



Revisiting customer analytics capability for data-driven retailing

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ABSTRACT

Customer analytics is one of the most dominant strategic weapons in today's competitive retail environment. In spite of its strategic importance, there is scant attention to investigating customer analytics capabilities in the retail context. Drawing on a systematic literature review and thematic analysis, this study proposes a multidimensional customer analytics capability model by identifying relevant dimensions and sub-dimensions in retail settings. The principal contribution of this study is that the model links a customer analytics perspective to a resource-based view (RBV)-capability of the retailers by proposing six customer analytics capability dimensions and twelve sub-dimensions in the spectrum of market orientation and technology orientation. The customer analytics capability dimensions depict three crucial themes of marketing, such as value creation (offering capability and personalization capability), value delivery (distribution capability and communication capability), and value management (data management capability and data protection capability). By incorporating this capability dimensions, practitioners will likely be able to engage customers and enhance customer equity.

1. Introduction

Advanced technologies are rapidly emerging in the ever-changing global retail landscape (Adapa et al., 2020; Daunt and Harris, 2017; Ferracuti et al., 2019). Some retailers are overwhelmed by technology-oriented opportunities and may utilize technologies without a clear understanding of both how they match into their plan and, probably, how customers see the relevance of those opportunities (Inman and Nikolova, 2017). A recent study conducted by the research firm 'Periscope-McKinsey' found that 78% of US retailers fail to provide unified brand experience to their customers due to the lack of customer analytics in various channels and inefficiency to engage customers across shopping journeys (Weinswig, 2018). Another study found that Australian fashion retailers struggle to remain competitive in the marketplace due to lack to customer focus and technology advancement (BBC, 2019; Euromonitor-International, 2019). The current study has taken an attempt to provide an explication to retailers by modelling customer analytics capability dimensions.

Customer analytics has been gaining momentum in recent years (Bonacchi and Perego, 2019; Hossain et al., 2020; Jayaram et al., 2015; Kitchens et al., 2018) because of the explosion of advanced innovative technologies and the ascent of new channels and new gadgets

(Herhausen et al., 2019; Verhoef et al., 2015). There is a higher pressure than ever before to satisfy customers, leveraging a large amount of structured and unstructured customer data (Sun et al., 2014; Wedel and Kannan, 2016) through the use of customer analytics (Hossain et al., 2020). Customer analytics helps to capture value for retailers in terms of sales forecasting, remarketing, micro-segmentation, dynamic pricing, churn prediction, and so on.

Despite the importance of customer analytics, there is a dearth of studies on the specific capabilities relevant to customers' benefit. Capability refers to "the firm's capacity to leverage internal and external resources to create new value for stakeholders and maximize competitive advantage" (Rahman et al., 2019). In the research of big data analytics, Akter et al. (2016) defined capability as the firm's capacity in management, technology handling, and talent utilization. Davenport and Harris (2007) perceive the capability notion as the firm's ability to set the optimal price, identifying quality problems, selecting the optimal level of inventory in the data-rich environment. While scholars have emphasized on building capability in different domains such as marketing capability (Morgan et al., 2009; Vorhies and Morgan, 2005; Vorhies et al., 2009), big data analytics capability (Akter et al., 2016; Gupta and George, 2016; Wamba et al., 2017), business analytics capability (Cosic et al., 2015) and so on, they provide a limited view on

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Table 1
Definitional aspects of customer analytics.

Study	Potential research areas	Definition	Purpose
Davenport et al. (2007)	Target marketing (e.g., identifying loyal and most profitable customers to generate customer equity), value proposition (e.g., developing a better customer experience).	Customer analytics is the process of analyzing data by applying various models, and that helps to make decisions.	Showing the importance of customer analytics to gain an advantage over rivals and also acknowledge the importance of ethics when dealing with customers' data.
Bijmolt et al. (2010)	Customers' data are available both online and offline for deploying customer analytics. Model development is required for customer acquisition and customer retention to connect them more deeply.	Customer analytics is a technological system that combined algorithm models to understand and manage customer's data.	The purpose is to review the opportunities of data collection and to portray the importance of customer engagement and analytics for acquiring and retaining customers.
Germann et al. (2014)	Customer analytics can significantly impact the firm's decision making (e.g., analyzing its scanner data and customer feedback data for making a better offer).	Customer analytics is the system utilized to explore limitless opportunities to make consistent decisions and to produce discovery.	The purpose is to identify the industry that gains the most benefit from deploying customer analytics. Analytics gradually leads to retailers in higher performance.
Erevelles et al. (2016)	Consumer insights gain from analyzing structured, semi-structured, and unstructured data, which later helps to attain dynamic capability and adaptive capability for making the marketing strategies.	Customer analytics is an improved system that captures customer's insights continuously that helps to predict consumer behavior.	The purpose of the research is to propose a model for sustainable competitive advantage by introducing a resource base view, dynamic capability, and adaptive capability.
Braun and Garriga (2018)	Potential research area are: Customer's purchase and navigational pattern (e.g., Customer's journey analysis in online), Customer's preferences (e.g., product-service design), and satisfaction (e.g., customer experience improvement).	Customer analytics analyse the customer's entire shopping journey data quantitatively.	The customer journey has enhanced through online channels. The purpose of the research is to concentrate more on privacy issues when a firm analyses a customer's shopping journey data.
Kitchens et al. (2018)	Potential research areas are to set up strategies for deploying customer analytics in a big data environment; analysis of customer acquisition, retention, and expansion method.	Customer analytics is a distinct process that narrowly focuses on a single aspect of customer behavior at a time.	The purpose of the research is to evaluate the various sources of big data to create value and utilize customer analytics by leveraging the relationship marketing theory.

accelerating customer engagement. Thus, this research addresses the following question to overcome the existing research gap.

RQ: What are the customer analytics capability dimensions for data-driven retailing?

The result of customer analytics capability unearths the issue of customer engagement. The concept of customer engagement generally focuses on customers and has gained momentum in recent years among the academics and marketing practitioners (Haumann et al., 2015; Hollebeek et al., 2019; Precourt, 2016). A firm should have the ability to engage customers by fulfilling their needs (Palvia, 2009; Yim et al., 2008). Furthermore, a firm's proficient customer analytics capability can also link up with customer equity as it has been recognized as the most significant determinant of the long-term values of the firm (Kim and Brandon, 2010; Lemon et al., 2001). The value a firm generates from a customer is not limited to the current transaction, but is the cumulative profit a company makes from the customer in the entire relationship over time (Kumar and George, 2007; Lee et al., 2014).

This research makes several significant contributions, both in theory and practice. Focusing on the outside-in view, this study combines market orientation (Day, 2011; Srivastava et al., 1998) and technology orientation (Trainor et al., 2011; Zhou et al., 2005) into the RBV research stream that generates RBV-capability to drive retail firms to respond effectively in market conditions. Besides, the outside-in view extends previous marketing capability research (Theodosiou et al., 2012; Vorhies and Morgan, 2005; Vorhies et al., 2011) and introduces a higher-order customer analytics capability by generating value in retail settings. Practically, the proposed customer analytics capability model is envisaged to connect customers, and ultimately maximize customer equity.

The paper progresses as follows: first, it focuses on the literature in the context of retail, customer analytics, and relevant theories in the capability research stream. Second, it discusses the methods and proposes a conceptual model. Subsequently, the study discusses the study findings, the theoretical and practical contributions, and provides guidelines for future researchers.

2. Literature review

2.1. Retail and customer analytics context

Global retail sales value is nearly US\$25 trillion, which is expected to strike US\$30 trillion by 2023 (emarketer, 2019). The number of tech-savvy customers is growing globally (Hallikainen et al., 2019; Hwang and Oh, 2020; Kurata, 2019), and they demand substantial value from the retailers (Hinsch et al., 2020; Huang, 2019; Ladhari et al., 2019; Souiden et al., 2019) as they have intercommunication with them on a relatively regular basis. The conversations between the customer and firm produce a massive amount of customer data (Kunz et al., 2017; Liu et al., 2019; Xie et al., 2016). These beneficial customers' data manifest a new pathway to the retailers to serve the customer more efficiently (Aloysius et al. 2016, 2018; Germann et al., 2014). Analytics, especially customer analytics plays an active role in analysing these customers' data. Customer analytics provides adequate opportunities for retailers by seizing the most relevant customer insights (Germann et al., 2014; Hossain et al., 2020).

Customer analytics is one of the sub-dimensions of marketing analytics (Hossain et al., 2020), and is a requirement to generate outstanding experience for customers (Magill, 2016). One stream of research emphasizes value creation and developing strategies. For instance, customer analytics helps to generate shrewdness from a large volume of data and provides direction to firms to set up a cross-selling strategy by analysing consumer's purchasing patterns (Verhoef et al., 2010). Another stream of research emphasizes the aspect of exploring new opportunities. For example, Surma (2011) considered customer analytics to create scope through customer-centric data mining from both physical and online settings. In this current study, we define

Table 2
Relevant studies on contemporary capability research stream.

Capability Research Stream	Relevant studies	Theoretical foundation
Marketing Capability	Vorhies and Morgan (2005) Morgan et al. (2009) Foley and Fahy (2009) Day (2011) Ngo and O’Cass (2012) Alnawas and Hemsley-Brown (2019)	RBV, market orientation, organizational learning RBV, dynamic capability Capabilities/resource based view RBV, dynamic capability, market orientation, adaptive capability RBV-capability theory
Big data analytics capability	Akter et al. (2016) Gupta and George (2016) Mikalef et al. (2017) Wamba et al. (2017)	RBV (resources & capabilities), market orientation RBT (resources & capabilities) RBT (resource-based theory) RBV, dynamic capability
Business analytics capability	Cosic et al. (2012) Cosic et al. (2015) Santiago Rivera and Shanks (2015)	RBV and sociomaterialism RBV, dynamic capability RBV, dynamic capability RBV

customer analytics as the advanced technology embedded process that assists in extracting insights about consumer behaviour from both online/mobile and offline channels to predict offerings and enhance the adaptive capacity to formulate marketing strategies. Table 1 portrays the definitional aspects of customer analytics that is extrapolated from the literature.

2.2. Relevant theories to develop customer analytics capability

To achieve a competitive advantage, firms enhance value by focusing on technology-enhanced, customer-centric communication. However, the value generation depends on identifying and developing essential resources and capabilities. This research introduces the following theories to develop a conceptual understanding of the customer analytics capability model. Table 2 portrays the relevant theories that is applied in the contemporary capability research stream.

Resource-based view (RBV) – RBV is a managerial framework used to facilitate a firm’s tangible and intangible vital resources with the potential to deliver a competitive advantage (Barney, 1991; Lee and Grewal, 2004). Wernerfelt (1984) acknowledges heterogeneity in a firm’s assets that are rare, valuable, distinctive, and non-substitutability are crucial, and the firm should have the ability to execute these varieties in an integrated way within the firm. A resource is significant if the organisational baseline is advanced or if the resource creates any benefits to customers that its rivals are unable to perform. A firm’s capital resources include a firm structure that facilitates the firm to convert insights into effect (Erevelles et al., 2016). A firm may require reconstructing the business processes to execute meaningful insights from data (Viaene, 2013). From an RBV point of view, the value of the customers depends on the firm’s resources and capability, but it is essential to identify the resources that have more influence on the process (Vargo, 2008).

Market orientation & technology orientation - In a traditional business environment, firms start from internal resources and look for outside opportunities, which is a firm’s inside out view (Day, 2011). As the market environment changes quickly and power shifts into the consumer’s hand, the firm should start to look at the outside in view first (Day, 2011; Day and Moorman, 2010). The outside-in view states that understanding the market condition should be the top priority of a firm (Haecel, 1999) (It is worth mentioning that marketing scholars have investigated marketing problems from an outside-in viewpoint Day, 2011; Ketchen et al., 2007; Srivastava et al., 1998). Market orientation is the firm’s outside-in view that brings the customer needs from the market, and that leads to creating value for the customers, which consequently helps to reap the advantage. Some of the studies addressed market orientation as a value-generating nature that makes it as customer orientation (Deshpandé et al. 1993). Other studies acknowledge that the outside-in view of the market orientation guides to delivering superior customer values (Day and Moorman, 2010).

According to Day (2011), a firm can connect customers profoundly and generate customer loyalty in the end if it becomes a market-oriented value leader. Thus, the more market-oriented a firm is, the higher the firm’s strength to create and deliver value to the customer. However, market orientation is not anticipated to influence a retailer’s performance directly. Instead, market orientation is likely to appraise higher-order customer analytics capability whose effects are expected to enhance a retailer’s performance. Besides, customers do not connect with a firm just because of the market orientation, but for the firm’s capacity to create and deliver value to the customer (Ngo and O’Cass, 2012). In this context, technology orientation is of high relevance, and scholars advocate that technology-dependent innovation is essential to connect customers (e.g., Zhou et al., 2005). A technology orientation within a firm can be observed as a viewpoint of “technological push” (Zhou et al., 2005), while a market orientation concentrates on the “customer pull” philosophy. Both market and technology orientations brings a distinct design (Trainor et al., 2011). The elevation of new technologies is vital to developing customer analytics capability. Technology dependent innovation is essential to connect customers (Zhou et al., 2005).

RBV-capability - The literature focuses more on the firm capabilities of handling valuable resources (Slater et al., 2006; Vorhies et al., 2009) and how these competencies harmonize with firm resources than contribute to attaining a firm’s competitive advantage (Morgan et al., 2009). A firm’s resources arrangement by its distinct capabilities is significant in generating firm’s unique performance (Vorhies et al., 2009). Capacity focused research have improved the thoughtfulness of how some firms have tackled resource scarcities through utilizing high-level capabilities to outperform the competitive firms (DeSarbo et al., 2007; Krasnikov and Jayachandran, 2008; Morgan et al., 2009).

A firm with a stable market orientation empowers the procurement of capacities that encourage associations between what is to be conveyed to customers in the marketplace and what customers anticipate from these types of offerings (Ngo and O’Cass, 2012). A firm with market-oriented sets significance on learning exposed and unexposed requirements of the customers (Slater and Narver, 1999). Therefore, a firm should concentrate on building and delivering unique capabilities to satisfy customers’ desired requirements and to explore distinct offers to meet potential wants. The orientation of technology signifies a firm’s capability to recognize and adopt new technology based on the market condition (Gatignon and Xuereb, 1997; Zhou et al., 2005). A market-oriented firm can analyse customers’ data, where resources include advanced software or systems that have the capability through which a firm can learn customer behaviour and make relevant recommendations. In contrast, a firm featured with traditional software is incompetent to analyse customers’ data (Bharadwaj et al., 2013). Our study found that there is a lack of customer analytics capability in existing research. Thus, by considering RBV-capability (generates through market orientation and technology orientation), this study is

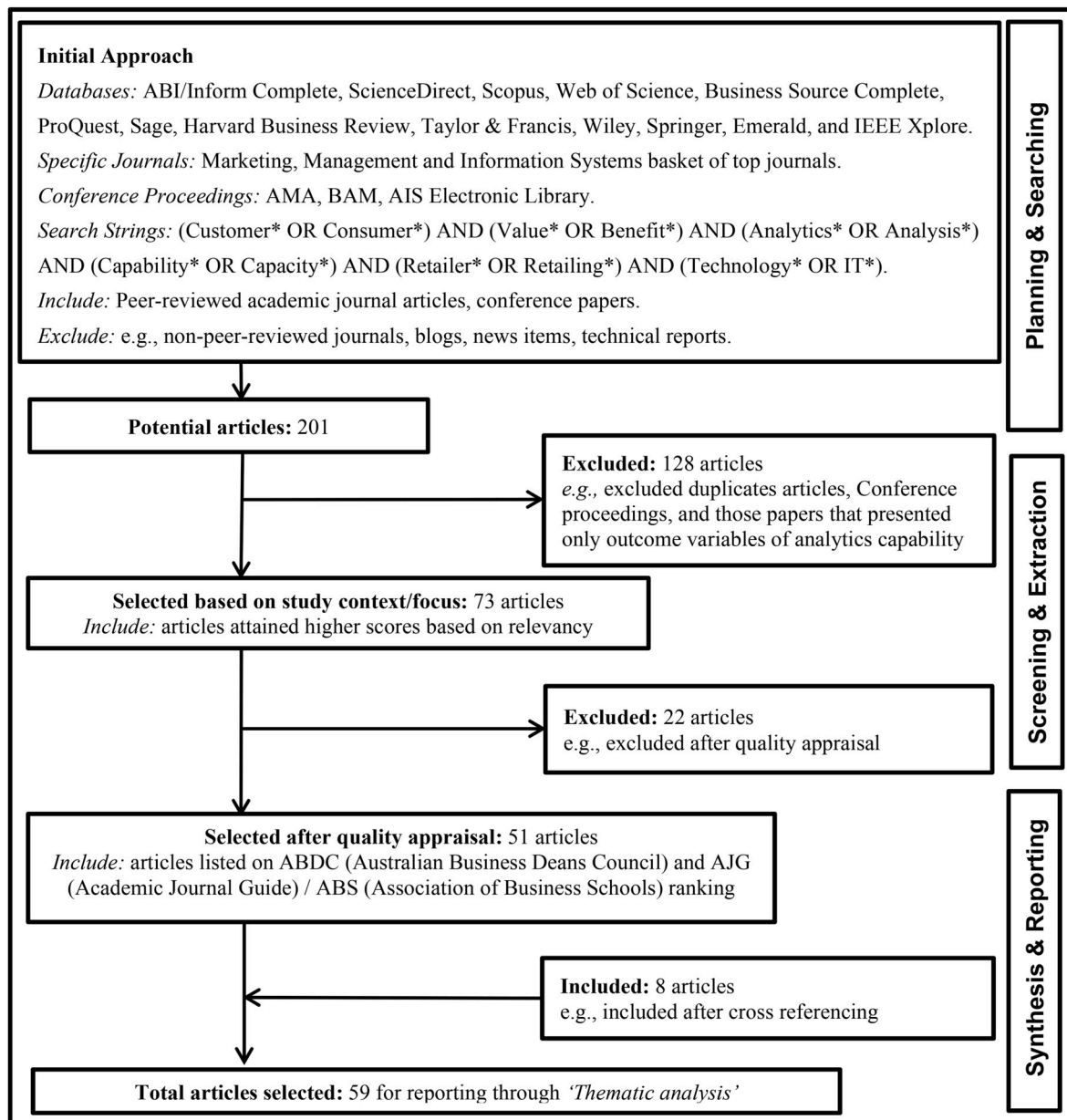


Fig. 1. Systematic Literature Review (SLR) Process for the current study.

likely to develop a customer analytics capability conceptual model specifically for the retailers.

3. Research methods

This research was initiated with a literature review to recognize and evaluate comprehensive information informing the definitional aspect of customer analytics. In order to address the research question, this study further incorporated a systematic approach of literature review (SLR). SLR aims to “comprehensively locate and synthesize research that sails on a particular question, using organized, understandable, and replicable procedures at each step in the process” (Littell et al., 2008). Tranfield et al. (2003) applied SLR in the field of management for producing knowledge and developing context-sensitive research. In the benchmarking study of SLR in a management context, Tranfield et al. (2003) acknowledged nine phases under three key stages, such as planning the review, conducting the review, and reporting and dissemination. Many researchers from business arena were inspired by

this process and adapted it in their studies. After taking the guideline from Tranfield et al. (2003) and similar type of reviews, Durach et al. (2017) introduced six steps of SLR process in the supply chain management study, such as defining the research question, preparing the components of primary studies, retrieving potential literature, picking the appropriate literature, synthesizing the literature, and reporting the results. Similarly, in recent business studies journals, Vrontis and Christofi (2019) applied a number of phases for SLR under four key stages, search protocol, detailed review of literature, thematic analysis and results. Watson et al. (2018) applied three steps in SLR such as searching, screening, extraction and synthesis in the study of “Harnessing Difference: A Capability-Based Framework for Stakeholder Engagement in Environmental Innovation,” which is consistent with Tranfield et al. (2003) approach. Thus, we follow this approach as an excellent example of a SLR to identify core constructs and their relationships within a conceptual model. Further, this approach has also been highly praised in one of the top tier marketing journals (Palmatier et al., 2018). Based on the above SLR guidelines, the current study

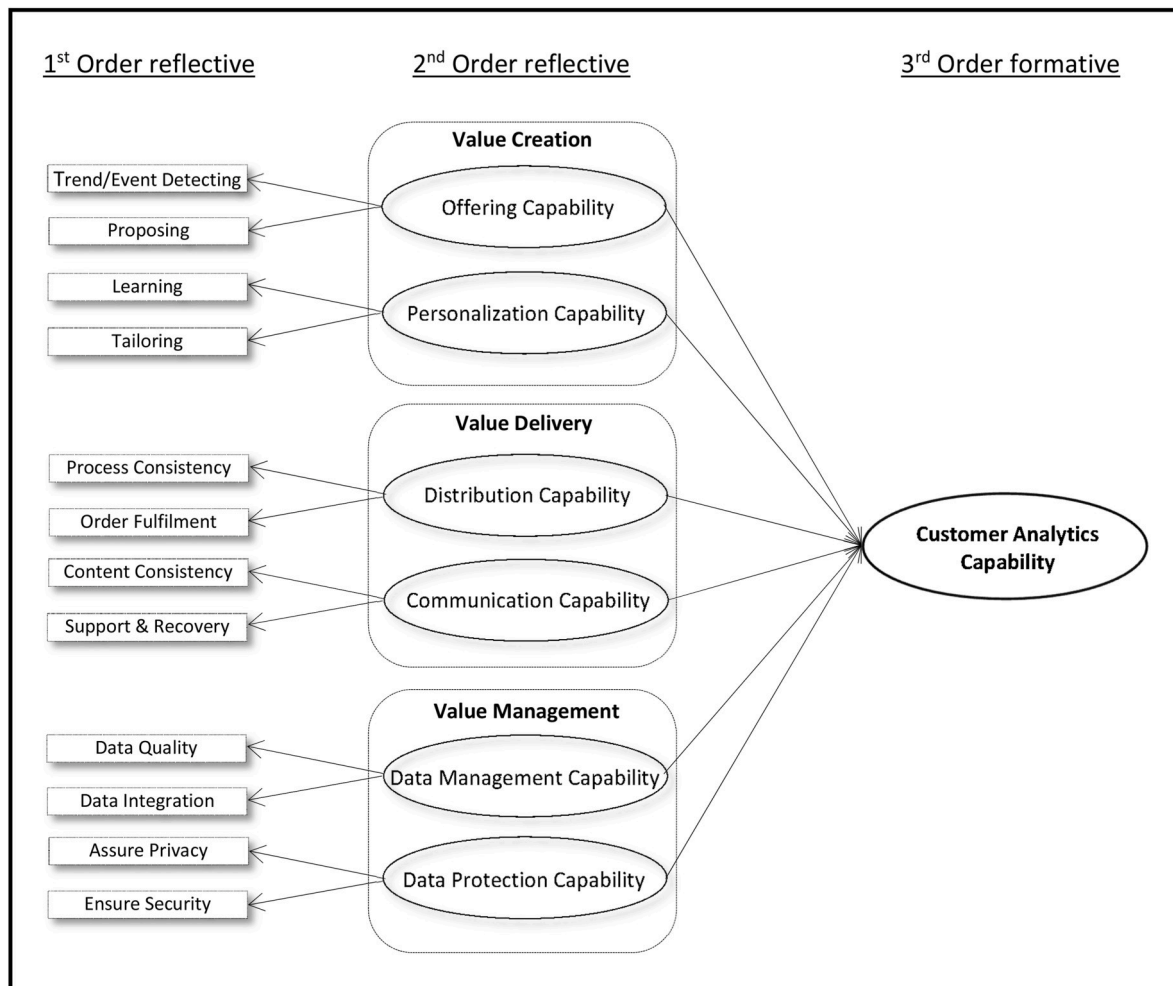


Fig. 2. Customer analytics capability: A higher order reflective-formative conceptual model.

applied several phases (see Fig. 1) along with three main stages (1) Planning and Searching, (2) Screening and Extraction, and (3) Synthesis and reporting.

(1) **Planning and Searching:** The authors set out the aforementioned research question to articulate the SLR. A flourishing review depends on transparent research questions that should be stated at the beginning of the review process (Nguyen et al., 2018). The Abstract, Title, and Keyword domains of the aforesaid online databases were searched, in a parallel way to Christofi et al. (2017) and Danese et al. (2018), as these domains usually hold the search words. Keywords have been identified initially from the research question and primary literature to construct the search strings. The keywords in each cluster were connected with the Boolean OR operator to generate a search string and Boolean AND operator to build a joint search string (see Fig. 1), in a similar way to Vrontis and Christofi (2019) and Watson et al. (2018). The authors considered the period for searching from 2000 (January) to 2019 (July) for looking scholastics papers in academic databases. Authors have chosen the year 2000 as the most minimal limit in light of the fact that the main fundamental article that showed cutting edge *technological* innovation in business change was “Beyond Computation: Information Technology, Organizational Transformation and Business Performance” by Brynjolfsson and Hitt (2000) was published in the Journal of Economic Perspectives (cited >3500 times). The initial

article search yielded a couple of thousand papers, where 201 articles viewed as more relevant to the context.

- (2) **Screening and Extraction:** The assessment of the aforementioned sample of 201 articles consisted of assessing the abstracts and titles of the articles, and assessing the introduction portion of the article. At this point, the authors had given less concentration on whether the inquiry absorbed entirely or partly on the examined question. The purpose was to detect all likely related researches that could shed light on the studied subject. Thus, in the screening stage, authors deleted duplicate articles, conference proceedings, and those articles that showed only the outcome variables of analytics capability. According to the guidance of Watson et al. (2018) and Pittaway et al. (2004), authors also independently scored the articles as part of the initial quality assessment and retained 73 articles for further investigation. The authors further matched the articles with ABDC (Australian Business Deans Council) and AJG (Academic Journal Guide) ranking and subsequently retained 51, while excluding 22 that failed to meet quality. The authors afterward checked the content of the 51 articles in more detail and used the data extraction form suggested by Bailey et al. (2017) and Nguyen et al. (2018) to describe observable aspects of the papers (e.g., type of paper, publication details, authors(s) details, etc.). This presented authors with the centres to recognize the complete nature of existing literature, methodological aspects, and research borders.
- (3) **Synthesis and Reporting:** At the end of the extraction, the authors identified some relevant articles that emerged through cross-

Table 3
Customer analytics capability constructs development – sources and concepts.

Constructs	Sources	Concise comments on constructs
1. Offering capability <ul style="list-style-type: none"> • Trend/Event detecting • Proposing 	Andreassen et al. (2015); Anna Rickman and Cosenza (2007); Atuahene-Gima (2005); Barczak et al. (2009); Du and Kamakura (2012); Israeli and Avery (2018); Ofek and Wathieu (2010); Sher and Yang (2005)	Retailer's ability to understand the market environment and current trend for making the appropriate offer to the customers through the help of analytics. Trend/event detecting capability assists a retailer to be observant and watchful to new market trends and opportunity discovery. Retailer's proposing (launching) capability refers to the firm's ability to make a new offer.
2. Personalization capability <ul style="list-style-type: none"> • Learning • Tailoring 	Ansari et al. (2000); Chung et al. (2016); Hauser et al. (2009); Khan et al. (2009); Murthi and Sarkar (2003); Steckel et al. (2005); Tam and Ho (2005); Wedel and Kannan (2016); Zhang and Krishnamurthi (2004); Zhang and Wedel (2009)	Personalization capability is the retailer's ability to learn consumer preferences and to make a customized offering to the consumers by deploying analytics. Learning is the process of observing the behaviour of customers. Tailoring is the ability of a retailer to customize the object based on the customer's preferences.
3. Distribution capability <ul style="list-style-type: none"> • Process consistency • Order fulfilment 	Akter et al. (2019); Banerjee (2014); Beck and Rygl (2015); Oh and Teo (2010); Sousa and Voss (2006); Thirumalai and Sinha (2005); Vorhies and Morgan (2005); Wollenburg et al. (2018); Wu and Chang (2016); Yong-zhi (2014); Zhang et al. (2018)	Distribution capability is the retailer's ability to deliver products or services through different channels. Process consistency refers to technical and systematic consistency in all the channels while dealing. Order fulfilment only makes sure the customer's comfortable ordering arrangement. For example, a customer can order a product online and collect it in-store. Advanced analytics programming will assist them.
4. Communication capability <ul style="list-style-type: none"> • Content consistency • Support and recovery 	Eggert et al. (2018); Hossain et al. (2019); Hsieh et al. (2012); Lee et al. (2019); Oh et al. (2012); Payne et al. (2017); Rangaswamy et al. (2005); Reis et al. (2019); Shen et al. (2018); Smith et al. (2009); Valentini et al. (2011); Venkatesan et al. (2007); Verhoef et al. (2015)	Communication capability is the retailer's analytical ability to deliver marketing messages to potential customers through different channels. Content consistency is the appropriateness of information. Support and recovery is part of the communication process where customer can raise their voice from any channels, and the retailers must have the capability of giving the solution.
5. Data management capability <ul style="list-style-type: none"> • Data quality • Data Integration 	Chuang and Lin (2013); Davenport et al. (2010); Jayachandran et al. (2005); Kwon et al. (2014); Lenzerini (2002); Nam et al. (2019); Pan and Lee (2003); Prahalad and Krishnan (2008); Vidgen et al. (2017)	Systematic ability to maintain customer's data by ensuring data quality and integration. Data quality refers to the collection of accurate, consistent, comprehensive, and recent data. Data integration connects data that are available in different sources.
6. Data Protection capability <ul style="list-style-type: none"> • Privacy • Security 	Akter and Wamba (2016); Braun and Garriga (2018); Dupre (2015); Kolsaker and Payne (2002); Miller and Tucker (2011); O'cass and Fenech (2003); Ranganathan and Ganapathy (2002); Tucker (2014)	Customer data protection has become a vital issue in the consumer journey analysis. Data protection comprises privacy and security. Privacy as the individual's right to be alone and the firm must ensure the anonymity of the customer's identification. Security refers to the safety mechanism that keeps hidden the customer's financial transaction.

referencing. These were not included initially, but complied with the quality benchmark mentioned above. Therefore, the authors synthesised 8 more articles, which gave a complete list of fifty-nine (59) articles. This process is similar to Vrontis and Christofi (2019). The reporting of the results portrays logically through the following application of thematic analysis.

The study adopted a thematic analysis- by following six phases guided by Braun and Clarke (2006). In phase 1, researchers repeatedly read all the 59 papers that have already been collected through the systematic review process. In phase 2, researchers generated the initial codes (ideas) about what is in the data of 59 articles and what is interesting about them. The method of coding is a component of the analysis (Miles et al., 1994), as the researchers were preparing data into meaningful groups (Tuckett, 2005). Researchers coded for trend detection, event detection, proposing, learning, tailoring, process consistency, content consistency, ordering, supporting, recovery, data quality, data management, privacy, and security. In phase 3, researchers searched for the themes of the different codes that have identified across the data set. Researchers initially selected five (5) themes that represent different codes: 1. Offering ability represents trend detection, event detection, and proposing, 2. Personalization ability represents consumer behavior and tailoring the offer accordingly. 3. Channel integration represents process consistency, content consistency, ordering, supporting, and recovery. 4. Data management capability represents the ability of retailers to manage data quality and data integration. 5. Data protection ability ensures security and assure privacy. In phase 4, researchers further reviewed all the themes and found the theme, Channel Integration representing distribution channel management capability and communication channel management capability. In phase 5, researchers finalized and adjusted the six themes/dimensions and their sub-constructs in the retailer's customer analytics capability context: 1. Offering capability (trend/event detection, proposing) and 2. Personalization

capability (learning, tailoring) are subsumed under the broader theme value creation. Value creation for customers is one of the fundamental tasks for marketers (Smith and Colgate, 2007). The concept of creating value for the customers has been recognized since the early stage of marketing (Weinstein, 2018; Woodruff, 1997). At the firm level, technology is generating new ways of offering to create more values for the customers (Kristensson, 2019). 3. Distribution capability (process consistency, order fulfillment) and 4. Communication capability (content consistency, support and recovery) are subsumed under the broader theme of value delivery. According to Wang et al. (2004) and Weinstein (2018) superior customer value delivery is an inherent theme in marketing to drive the customer relationship management performance and to attain sustainable competitive advantage. Studies in the similar vein also suggested firms should emphasize on superior value delivery process to accelerate customer relationship management performance (Day, 1994; Jensen, 2001; Weinstein, 2018). 5. Data management capability (data quality, data integration) and 6. Data protection capability (assure privacy, ensure security) are subsumed under the broader theme of value management (see Fig. 2). Value management has become a crucial matter in the modern business arena (Eggert et al., 2018; Lindgreen et al., 2012). Despite the interest of academics and practitioners in this regard, firms are still striving to perform customer value management in practice (Töytäri et al., 2015). Scholars raised their voices to contemplate new approaches in the customer value management spectrum (Keränen and Liozu, 2020; Macdonald et al., 2016).

In phase 6, researchers developed a report that presents the concept of all the capabilities that answering the research question (see next section). A concise view of customer analytics capability dimensions depicted in Table 3.

4. Conceptual model of customer analytics capability

This section proposes the conceptual model (See Fig. 2) of customer

analytics capability for retailers and also explaining the customer analytics capability dimensions in detail.

4.1. Offering capability

Technology and Innovations allow a firm to offer a distinct product or service (Sher and Yang, 2005). Technological advancement can spot the trend by monitoring changes in the market environment and propose the offer accordingly (Andreassen et al., 2015). According to Du and Kamakura (2012), trend spotting is a vital marketing intelligence tool that helps to detect the consumer's real-time desires. The purpose of trend spotting is to reveal unknown insights by analysing data on consumers' movement from numerous sources (e.g., internet tracking data, social media conversation) (Andreassen et al., 2015). Marketers can cover integrated services to incorporate various platforms concurrently, such as trendrr (trenrr.com), which permits users to observe public communications on a product or service in real-time over a comprehensive variety of digital and social media (Du and Kamakura, 2012). A successful trend spot can provide an advantage to the firm for proposing appropriate offers to the customers, which is more about the market-oriented approach (Andreassen et al., 2015).

4.2. Personalization capability

A firm's analytics ability to learn consumer behaviour from data and tailoring objects simultaneously for the customer is the firm's personalization (Wedel and Kannan, 2016). Personalization capability has taken the marketing mix allocation concept one step further, which is capable of applying marketing mix based on the customer's needs (Khan et al., 2009). Personalization can launch at the individual level, mass level or segment level (Wedel and Kannan, 2016; Zhang and Wedel, 2009). However, many researchers emphasized only on individual-level personalization to get the maximum benefit (Chung et al., 2016; Murthi and Sarkar, 2003; Tam and Ho, 2005). Zhang and Wedel (2009) established that personalization at the individual-level is significantly beneficial but mostly in the online channels. A recommendation engine can be based on content filtering, collaborative filtering, or a model-based system. Content filtering performed as a digital agent determines similarity based on the customer's past preferences and makes the judgment. Collaborative filtering observes similar customers and predicts accordingly. The model-based system applies the statistical method to make the prediction (Ansari et al., 2000). The adaptive personalization system provides real-time advanced personalized solution (Steckel et al., 2005). Zhang and Krishnamurthi (2004) showed the personalize price discounts promotion in online by utilizing a combined shopping frequency, volume, and timing attached with a model that anticipates customers' acknowledgment of effort made after assigned time, and apply benefit augmentation numerical to fix the timing and intensity of customized promotions adaptively. Hauser et al. (2009) revealed a method for adaptive customization of the online site layout call "website morphing," which includes harmonizing the substance, look, and feeling of the site to set number of intelligent systems.

4.3. Distribution capability

Distribution capability has been considered in this study as a value delivery distribution channel management capability. A firm should have the ability to establish effective and efficient channels of distribution for delivering values to the customer (Vorhies and Morgan, 2005; Zhang et al., 2018). Distribution capability can be categorized into two reflective variables namely (1) *Process consistency* and (2) *Order fulfilment*. Process consistency ensures technical compatibility in process attributes such as service performance and service feelings in various channels (Banerjee, 2014; Sousa and Voss, 2006). Besides, System quality ensures system consistency (Akter et al., 2019), which is relevant to the process consistency concept. Thus, this study conceptualizes the

process consistency as technical and systematic consistency with the support of analytics in all the channels to deliver appropriate value to the ultimate customers. While process consistency is concerned with the overall process compatibility such as customer's navigation flexibility from online to mobile or offline, order fulfilment mainly concentrates on customer's order versatility (Hossain et al., 2019). Due to analytics advancement, retailers can integrate order fulfilment capability that provides a customer numerous options between channels for moving freely (Oh and Teo, 2010), and the setting contributes to customer satisfaction. In integrated order fulfilment settings, a customer will get the flexibility by buying an item through on the web and picking from a store, or refunding the item in a physical store after buying through online, or trial and buying a product at brick and mortar after booking it in online (Wu and Chang, 2016; Yong-zhi 2014). A firm can prioritize quick delivery options at this point by enhancing analytics driven logistic assistance in the order fulfilment option. Therefore, a firm's distribution capability is considered here as one of the top customer analytics capabilities.

4.4. Communication capability

Communication capability is considered in this study as a firm's analytics based communication ability through different channels while delivering value. The importance of communication during value delivery has received notable attention in contemporary researches (Eggert et al., 2018; Payne et al., 2017). Communication capability can be categorized into two reflective antecedents, namely (1) *Content consistency*, (2) *Support, and recovery*. Content consistency refers to the appropriateness of the incoming and outgoing information on various channels (Lee et al., 2019). The information transmitted through different channels must have uniformity (Banerjee, 2014; Oh and Teo, 2010). In the multi-channel settings, a customer expects reliable, consistent information related to products and services (Wu and Chang, 2016), as inconsistent information significantly reduces the trust of the customer (Hsieh et al., 2012). Support and recovery are also a critical component. Customers can raise their voices from any channels, and firms should have the ability to communicate with the customers for supporting and improving any disturbance (Hossain et al., 2019; Smith et al., 2009). Therefore, the ability to quality communication with the support of analytics enhances firm's value delivery performance.

4.5. Data management capability

A firm's capability in customer's data management is one of the crucial blocks of customer analytics capability. The purpose of business analytics is to find out the insights of the relevant product, services, manufacturing, purchasing, sales, and so on (Davenport et al., 2010). Therefore, customer data management in analytics deals with customer's data that located in different channels. A firm frequently collects structured and unstructured data of the customers from various sources. Thus, an immensely higher level of *data quality* and *integration* must be utilized within the firm as part of the customer data management process (Nam et al., 2019). Data quality defines to the collection of accurate, consistent, comprehensive, and recent data (Kwon et al., 2014). Managing customer's data quality as one of the difficult tasks as customers frequently change contact details, address, and even product choice preferences without informing the firm (Nam et al., 2019). Qualified data is required to obtain valuable insights from customer analytics. Thus, data integration also plays a vital role which connects information that is available in different sources (Lenzerini, 2002). Firms get a sharpened view of the data by deploying the process of data integration (Pan and Lee, 2003). Firms must ensure the quality of structured and unstructured forms of data and can generate more value for customers by deploying data integration as part of the data management capability in the customer analytics paradigm. Therefore, a firm should equip customer's data management capability with a systematic process at the

retailing landscape.

4.6. Data protection capability

Data *privacy* and *security* have turned to vital concerns for customer analytics in the digital environment as more customer data is collected. According to a survey report by Dupre (2015), websites frequently ignore the privacy law. A firm should utilize a more reliable capability of handling new technologies to shield data privacy and security concerns. Customers generally like to take more control of their personal information. Using experimental research, Tucker (2014) showed that the rate of customers clicking on customized advertisement significantly raise when it gives customers more freedom to control and secure their own activities and information in the web portal and consequently, customers feel more relaxed as their privacy concerns are addressed. Retailers also need to consider data minimization and anonymization under privacy issues. Data minimization entails managers to restrict the variety of data they assemble and preserve and replace the data they no longer need (Wedel and Kannan, 2016). Further, personally identifiable information can be removable (Data anonymization) through the procedure call K-anonymization where each record is indistinguishable (Miller and Tucker, 2011). In the security issue, a substantial extent of fraud could be avoided by distinguishing important bits of knowledge through the appropriate use of enormous information.

5. Discussion

5.1. A concise view of the study findings

The objective of this study was to identify the capability dimensions of customer analytics in a retail context. In order to serve the objective, a systematic literature review and thematic analysis were undertaken to develop six distinct primary dimensions and twelve sub-dimensions of customer analytics capability under the broad themes of value creation, value delivery, and value management. We contend that customer analytics capability in the retail environment enables customer engagement. Therefore, retail firms should attain the capacity by enhancing personalization (learning, tailoring) and offering (trend/event detecting, proposing) capability. Retail firms should also emphasize the integration of distribution (process consistency, order fulfilment) and communication (Content consistency, support & recovery) channels, as customers want to engage in different channels, while seeking a seamless experience. Besides, data management (Data quality, data integration) and protection (assure privacy, ensure security) are one of the top-most prioritized options. Erevelles et al. (2016) state that customer analytics is at the intersection of consumer behaviour and large volume of data. The current study considers "customer analytics capability" as not only detecting customer behaviour in a data-driven retail environment but also assisting customers accordingly through the various integrated channels. Our most significant contribution lies in providing customer analytics capability dimensions that show a pathway to retailers in the competitive business environment. To the best of our knowledge, there is currently no market-focused model on customer analytics capability dimensions in academic literature. By applying this higher-order reflective-formative model, retailers will be in the position to engage customers and enhance customer equity.

5.2. Theoretical implications

This research makes several significant theoretical contributions while addressing the research question. Firstly, the study combines relevant theories into the RBV research stream that generates RBV-capability and drives the firm to respond in the market condition supremely. In RBV, knowledge is the most crucial resource, but the challenge is how to transform this knowledge into relevant competencies (Barney, 1991; Kogut and Zander, 1992). This study meets this challenge

and portrays a perspective of a firm's outside-in view by introducing market orientation (Day, 2011; Srivastava et al., 1998) and technology orientation (Trainor et al., 2011; Zhou et al., 2005).

Secondly, the study has explored specific aspects of the customer analytics capability of retailers by introducing value creation, value delivery, and value management viewpoints by considering three crucial channels: online, mobile, and offline. Thirdly, the outside-in view extends previous marketing capability research (Theodosiou et al., 2012; Vorhies and Morgan, 2005; Vorhies et al., 2011) and introduces higher-order customer analytics capability model on six distinct primary dimensions and twelve sub-dimensions.

5.3. Practical implications

The implementation of the customer analytics capability model will likely assist to connect customers to their retailing firms, and enable firms to maximize customer equity. The firm's ability to detect and adapt customers' needs in the changing market conditions helps to connect customers (Day, 2011; Vorhies et al., 2011). Customers connect to the firm psychologically and emotionally when firms can satisfy customer's needs (Bhattacharya et al., 1995; Yim et al., 2008). A firm's capability in appropriate offering, personalization, channel integration for distributing and communicating offers, customers data management and data protection can play a vital role in building customer analytics, leading to customer engagement (Mu, 2015).

In a practical context, a fashion retailer "Gap" in the United States identified trends early through data analysis that showed people are searching for men's jogging pants across North America, and they were able to make the offer accordingly. Besides, firms can detect relevant events from previous data. For example, one of the Australian fashion retailers identified all the major events and made the offer not only in the Christmas event but also during other periods, such as the Chinese New Year event in the Australian local Chinese community. Therefore, retailers could enhance their analytics-based offering capability to detect such events and propose appropriate offers to relevant segments. Similarly, as part of personalization, firms like "Amazon" and "Netflix" have developed powerful recommendation systems that frequently observe customers' virtual movements and suggest offers according to their preferences. "Gap" created automatic email programs based on customer data to present relevant, personalized messages to valued consumers. Gap also introduced "geosniffing" to determine the physical location of particular consumers and to send them appropriate localized information in real-time. Thus, capable firms are not only stimulating purchase likelihood but also triggering the button of word of mouth (WOM) through the real-time dynamic personalization. Besides, in the mode of online shopping, customers like to get quick delivery (Euro-monitor-International, 2019). Amazon Prime has made the process faster in terms of ordering delivery by using advanced analytics. The US-based retailer Macy introduced an app "Macy's On Call" that reserves customer's information and Macy's all of the stores' data. This app has a default advanced analytics that directs the customer by providing consistent information and to find out the specific item within the store. In this way, successful firms have developed customer analytics capability in distribution and communication. A further example shows Walmart managing a large volume of customer data by applying the imperative cleansing method while approaching the technique, the firm ensures customer data quality and integration within the system. On security capability, the retail giant Amazon uses Hadoop software that facilitates data protection, which can protect the identity theft of a customer's credit card information. Therefore, we contend that the development of customer analytics capabilities through creating, delivering, and managing customer's value will likely result in profound customer engagement.

5.4. Limitations and future research directions

This study also has few drawbacks like any other studies. The market-oriented dimensions of the customer analytics capability proposed in this study are suited for specific business contexts such as retailing. In this study, the authors applied a systematic review of the literature and thematic analysis; thus, this study is limited to understanding the dimensions of customer analytics capability and their definitional aspects. In the future, researchers can develop the scales of the model sub-dimensions and can test this model in the real-life setting. For the convenience of future researchers, this study also identifies the possible crucial elements of the measurement scales (see Table 4).

According to Potdar et al. (2018), Customer engagement includes communication, interaction, involvement, satisfaction, continued connection, bonding, and endorsement points. Brodie et al. (2013)

acknowledged customer engagement is associated to relationship consequences such as satisfaction, trust, and loyalty. Bijmolt et al. (2010) mentioned customer engagement might be formed in different phases of the customer life cycle, such as acquisition phase, customer growth phase (development) or retention phase (churn reduction). Similarly, customer engagement can assist the firm in achieving three strategic goals, such as developing brand awareness to acquire customers, developing loyalty that helps to retain customers, and boosting sales that ensure the growth (Castronovo and Huang, 2012). The value a firm capture from a customer is not limited to the current transaction but is the cumulative profit a firm makes from the customer in the entire relationship over time (Kumar and George, 2007; Lee et al., 2014). Therefore, maximizing customer equity is getting the highest priority in the business and marketing studies (Kumar and George, 2007). Future research can take an attempt to empirically investigate customer

Table 4
Potential key elements for measuring scales for future research.

2nd order	1st order	Possible key elements for measurement scales, (for future research)
		The firm should have the capability to perform the following tasks.
Offering Capability	Detecting	<ul style="list-style-type: none"> • Examine emerging market trends • Alert to changing market conditions • Sensitized to listen to inherent problems • Anticipate trends before they are fully apparent • Effectively listen to relevant marketplace conversations
	Proposing	<ul style="list-style-type: none"> • Speedy trendy offer • Offering through various channels • Creative strategies for new offers • Invest resources for trendy offers
Personalization Capability	Learning	<ul style="list-style-type: none"> • Learn consumer behaviour from big data • Learn a customer's shopping journey • Learn new technological advancements to monitor a customer • Learn about customer preferences
	Tailoring	<ul style="list-style-type: none"> • Real-time advertisement that makes purchase recommendations • Tailor-made items based on customer preference • Tailor-made email to meet customer expectations • Tailor-made promotion based on the customer's desire
Distribution Capability Communication Capability	Process Consistency	<ul style="list-style-type: none"> • Service feelings consistent across channels • Technical competencies across channels
	Order Fulfilment	<ul style="list-style-type: none"> • Service performance is consistent • Coupons redeemed via any channels • Ordering possible by the catalogue number • Physical store collection is possible for online purchase • Customers can choose any physical store to pick up the online items • Online purchases payment can be paid via a physical store
	Content Consistency	<ul style="list-style-type: none"> • The identical response within diverse channels • Customers interaction in all channels taken into account • Information is compatible through various channels.
	Support & Recovery	<ul style="list-style-type: none"> • The online system provides post-purchase services • Exchange of products purchased in any channel • Stable interaction with support assistance • Fix a service failure quickly
Data management capability	Data Quality	<ul style="list-style-type: none"> • Examine possible contingencies across channels • Automatic process ensures data collection consistency • Manage data in the identical way at the entire process • Data fault corrects quickly
	Data Integration	<ul style="list-style-type: none"> • System reviews assailable data • Use various tools to integrate customer information • Integrate data from different sources • Merge the data of each customer
Data protection Capability	Assure Privacy	<ul style="list-style-type: none"> • Concern about customer's privacy • Only store necessary personal data • Abide by data-protection laws • Respect the user's rights in data extracting • Don't share information without customer's consent
	Ensure Security	<ul style="list-style-type: none"> • Mechanisms for safe circulation of data • Extreme grip for the security in dealings • Adequate capacity to protect hackers • Other parties cannot modify our customers' information

^a Possible key elements for developing measurement scales have been identified from the various literature. The sources of the literature have been mentioned in Table 3. Therefore, the guideline will likely be able to assist future researchers in developing and validating the CAC scales and confirming the model validation in the retailing context.

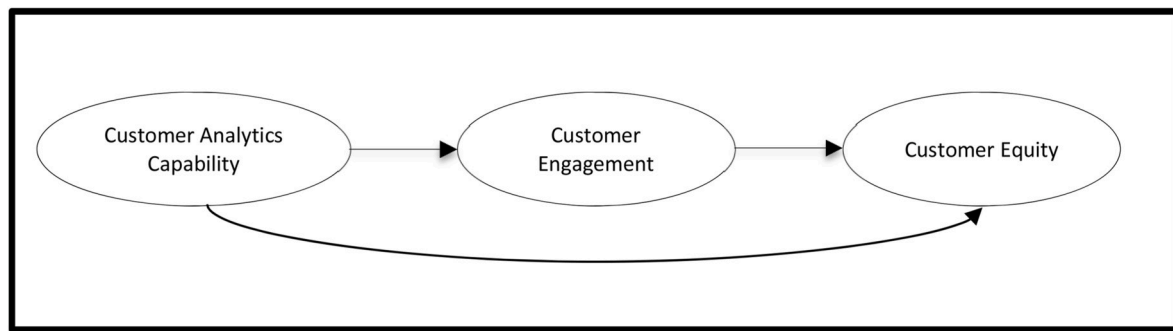


Fig. 3. Customer analytics capability effects (A model for the future empirical investigation).

analytics capabilities' influence on customer engagement and customer equity in retailing (see Fig. 3).

6. Conclusion

With the speedy technological advancement and the expansion of various analytics tools, an increasing number of firms are trying to adapt to analytics for staying competitive in the business. Despite the fact, there is a lack of guidelines about customer analytics capability deployment at the firm level. This research pinpoints customer analytics capabilities in the retail industry setting. Academics and practitioners always discuss on customer values when dealing with marketing issues. This research shows the pathway of managing customers' value in the data-rich environment through customer data management capability and data protection capability. Analysing and handling customers' data open up new opportunities for value creation. If deployed appropriately, retailers can make better offers by analysing the trends and events. An advanced adaptive personalization capability generates real-time value creation for the customers. In retail settings, customers want a seamless experience within the channels (Online, offline, and mobile). Thus, a unique omni-channel experience can enhance through incorporating analytics in distribution and communication capabilities. Therefore, customer analytics capabilities are the complete package for retailers to not only create value, but also deliver and manage value.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jretconser.2020.102187>.

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