

How do firms handle variability in customer experience?

A dynamic approach to better understanding customer retention

Abstract

Firms invest in customer experience in the expectation that these investments will ultimately provide positive financial returns. In practice, however, customers are continuously exposed by the changes occurring in their personal perceptions of customer experience and market surrounding. Using a unique and comprehensive dataset containing customer-level and market-level information for a sample of 13,761 customers in the telecom market, we empirically test the proposed framework by applying multilevel modeling techniques. The results offer novel insights into the effects of customer experience, its variability (customer level), and market turbulence (market level) on customer retention, including the moderating effect of relationship age.

Keywords: Customer experience; Market turbulence; Customer retention

1. Introduction

Successfully designing and providing customers with an optimal experience has become a central priority for marketing theory and practice (Becker and Jaakkola, 2020; De Keyser et al., 2020; Lemon and Verhoef, 2016). Companies are exponentially increasing their investment in customer experience in the expectation that these investments will ultimately provide positive financial returns. According to the recently published IDC (2019) spending guide, investment in customer experience technologies will reach US\$641 billion in 2022. Similarly, Gartner's (2019) global survey of a wide range of industries revealed that 74% of organizations expected budgets for customer experience to rise in 2020 and that this will continue to be one of the biggest areas of investment over the coming years.

Customer experience is understood as “the subjective response to the holistic direct and indirect encounter with the firm” (Lemke et al., 2011, p. 848). It encompasses every aspect of a company's offering in terms of quality of customer care, advertising, packaging, product and service features, ease of use, and reliability (Gao et al., 2020). Hence, customer experience reflects the customer reaction to all interactions and touchpoints with the firm over time, as customers are constantly making an assessment of these interactions (Gao et al., 2020; Gentile et al., 2007; Verhoef et al., 2009).

Customer experience has been revealed as critical to generating customer retention (Ascarza et al., 2018; Becker and Jaakkola, 2020); indeed, customer experience management in order to achieve long-term customer loyalty, and hence long-term firm growth, is considered to be a driving purpose of firms (Homburg et al., 2017).

However, in this research we aim to additionally investigate the dynamic nature of customer experience by also taking its variability into account. Drawing on social exchange theory, we argue that customer retention is determined by customers' perceptions not only of the current customer experience but also of its variation across time. This theory reveals the reciprocity principle (Bagozzi, 1995), according to which customers, upon receiving a benefit (e.g., a superior customer experience), respond and

compensate the provider's effort, leading to loyalty as their relationship grows (Cropanzano and Mitchell, 2005). Although previous studies have increasingly emphasized the importance of adopting a dynamic perspective (Lemon and Verhoef, 2016) to investigate the role of the variability of customer experience on customer retention across time, empirical research on this topic is still scarce (Shamsollahi et al., 2020). In particular, customers are surrounded by different levels of variability, ranging from the individual level (e.g., variability of perceived customer experience across time) to the market level (e.g., market turbulence). Firms increasingly invest in customer experience to retain their customers, but the variation of the perceived customer experience also matters. A large variation of the perceived customer experience might increase the level of uncertainty and the feeling of uncomfortableness, thus leading customers to switch decisions (Voorhees et al., 2020).

In addition to the customer level, change at the market level might also influence customer retention. For example, the introduction of a new product (Lin et al., 2021) or the entrance of a new competitor (Barari et al., 2020) might trigger customers to leave the current firm. This is what is commonly known as market turbulence. The concept of market turbulence is based on the idea of uncertainty, change, instability, and complexity of the market and environment for the firm's product (Cui and Wu, 2017; Moon, 2013), and it has been identified as one of the external key factors affecting organizations (Dess and Beard, 1984). The literature suggests that when market turbulence increases, uncertainty about a firm's future plans and outcomes grows. In particular, MSI (2020) highlighted the importance of capturing the role played by market turbulence. A turbulent market is characterized by frequent and unpredictable changes both in product and production technologies and in the competitive landscape (Wang et al., 2015). Thus, while the importance of market turbulence is well recognized in the field of innovation and market orientation (e.g., Jaworski and Kohli, 1993; Slater and Narver, 1994), it has been barely studied in relation to retailing (Dekimpe et al., 2011; Panigyrakis and Theodoridis, 2007). In practice, companies continuously struggle to understand changing market trends and to come up with renewed products in turbulent markets. The fundamental reason for this is that multiple factors are out of firms' control, given that market turbulence is often driven by intense competition and unpredictable timing of technological advances (Wang et al., 2015). In addition, to the best of our knowledge no research has established from a dynamic perspective the conceptual and empirical linkage between customer experience and market turbulence and how these variables may influence customer retention.

Therefore, our work contributes to the literature in several ways: (1) we analyze not only the concept of customer experience but also the variability of customer experience and how both metrics influence customer retention; (2) to the best of our knowledge, the dynamic perspective of customer experience affecting customer retention has not been taken into account in the retailing research; (3) we additionally take into account market turbulence by considering the introduction of a new product or the entrance of a new competitor; and (4) we introduce the variable of relationship age to analyze how the duration of the relationship may moderate the linkages between customer experience, market turbulence, and customer retention.

Our study used a rich dataset of 13,761 customers in the telecom industry in a European country within a time window of 48 months. All the firms operating in the industry during this period were covered, consisting of 45 mobile service providers, thus affording us a global view of the whole sector. Enabled by this dataset, we applied a multilevel modeling technique to empirically test the proposed research objectives.

The rest of this paper is organized as follows. In the second section, we propose an integrative conceptual framework in which we propose the direct impacts of customer experience, its variability, and market turbulence on customer retention. We further consider the moderating role of relationship age in the variability of customer experience and market turbulence. Section three presents our empirical analysis via multilevel modeling to test the proposed conceptual model. In the final section, we conclude by discussing the theoretical and managerial implications and by suggesting further research lines.

2. Conceptual framework

2.1. Customer experience

The customer experience framework acknowledges the overall customer–firm relationship given the existence of interactions or touchpoints that occur during the customer's experience with the focal firm (Lemon and Verhoef, 2016). This framework reveals a new understanding of the relationship a customer has with a company, as customer experience is represented by the total customer–firm interactions, including the search, the purchase, the consumption, and the after-sales support (Verhoef et al., 2009). For customers, creating experiences is just as important as satisfying needs. For that reason, ever more companies are recognizing the importance of customer experience as part of their marketing strategy (Pekovic and Rolland, 2020). Experiences determine customer responses and shape their expectations of the company and their interactions with it (McColl-Kennedy et al., 2019). Thus, companies focus on how they interact with their customers in order to develop strong long-term relationships and customer retention (Grewal et al., 2009; Srivastava and Kaul, 2016).

Owing to its importance for both academia and best practice, the marketing literature has focused on studying the nature and peculiarities of customer experience. As revealed by prior studies, uniqueness is one of the main characteristics of customer experience, as each experience is perceived differently by each customer (De Keyser et al., 2015). This peculiarity has been further reinforced through the acknowledgment that each experience is distinctive for each customer, time, or location (Palmer, 2010).

Customer experience's dynamism has also been recognized as a relevant feature (Verhulst et al., 2020). Due to its dynamic nature, various authors have argued that customer experience affects not only current customer–firm interactions but also future encounters and the continuity of the customer–firm relationship (Tyrväinen et al., 2020; Verhoef et al., 2009). This indicates the importance of customer experience and its assessment in order to predict the future of a commercial relationship.

The literature has hitherto focused on absolute evaluations of customer experience and its influence on customer responses and outcomes. For instance, Barari et al. (2020) distinguished between negative and positive shopping experiences and focused on their influence on dissatisfaction and negative word-of-mouth. Similarly, Tyrväinen et al. (2020) assessed the influence of customer experience on word-of-mouth and repeat purchase intention. Additionally, Grewal et al. (2009) revealed that creating a superior customer experience influences customer satisfaction and leads to a higher frequency of shopping and increased customer profitability. Other studies have corroborated that a positive customer experience can determine repurchase (Iglesias et al., 2019; Rajaobelina et al., 2018). However, little is currently known about the possible effect of customer experience variability and how a change in the customer experience's

assessment from one time period to another might influence the customer–firm relationship. As customers evaluate ever more customer–firm interactions, they can make different assessments of each experience, leading to variations in their evaluations. This variation might be especially relevant to identifying the real impact of customer experience on important measures of customer responses.

2.2. Market turbulence

The overall customer experience includes every touchpoint or interaction that occurs between the customer and the focal firm, including those touchpoints that are out of the company's control, such as external influences (Lemon and Verhoef, 2016). Paying attention to every factor that might affect the customer experience has been recognized as a priority by scholars (Jain et al., 2017). However, firms have limited control over the influences a customer might receive from external factors; hence, companies can impact customer experience only up to a point (Grewal et al., 2009).

In recent years, there has been a proliferation of new technologies and tools that have increased the number of touchpoints and channels through which customers and firms can interact (Barann et al., 2020; Barwitz and Maas, 2018). Enabled by the advanced development in information communication technology, customers can reach more information than ever in an immediate manner, including the new product launching from the external party (Lemon and Verhoef, 2016). Similarly, customers interact not only with their current providers but also with competing firms. This situation leads companies to pay extra attention to customer defection by increasing customer retention and loyalty (McLean et al., 2018).

Based on this evidence, it is clear that variations at a market level affect customers' decision about whether to continue a relationship with a specific provider. Changes in the market structure are usually referred to by the literature as market turbulence, which is associated with the uncertainty and complexity of the firm's environment (Moon, 2013), namely new product launching from the external party (Ascarza et al., 2018; Su and Rao, 2010) and new competing firm entered to the market (Barari et al., 2020). The ambiguity surrounding market turbulence is a critical factor affecting the firm, given the unpredictable variations of customers' product preferences or the competitive scenario (Dess and Beard, 1984; Wang et al., 2015). Market variations capture the changes in the market environment as regards the variations of products available and the competition (Santos-Vijande and Álvarez-González, 2007). They also include the uncertainty as regards the prediction of market preferences, the evolution of external forces that might directly affect the firm, and the difficulty of managing new competitive challenges (Milliken, 1987). As a result, high market variations lead to increased uncertainty about the firm's outcomes and to the need to adapt to volatile changes in the market (Siong-Chung and Low, 2017).

2.3. Customer retention

Customer retention is closely related to customer loyalty and is the opposite of customer defection (Kumar and Ayodeji, 2021). The marketing literature has traditionally focused on repeat purchase behavior of everyday products (Teichert and Rost, 2003), but recent studies have increasingly focused on service customer experience and how a superior experience leads to customer retention (Pekovic and Rolland, 2020; Prentice and Nguyen, 2020). Customer retention presents challenges to marketers, and academic researchers have attempted to classify the underlying factors that determine repurchases, retention, and loyalty (Chou and Hsu, 2016). Some studies have identified

determinants relating to individual characteristics such as customer perceptions of the experience (Japutra et al., 2021). Other research has focused on contextual factors that are sometimes beyond the provider's control (Patterson and Smith, 2003). For instance, Fernandes and Pinto (2019) argued that customer perceptions of environment, frontline personnel, moments of truth, and offerings influence the customer experience, leading to an increase in relationship quality and ultimately to retention. Likewise, Prentice and Nguyen (2020) revealed how different aspects of service experience determine engagement that eventually leads to customer loyalty. On a similar note, Japutra et al. (2021) identified the features of customer experience that determine the value in use and customer loyalty.

When studying the influence of customer experience on customer retention, however, it is important also to include the impact of the variation of customers' assessments of the experience, owing to the dynamic nature of customer experience (De Keyser et al., 2015; Palmer, 2010; Verhulst et al., 2020). If only the evaluation of the experience at a given moment is studied, then an incomplete image is revealed about the effectiveness of customer experience as a determinant of customer retention. Similarly, the variability in a customer's experience with a given company does not occur only at an individual level. The market-level variability characterized by market turbulence and changes in the competing firm's structure and products may also influence a customer's loyalty to the current provider. The prior literature reveals that customers in turbulent markets tend to switch providers when there is market uncertainty and variations in the firm's competition structure (Santos-Vijande and Álvarez-González, 2007).

Based on the evidence provided by the literature, we recommend that customer retention must be studied by taking into consideration both customer experience and market variations. Evaluations of customer experience face variations due to the dynamic nature of this experience and the multitude of possible encounters that affect the overall assessment (Grewal et al., 2009). Markets also present variations regarding the attractiveness of alternatives due to the possibility of the introduction of a new product or the entrance of a new competitor (Patterson and Smith, 2003). These changes determine the customer's reevaluation of their relationship with the current provider and their willingness to continue the relationship (Tyrväinen et al., 2020; Venetis and Ghauri, 2004).

To the best of our knowledge, there is no empirical evidence of how both elements and variations simultaneously influence customer retention. Furthermore, we argue that long-term relationships may offset the damaging effect of variations in customer experience and market turbulence, as customers who have a longer history with the provider usually cultivate interpersonal bonds with the company, which diminishes customer defection (Gilboa et al., 2019; La and Choi, 2012). Studying the variations of customer experience and market turbulence is extremely important both for enabling a full scholarly understanding of how customer retention is developed, and for equipping practitioners with the relevant tools to increase customer retention and diminish defection.

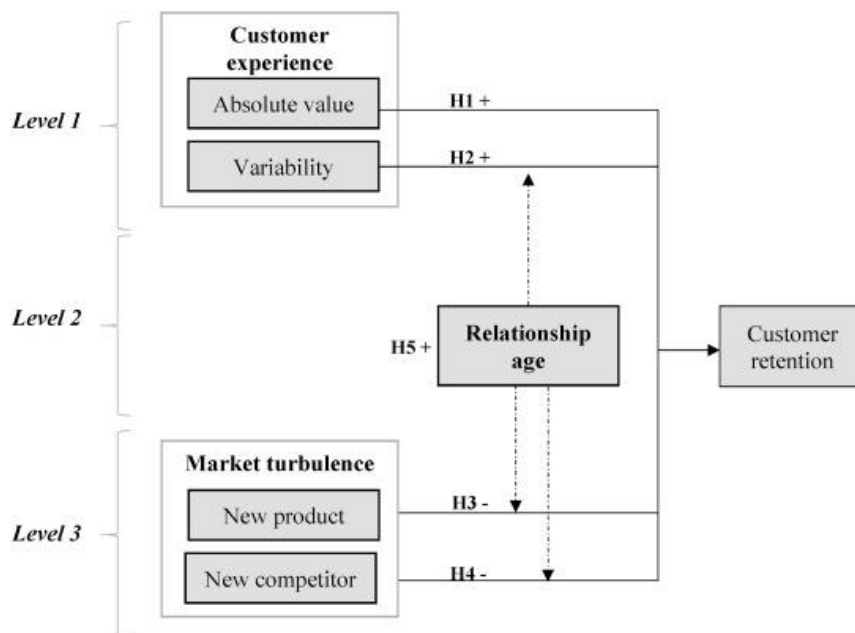
3. Hypotheses development

This study's conceptual framework is based on social exchange theory. This theory is mostly employed in the marketing literature to describe the interdependence that develops in the customer–firm relationship (Blau, 1964; Cropanzano and Mitchell, 2005; Ngo et al., 2020).² It posits that, within a social exchange, the parties are engaged in a series of interactions through which different exchange relationships are established, ranging from short-term to long-term relationships (Cropanzano and Mitchell, 2005;

Witell et al., 2020). Furthermore, this social exchange is guided by the reciprocity principle that acknowledges how the parties respond to the exchange by reciprocating the established exchange relationships (Bagozzi, 1995; Emerson, 1976; Tangpong et al., 2016). Customers engaged in long-term relationships (i.e., a long relationship age) are more likely to recognize the other party's effort (e.g., an outstanding customer experience) (Palmatier et al., 2009) and to tolerate external influences (e.g., new product launching, newly emerged firms), thus leading them to remain in the established relationship as a means of reciprocation (Gouldner, 1960; Witell et al., 2020). Some authors have argued that failing to compensate such efforts leads to psychological pressure or guilt (Dahl et al., 2005). As a result, purchasing behavior may be driven by this willingness to reciprocate and enhance customer retention.

Our research draws on social exchange theory to study the effect of customer experience (i.e., absolute value and variability) and market turbulence (i.e., new product and new competitor) on customer retention. The proposed framework also includes the moderating effect of relationship age on the relationship between the variability of customer experience and customer retention, on the one hand, and market turbulence and customer retention, on the other. Fig. 1 presents the proposed conceptual framework.

Fig. 1. Conceptual framework.



Companies that can deliver superior customer experiences are more likely to develop desirable customer responses that lead to customer retention and loyalty (Kandampully et al., 2015). From a social exchange perspective, outstanding experiences determine strong responses and the desire to reciprocate and compensate the provider's effort through gratitude and loyalty (Gouldner, 1960; Palmatier et al., 2009). A customer who receives what they perceive as a superior experience may wish to continue the relationship and repeat this experience, leading to engagement with the company, relationship quality, customer loyalty, and retention (Fernandes and Pinto, 2019; Prentice and Nguyen, 2020). This loyalty is mainly determined by companies achieving differentiation through customer experience (Payne et al., 2009). Additionally, Fernandes

and Pinto (2019) demonstrated that the quality of customer experience determines relationship quality and customer retention. Thus, the likelihood of defection by a customer satisfied with the experience received is diminished, and customer retention rates increase when companies provide superior customer experiences. For this reason, we propose the following hypothesis:

H1: Customer experience in its absolute value positively affects customer retention.

Customers are surrounded by different levels of variability, ranging from the individual level (e.g., variability of perceived customer experience across time) to the market level (e.g., market turbulence). While firms increasingly invest in customer experience to retain their customers, the dynamic nature of customer experience means that its variation also matters (Tyrväinen et al., 2020; Verhoef et al., 2009). The customer's decision to stay (or to leave) can be determined by the perceived benefits (or the loss of those benefits) received from the customer experience delivered by the current provider (Temerak and El-Manstrly, 2019). Switching costs play an important role in this decision (Patterson and Smith, 2003; Singh and Rosengren, 2020). A large variation of the perceived customer experience might increase the level of uncertainty and the feeling of uncomfortableness, thus diminishing the perceived switching costs. As a result, customers may decide to change their provider. Thus, we propose the following hypothesis:

H2: Variability of customer experience negatively affects customer retention.

In addition to the customer level, changes occurring at the market level might also exert influence on customer retention. For example, the introduction of a new product from the external party might trigger customers to leave the current firm (Su and Rao, 2010). As emphasized by Ascarza et al. (2018), new product launching is a critical factor that firms should take into account in order to forestall customer churn, especially in highly competitive industries. Customers present ever-changing needs that are often dismissed by providers due to their uncontrollable nature (Coyles and Gokey, 2005). These new needs may be satisfied through new products and, as a result, the attractiveness of alternatives is a relevant factor in determining customer defection (Patterson and Smith, 2003). The influence of new product is especially relevant when it comes from an external party, which is outside the control of existing firms in the market. From the customer's perspective, this is given by their ever-changing needs that can be satisfied through new products (Coyles and Gokey, 2005), since the new product may raise the customer's interest, and, this way, increase the attractiveness of alternatives (Lee and O'Connor, 2003; Patterson and Smith, 2003). From the firm's perspective, the product innovation occurred outside of firms' control (i.e., new Apple iPhone launching), as the external influence (i.e., market turbulence) is expected to lead existing mobile service providers to compete for subscribers (Lin et al., 2021), provocation negative influence in customer retention (e.g., Zhu et al., 2015). Indeed, as indicated by Zhu et al. (2015), stimulated by the launching of new product from an external party (i.e., the newly launched iPhone), customers are prone to update or change the currently acquired mobile handset, causing the switching behavior across wireless carrier at a market level. Hence, we propose the following hypothesis:

H3: New product launching in the market negatively affects customer retention.

Similarly, with the introduction of a new product, the change occurring at the market level as regards the competing firms might also influence customer retention. The decision to switch to another provider becomes increasingly easier for customers owing to the proliferation of online touchpoints and channels that inform customers of the entrance of

new providers and their offerings (Barari et al., 2020). Moreover, the uncertainty generated by market changes creates further obstacles that make it difficult to identify the external influences of competing firms, or it results in the company's offerings becoming incompatible with customers' preferences (Santos-Vijande and Álvarez-González, 2007). Consequently, the entrance of a new competitor might trigger customers to leave the current provider. Thus, we propose the following hypothesis:

H4: A new competitor in the market negatively affects customer retention.

3.1. Moderating role of relationship age

Relationship age refers to the duration of the customer's relationship with the focal firm (Dawes, 2009). The prior literature suggests that companies that establish long-term relationships with their customers benefit from a higher customer tolerance to product variations and an increase in customer retention due to a diminished likelihood of customer churn (Bolton et al., 2006; Reichheld, 1996; Venetis and Ghauri, 2004). Relationship marketing literature also suggests that, as relationships evolve in time, customer loyalty formation is also influenced (Dwyer et al., 1987; Oliver, 1999). As the customer develops a longer and successful relationship with the company, the history of this relationship and fruitful past encounters can counterbalance the negativity of variations in customer experiences, given that a longer history creates the opportunity to cultivate personal bonds; hence, the longer the relationship, the higher the probability of repurchase and customer retention (Dawes, 2009).

On the other hand, a long-term relationship creates higher switching costs that can affect customer loyalty since customers become less sensitive to market turbulence (Blut et al., 2014). Authors such as Yang and Peterson (2004) recognized that switching costs have an influence on customer loyalty when customers are highly satisfied and perceive a higher value. Similarly, a longer relationship can lead to an increase in the customer's risk aversion, which may result in the customer continuing with their current relationship rather than risking initiating a new relationship with a different company (Dawes, 2009). This indicates that a long-term relationship with a specific provider and product influences the likelihood of continuing with the same company.

Equally, customer lifetime value literature recognizes the dynamic nature of the customer-firm relationship and argues that, over time, this relationship evolves through a series of stages that customers go through based on the evaluations of the customer-firm interactions (Cambra-Fierro et al., 2018; Jap and Ganesan, 2000; Kusari et al., 2013). Over time, as customers experience the evolution of this relationship, parties' interdependence is reinforced (Kusari et al., 2013). Similarly, Jap and Ganesan (2000) argue that, as the relationship reaches a level of maturity, parties agree to continue the relationship leading to customer loyalty. This suggests that, as the duration of the relationship increases, the likelihood of transactional and non-transactional behavior is higher. For that matter, the moderating role of relationship age has been corroborated in a large body of research, acknowledging its contributions on several desirable customer outcomes, such as customer retention (Verhoef, 2003), customer loyalty (Raimondo et al., 2008), referrals or the number of services purchased (Verhoef et al., 2002) among others.

Based on all this evidence, we expect that customers who have established a long-term relationship handle better the different levels of variability: customer experience variability and market turbulence. As a result, we propose the following hypothesis:

H5: Relationship age positively moderates the linkage between customer retention and (a) variability of customer experience, (b) new product launching, and (c) a new competitor.

4. Empirical study

4.1. Data

To assess the heterogeneity of the effects of customer experience variability and market turbulence on customer retention at the firm and customer levels, we combined two types of data sources to form a unique and comprehensive dataset. The first data source mainly captured the individual customer-level information about the telecom industry in a European country. It was provided by a leading consulting company. This included a total of 13,761 customers who were representative for the selected market, and it covered a time window of 48 months for the mobile service category. All the firms operating in the industry during this period were included in this data source, which amounted to 45 mobile service providers. More specifically, this data included the information about customer retention as the dependent variable, as well as the key independent variables at the individual customer level: customer experience, its variability, and the relationship age. The second data source was the annual official report of the telecommunications sector in the corresponding market, as well as news websites. This data contained the market-level information about market turbulence (new products and new competitors).

4.2. Operationalization of variables

Customer experience. This variable was quantified using the annually measured individual customer-level Net Promoter Score (NPS) via a survey (Reichheld, 1996) carried out at the end of each year (December). This measurement has been used for years by telecom firms. NPS has been considered a proper measurement of customer experience by previous studies that have taken a theoretical perspective (Lemon and Verhoef, 2016; McColl-Kennedy et al., 2019). Its predictive quality has also been demonstrated by empirical research (De Haan et al., 2015). The variability of customer experience was taken to be the standard deviation divided by the mean. Drawing on prior research (Tarasi et al., 2011; Voorhees et al., 2020), we calculated the variability of customer experience per customer through the accumulated variability across the current and previous customer experience year by year. Such operation was developed over the four-year period. This variable was regarded as an optimal predictor for the model, which includes evaluations nested within individuals (Roberson et al., 2007), such as in our case. Given that response rates across the four years averaged at 28.17%, we applied the mean replacement to deal with missing data. This is acknowledged as a well-performing method, so it is commonly used in the literature of marketing (Kamakura and Wedel, 2000). For customers who did not participate in the survey in one year, we used the average value of customer experience across customers from the same firm of that year.

Market turbulence. The information about market turbulence related to new products and/or new competitors, and it was captured on a monthly basis by two dummy variables. As noted above, this information was included in the second data source. In this way, we captured the occurrence of newly launched mobile brands and/or the appearance of competitors in the market.

Relationship age. The relationship age depicts the relationship duration between customers and firms. Following Verhoef et al. (2002), we measured it as the interval (in months) between the time of measurement and the starting date of the relationship.

Customer retention. Customer retention was the dependent variable in the proposed conceptual model. Enabled by the panel structure, customer retention in the focal firm was gauged in a monthly manner for each customer.

Control variables. To rigorously test the conceptual framework, we supplemented our primary dataset with a set of control variables. The first data source included customer demographic characteristics: gender, number of people in household, working status, and social class. In addition, we collected data relating to contract length. To facilitate the interpretation and to decrease the number of parameters, we recoded some of the control variables. Table 1 presents a summary of the variables included in our modeling framework and the corresponding descriptive statistics for each variable.

Table 1. Descriptive statistics.

Variable	Description of variable	Min.	Max.	Mean	SD
Time	Time measured by month over four years	1	48	–	–
Customer retention	Decision of whether to remain with the current firm or switch to one of the 44 competing alternatives at time t (yes 1; no 0)	0	1	0.988	0.109
Customer experience					
Absolute value	Customer experience measured by Net Promoter Score from 0 to 10 in December per year	0	10	7.691	.801
Customer experience variability	Variability of customer experience calculated using the accumulated standard deviation divided by the mean of customer experience per year, over four years	0	3.742	.014	.092
Market turbulence					
New product	Whether new iPhone is launched in the market at time t (yes 1; no 0)	0	1	.104	.305
New competitor	Whether a new competitor enters the market at time t (yes 1; no 0)	0	1	.042	.199
Moderator					
Relationship age	Number of months customers have been in the relationship with the mobile service provider until time t	0	190	28.885	29.465
Control variables					
Contract length	Length of the contract associated with the purchase of mobile handset at time t	0	36	9.800	6.519
Social class (low)	Whether the customer belongs to a lower social class (yes 1; no 0).	0	1	.285	.452
Social class (high)	Whether the customer belongs to a higher social class (yes 1; no 0).	0	1	.151	.358
Gender	Customer gender (female 1; male 0).	0	1	.638	.481
Household size	Number of family members	0	9	.983	1.255

4.3. Method

To empirically test the proposed conceptual model, we applied a multilevel modeling technique (Hox, 2002). According to the hierarchical structure of our data, we accommodated three levels in our analyses: customer responses (first level), customers belonging to different relationship age segments (second level), and mobile service providers (third level). As the first level might be considered less straightforward than the other two, it is worth explaining the importance of including it. Given the panel data structure in which, over a four-year period, customers repeatedly give responses about their customer experience with the focal firm at the end of each year, we included this level to avoid the possible correlated errors within customers that could consequently lead to inconsistent estimates. In particular, the e_{ijmt} in Equation (2) is intended to quantify the correlated errors within respondents.

We chose to use a generalized linear model with the random intercept at the firm level and fixed effects at the customer level to account for the heterogeneity of customer retention at these levels (De Haan et al., 2015; Ou et al., 2014). The binomial family referred to a binomial distribution of the dependent variable. Proportions were assumed to have a binomial distribution. Our dependent variable of customer retention was proportional because the variable measures self-reported probabilities of staying with the focal firm. The logit link indicated the logit transformation of the dependent variable, which assumes a linear relationship between this dependent variable and its predictors. We specified our model as follows:

$$\text{Retention}_{ijmt} \sim \text{logit}(U_{ijmt}). \quad (1)$$

Level one

$$U_{ijmt} = \beta_{0jm} + \beta_{1jm}CX_{ijmt} + \beta_{2jm}VCX_{ijmt} + \beta_{3jm}NP_{ijmt} + \beta_{4jm}NC_{ijmt} + \beta_{5jm}Control_{ijmt} + \eta_{ijm}. \quad (2)$$

Level two

$$\beta_{0jm} = \gamma_{00m} + \mu_{0jmt}; \quad (3.1)$$

$$\beta_{2m} = \gamma_{20m} + \gamma_{21} RA_{0jmt}; \quad (3.2)$$

$$\beta_{3m} = \gamma_{30m} + \gamma_{31} RA_{0jmt}; \quad (3.3)$$

$$\beta_{4m} = \gamma_{40m} + \gamma_{41} RA_{0jmt}; \quad (3.4)$$

Level three

$$\gamma_{00m} = \alpha_{00} + \nu_{00m}. \quad (4)$$

In these equations, Retention_{ijmt} represents the logit-transformed customer decision of whether customer i belonging to the age segment j remain the relationship with the focal firm m or switch to one of the 44 competing firms at time t . Let CX_{ijmt} and VCX_{ijmt} in Equation (2) denote the perceived customer experience by customer i from firm m at time t and the variability of customer experience of customer i with firm m until the time t , respectively. Moreover, NP_{ijmt} indicates if there is a new iPhone launched in the market at time t , whereas NC_{ijmt} indicates whether there is a new competitor entering the market at time t . $Control_{ijmt}$ represents a vector of control variables, including customer demographic information (gender, working status, and social class), together with the contract length acquired from firm m by customer i at time t . The variable RA_{0jmt} included in the set of Equations (3.1), (3.2), (3.3), (3.4) relating to level two captures the number

of months from customer i 's initiation of the relationship with the focal firm m until time t (relationship age). Finally, η_{ijm} , μ_{0jm} , and v_{00m} , are the residuals in levels one, two, and three, respectively.

In regard to the parameters, β_{0jm} is the random level-one intercept; β_{1jm} and β_{2jm} are the fixed coefficients of customer experience and its accumulated variability across time, while β_{3jm} and β_{4jm} gauge the effects of the two variables relating to market turbulence (new product and new competitor). As noted above, the importance of customer experience in customer retention has been largely demonstrated in the marketing literature (De Haan et al., 2015; Lemon and Verhoef, 2016); thus, it does not constitute the major focus of the present study. We have not, therefore, proposed a specific hypothesis about the moderating role of relationship age in the impact of customer experience (its absolute value) on customer retention; instead, we have empirically tested this direct impact.

In addition, β_{5jm} measure the influence from the set of control variables. In parallel, γ_{00m} , γ_{20m} , γ_{30m} and γ_{40m} are the level-two intercepts; γ_{21} , γ_{31} and γ_{41} are the coefficients for the interaction terms between relationship age and variability at the customer level (customer experience variability) and at the market level (new product and new competitor). Finally, α_{00} is the random level-three intercept.

5. Empirical results

5.1. Model fit

To investigate the incremental power of the key variables in the explanation of the variance in customer retention, we estimated a baseline model (Model 0) in which the multilevel nature of the dataset was not considered and only the control variables were included. We then introduced the key variables set by set, thus resulting in three more models. In comparison to the baseline model, and taking into account the influence of three levels in the intercept, Model 2 further included the direct impacts of customer experience, its variability, and market turbulence on customer retention. Model 3 added the moderating role of relationship age in the impacts of variability in customer experience and market turbulence on customer retention. The results of the estimated models were presented as a set of nested models in Table 2. To assess the degree of fit across the three models, the log-likelihood ratio test and the AIC (Akaike, 1998) were performed for each model. As shown by the fit statistics, the significant chi-squares values of the multilevel models (Model 2 [82.504, $p < .01$] and Model 3 [35.303, $p < .01$]) were higher than that for Model 0, illustrating the adequacy of considering the multilevel nature of the dataset in the estimation. Furthermore, the decreased AIC value indicates that adding each set of variables improved the model fit significantly. Given that Model 3 demonstrated a significantly superior model fit than the other two models, we therefore mainly focus on Model 3 in the discussion of the results.

Table 2. Model estimation results.

Dependent variable: customer retention	Model 0	Model 1	Model 2	Hypothesis and results
Intercept	3.365***	2.966***	3.949***	-
Customer experience				
Absolute value	-	0.069**	.073***	H1 (S)
Customer experience variability	-	-.942***	-1.204***	H2 (S)
Market turbulence				
New product	-	0.230*	0.053	H3 (NS)
New competitor	-	-.758***	-1.344***	H4 (S)
Relationship age				
Relationship age	-	-	.068***	-
Relationship age x Customer experience variability	-	-	.023*	H5a (S)
Relationship age x New product	-	-	.010	H5b (NS)
Relationship age x New competitor	-	-	.044**	H5c (S)
Random intercept				
Mobile service providers (Level 3)	-	.452	.451	-
Relationship age (Level 2)	-	.227	.031	-
Customer (Level 1)	-	.285	.309	-
Control variable				
Contract length	.052***	.050***	0.048***	-
Gender	-.002	0.001	0.001	-
Social class (low)	.144*	.174*	0.174**	-
Social class (high)	0.062	0.068	0.069	-
Household size	-.060**	-0.064*	-0.061**	-
Fit Statistic				
AIC	10650	10576	10548	-
BIC	10731	10692	10700	-
Log-likelihood	-5316.1	-5274.8	-5257.2	-
Chi-square		82.504***	35.303***	-

Note: The random intercepts in Model 3 refer to the estimated standard deviations at three levels.

Significance levels: *p<.1; **p<.05; ***p<.01.

S=hypothesis supported, and NS=hypothesis not supported.

5.2. Results

The effects of customer experience. The results reported in Table 2 indicate that customer experience in its absolute value has a positive impact on customer

($\beta_{1jm} = 0.073, p < .01$), thus supporting H1. Consistent with our expectation, the results show that a high level of accumulated variability in customer experience significantly decreases the likelihood of customer retention ($\beta_{2jm} = -1.204, p < .01$), thus supporting H2.

The effects of market turbulence. With regard to the influence of market turbulence, we found, in contrast to our expectation, that the launching of a new product has a positive influence on customer retention; however, this influence is not significant ($\beta_{3jm} = 0.053, p > .10$), so H3 is not supported. When it comes to the effect of new competitors, we found, as expected, that the entrance of a new competitor in the market has a negative impact on customer retention ($\beta_{4jm} = -1.344, p < .01$), thus supporting H4.

Moderating effects of relationship age. In line with our expectations, the results demonstrate that customers who have developed a long-term relationship are more likely to tolerate the uncertainty caused by the variability in customer experience ($\gamma_{21}=0.023, p < .10$); hence, H5a is supported. However, this expectation is not observed in the influence of a newly launched product in the market on customer retention ($\gamma_{22}=0.010, p > .10$), meaning that H5b is not confirmed. Finally, consistent with the hypothesized direction, a long-term relationship decreases the effect of new competitors on customer retention ($\gamma_{23}=0.044, p < .05$); therefore, H5c is supported.

Control variables. The results indicate that customer retention is also affected by some of the control variables included in the empirical testing. Contract length is found to positively influence customer retention ($\beta_{5jm} = 0.048, p < .01$), indicating that the longer contract associated with the purchase of mobile handset, the higher the probability of customer retention. The results reveal that gender is not a relevant factor in determining customer retention ($\beta_{5jm} = 0.001, p > .10$). Taking the medium social class as the reference to compare, social class is found to be significant only in the case of low social class while the influence of high social class is insignificant (low social class: $\beta_{5jm} = 0.174, p < .05$; high social class: $\beta_{5jm} = 0.069, p > .10$), suggesting that individuals belonging to a lower social class are more likely to remain with the current firm. Lastly, household size has a negative impact on customer retention ($\beta_{5jm} = -0.061, p < .05$), corroborating that, as the number of family members decreases, the likelihood of customer retention increases.

6. Discussion

This research explored the effects of variability at the customer level (i.e., customer experience) and at market level (i.e., market turbulence) on customer retention, and it jointly assessed their impacts under the moderating role of relationship age. Our study reveals that variability in both customer experience and market turbulence may trigger customers to switch to the focal firm's competitors. However, consistent with social exchange theory, customers who have established long-term exchange relationships usually have greater tolerance to such changes, so it is more likely that they will remain in the established relationships as a way of reciprocating the perceived benefits to firms. These results have important implications for research and practice.

6.1. Theoretical implications

Customer experience management has become a central issue for retailing and service companies. The perceived experience complements the ability of the product or service to satisfy customer needs, not only within the search phase but also within the purchase,

consumption, and after-sales service phases (Verhoef et al., 2009). This issue is complicated by the effect of variability in both customer perceptions and the market environment. Thus, authors such as Lemon and Verhoef (2016) have highlighted the relevance of adopting a dynamic perspective in order to capture how this variability may affect critical outcomes such as customer retention. However, academic research along these lines is still very scarce (Shamsollahi et al., 2020).

Variability can also arise at the market level (i.e., market turbulence). These elements create uncertainty, instability, and complexity in the firm's environment, and they make it more difficult to manage customer experience and to allocate commercial resources efficiently (Cui and Wu, 2017). Indeed, as demonstrated in the results, newly entered competitors to the market effectively trigger a customer to switch. About the impact of new product, the results reveal that the influence of new competitors turns to be insignificant once adding the moderating effect of relationship age. One potential reason could be that customer reaction toward the new product might differ depending on the type of the currently employed product (e.g., iPhone or Samsung) (e.g., Zhu et al., 2015), thus leading to an insignificant impact of new product launching on customer retention.

To the best of our knowledge, however, this research is the first study to establish the linkage between customer experience and market turbulence from a dynamic perspective, and to investigate how they influence customer retention. To meet our research objective, we adopted social exchange theory as the theoretical basis in order to establish an integrative conceptual framework. Social exchange theory postulates that the way in which customers value the perceived favors (i.e., consistently delivered positive experiences) and external influence (i.e., market turbulence) varies depending on the established exchange relationships (i.e., long versus short relationship age) (Cropanzano and Mitchell, 2005; Witell et al., 2020); thus, based on the social exchange theory, we find that the relationship age exerts a significant influence on customer retention.

Our results reveal that a positive experience influences customer retention. This idea is not new and has already been suggested in several previous works (e.g., Kandampully et al., 2015; Fernandes and Pinto, 2019; Prentice and Nguyen, 2020). From a dynamic point of view, however, the variability in the perceived customer experience could negatively affect the continuity of the relationship. Continuous and relatively significant changes in the perception of customers about their experiences generate uncertainty about the future outcome of the relationship and could increase the customer's willingness to change providers. This is in line with the ideas suggested by prior research (Singh and Rosengren, 2020; Tyrväinen et al., 2020; Verhoef et al., 2009). However, our research is the first attempt to analyze and compare the absolute value of customer experience and its variations, as well as to analyze their influence on customer retention, thus enabling us to achieve the two main proposed goals of this empirical research.

Additionally, we aimed to analyze the effect of market turbulence through the effect of the introduction of new products and the entry of new competitors. The literature suggests that the appearance of new products could influence the attitude of consumers, including a change of provider (Patterson and Smith, 2003). However, our results surprisingly suggest no significant relationship between the launch of a new product and customer retention. To explain this result, we suggest that consumers may perceive risk and uncertainty due to the change and thus decide to maintain the relationship (Lee and O'Connor, 2003). Another possibility is that the entrance of new products in the market may increase the customer effort of comparing all the alternatives and that customers are unwilling to invest additional time in this effort. A final potential reason behind this

result is that customers may feel a kind of habit or inertia toward their current products (Cambra-Fierro et al., 2020), and hence they do not pay attention to new alternatives.

Furthermore, this research has also considered the effect of new competitors in the market. From a practical point of view, the more choice that is presented by alternatives, the greater the risk associated with the exchange. Our results corroborate this idea and align with previous studies (Barari et al., 2020; Santos-Vijande and Álvarez-González, 2007). The relationship marketing literature has highlighted the relevance of increasing the level of knowledge about each customer in order to offer proposals adapted to a customer's needs, which consequently improves the customer's overall experience, increases their level of satisfaction, and generates switching costs (Lee and O'Connor, 2003; Su and Rao, 2010). If proposals are not adapted, many customers are likely to try other alternatives. Therefore, we fulfill our third objective by taking into account the possible effect of market turbulence on customer retention. Consequently, this is the first paper to integrate variations at both the individual level and the market level.

Finally, from the point of view of relationship marketing, the relationship life cycle models (Zhang et al., 2016) suggest that as the length of the relationship increases, emotional bonds are generated between the company and its customers. For this reason, our research included a fourth objective of studying the potential effect of the relationship age on the general hypotheses proposed in our conceptual model. As a result, this is the first paper to explore how the history of a customer–firm relationship moderates the relationships between customer experience (absolute value and its dynamic variations) and market turbulence (new product and new competitor) on the one hand, and customer retention on the other.

The results indicate that as the age of the relationship increases, consumers are indeed somewhat more likely to tolerate uncertainty caused by the variability in their perceived experience. Furthermore, once the relationship is consolidated, it is more difficult for the consumer to be willing to change providers; thus, as we suggested, the effect of new competitors on customer retention is decreased. However, the age of the relationship does not influence the relationship between newly launched products and customer retention. The underlying explanation could be that customers who have developed a long-term relationship with the organization pay less attention to newly launched products, since they give more weight to the satisfactory experiences delivered by the current firm (Bolton, 1998).

Thus, while our research is in line with the ideas of prior research (Blut et al., 2014; Gilboa et al., 2019; Morgan and Hunt, 1994), it also reveals the importance of completing the analysis of the customer portfolio and the relational life cycle models by monitoring the environment (market turbulence) and, if possible, at the macro, meso and micro levels, guaranteeing positive customer experiences in a dynamic and global environment.

6.2. Managerial implications

As firms need to know how to manage variability at both customer and market levels and to understand how this variability may influence customer retention, the findings of this study have significant repercussions for managers as well. From a practical perspective, we specifically propose a set of managerial guidelines as recommendations for best practice.

First, as illustrated by our findings, it is important to provide a positive customer experience in a consistent manner in accordance with the interaction between customer

and firms. This suggests that the standardized excellence in customer experience needs to be a priority. To achieve this goal, one obvious strategy is standardization. Firms might, therefore, consider introducing robotics technology to ensure the consistency of the delivered experiences to their customers (Xiao and Kumar, 2019).

Second, in the same vein, we recommend that firms implement advanced technology and information analytics (e.g., AI and big data) to capture any potential changes or tendencies at the market level, given that variability at the market level (i.e., market turbulence) also exerts an important influence on customer retention. In this way, firms can foresee any other incidents relating to factors at both the customer and market levels, thus adjusting their strategies accordingly to better adapt to all types of change.

Lastly and most importantly, customers react differently to the variability at both the customer and market levels depending on the established relationship with firms. This indicates the importance of implementing customer relationship management through which firms can identify the type of relationship between customers and firms in a more detailed manner. Such information enables firms to predict the possible reactions of customers under different situations of variability and to maximize the possibility of retaining their customers (Zhang et al., 2016).

7. Limitations and future research lines

This study is not without limitations, which can therefore be considered as future research lines. First, we measured customer experience by a single-item metric (i.e., NPS). In addition, the NPS measurement presents some missing data which has been replaced with the mean following the recommendations of Kamakura and Wedel (2000) and Tsikriktsis (2005). Although simple measures are easily understood by marketing practitioners (Lemon and Verhoef, 2016) and the superior predictive power of NPS for customer retention in comparison to other perception metrics is well demonstrated in the literature (De Haan et al., 2015), we suggest future research could take into account other customer experience metrics. Likewise, future research could distinguish between emotional and cognitive customer experience and their variations, while identifying their impacts on customer retention.

Another limitation relates to the measurement of market turbulence, which we quantified in an objective manner. We encourage future research to include the individual customer perceptions of market turbulence within its measurement. Additionally, when examining new product performance, some studies take into consideration the degree of novelty of the product (e.g., Im and Workman, 2004; Szymanski et al., 2007). Future research may consider how this aspect may affect customer retention as well. Finally, in addition to the relationship age, other customer-related characteristics should also be considered, such as customers' propensity for risk taking, which may lead customers to visualize the variability in a different way.