision making. Managers can draw on these inputs to plan their pre- and post-product innovation strategies to garner better consumer engagement and reduce the instances of opposition, postponement or rejection of innovation. In sum, our study revealed that the research in the area remains in a nascent stage and identified a number of gaps, underscoring the need for the deeper theoretical examination of constructs and broader conceptualisation of the variables.

8.1. Limitations of the study

The contribution of our study should be evaluated in light of three limitations: First, we searched only two databases (Scopus and WOS), due to which we might have missed some relevant studies available on other databases. However, our coverage of the literature is quite extensive since most leading journals are listed on these two databases. Second, we followed a robust study search protocol based on relevant keywords, yet it is possible that some studies related to consumer resistance towards digital innovations could have been missed on account of the absence of our keywords in their title, author keywords and abstract. Third, due to time limitations, we could not seek peer review by experts to further refine our search. However, we conducted stringent independent coding by three researchers to ensure the robustness of the short-listing process.

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