Engaging shoppers through mobile apps: the role of gamification

Francesca De Canio
Department of Economics Marco Biagi, University of Modena and Reggio Emilia, Modena, Italy
Maria Fuentes-Blasco
Department of Management and Marketing, Pablo de Olavide University, Sevilla, Spain, and
Elisa Martinelli
Department of Economics Marco Biagi, University of Modena and Reggio Emilia, Modena, Italy

Abstract

Purpose – The purpose of this paper is to examine the influence of several intrinsic motivations driving consumers' intention to buy using a mobile app, namely: shopping gamification, focussed attention, shopping enjoyment and socialness, through the mediating role of shopping engagement. The online shopping experience is investigated in its dual role as direct driver of the intention to buy using a mobile app and as moderator of the shopping engagement – intention to buy using a mobile app path.

Design/methodology/approach – The empirical analysis was performed in China due to the extensive usage of mobile shopping apps amongst the Chinese population. A structural equation model was estimated on 893 valid and complete structured questionnaires collected amongst a sample of Chinese consumers.

Findings – Findings confirm that intrinsic motivations (i.e. shopping gamification, focussed attention, shopping enjoyment and socialness) indirectly influence the intention to buy using a mobile app channelled by shopping engagement. Most remarkably, results show that the online shopping experience positively moderates the shopping engagement – intention to buy using a mobile app path.

Originality/value – The novelty of the paper lies in the conceptual and empirical evidence provided on shopping gamification, within the retailing marketing domain. The study investigates other related intrinsic motivations that jointly with shopping gamification directly influence shopping engagement and indirectly impact mobile shopping intention. The paper provides insights into the moderating role of online shopping experience, a key aspect when the challenge concerning gamification is considered.

Keywords Mobile shopping, Engagement, Gamification, Previous online shopping experience

Paper type Research paper

Although the paper is the result of the collaborative work of the three authors, Francesca De Canio developed the introduction, gamification, literature review and hypotheses, data curation, limitations and directions for further research sections (contribution: ca. 45%); Maria Fuentes-Blasco developed the methodology and results sections (contribution: ca. 35%); Elisa Martinelli cared the conclusion and implications section (contribution: ca. 20%).

Introduction

The pervasive, interactive and ubiquitous technology is opening up the debate on how to use ICT to improve the retailer–customer relationship to enhance the shopping experience (Caboni and Hagberg, 2019). The introduction of in-store digital tools such as QR codes, virtual screens, shelves and isles, self-service kiosks, self-scanning machines (Piotrowicz and Cuthbertson, 2014; Siregar and Kent, 2019), as well as the integration of augmented virtual elements (Caboni and Hagberg, 2019; Flavián et al., 2019), may influence the in-store shopping experience. Likewise, gamification and social cues may enhance the online shopping experience (Insley and Nunan, 2014; Rodrigues et al., 2016).

The literature agrees that the emerging interactive technologies and the increased usage of digital platforms can make the experience more engaging and consumers more loyal with positive effects on retailers' profitability (Rodrigues et al., 2016). Extrinsic and intrinsic motivations jointly determine consumers' shopping intentions (O'Brien, 2010; Van der Heijden, 2004). Nevertheless, retailers' strategies based on pricing and/or product innovation, prevailing so far, are no more sufficient (Insley and Nunan, 2014). Companies marketing strategies are increasingly incorporating the fast-emerging trend to gamification (Yang et al., 2017). Gamification generated an estimated value of $5.5bn in 2018 with a 600% potential increase in user's downloading for gamified business apps (Lynkova, 2019). From a theoretical perspective, gamification is becoming a relevant research topic being a driver for experiential aspects (i.e. enjoyment, engagement and retention) of the user-platform interaction (Hamari, 2013; Hofacker et al., 2016). The introduction of gamified, ludic and social elements in mobile apps reduces consumers' cognitive efforts (Rodrigues et al., 2016), representing a potential competitive advantage for retailers. Our paper aims at contributing to the retailing and marketing literature, with a specific focus on mobile retailing apps, investigating how intrinsic – social and motivational – cues, namely: shopping gamification, focussed attention, shopping enjoyment and socialness, influence shopping engagement (Van Doorn et al., 2010). Shopping engagement is investigated as a predictor of consumer's intention to buy using a mobile app. Furthermore, the paper explores the bivalent nature of the online shopping experience as direct driver (Goldstein and Gigerenzer, 2002) and moderator (Giovanis et al., 2018) of consumers' intention to buy using a mobile app.

The empirical analysis was conducted in China, the country with the worldwide largest and long-lived tradition in the game industry (Fang, 2019) and in the use of smartphones and mobile apps. In the country, smartphones penetration reached 53% of the overall population, and almost 70% of smartphones have installed shopping apps (China Internet Watch, 2019). Further, China is experiencing the spread of multifunctional apps, such as WeChat (Wēixìn), amongst others, allowing together modern social networking and m-commerce (TenPay-Cai Fu Tong).

Three are the main contributions of this study. First, in response to the literature that considers price convenience and product innovation as necessary but no longer sufficient to drive consumers' buying intentions, the paper examines how intrinsic motivations (i.e. shopping gamification, focussed attention, shopping enjoyment and socialness) influence consumer engagement. Second, the study explores the bivalent role of previous online shopping experience as direct driver of the consumers' intention to buy using a mobile app, and as moderator of the shopping engagement–intention to buy path. The third and most innovative contribution of the paper concerns the conceptualization and empirical evidence of the role played by gamification in enhancing, directly, shopping engagement and, indirectly, buying intentions towards mobile retailing apps. Gamification is assuming a key role in recent marketing strategies (Hamari et al., 2014), although its purpose has been poorly investigated (Hamari, 2013; Insley and Nunan, 2014). Actually, gamification is fairly recent in marketing studies. Through an overview of its conceptualization along the last decade – since its conceptualization – this paper theoretically defines the gamification concept (Yang et al., 2017),

contextualising it in the retail domain. Further, the paper responds to the contribution to a death empirical evidence on the effect of gamification in the consumer decision process through digital platforms (Hofacker *et al.*, 2016). Specifically, this research empirically tests the role of shopping gamification in enhancing shopping engagement and indirectly the mobile shopping intention.

The paper is organised as follows. The gamification concept is explored in the next theoretical section. Section 2 presents the hypotheses underpinning the study. The subsequent section presents the empirical analysis. The paper concludes with the main results of the analysis, the key theoretical and managerial implications, and suggestions for possible developments to work out in future studies.

Gamification: from serious games to mobile apps

Serious games are computer-based software potentiated with game features operating in several non-game contexts, such as education, labour, banking, trading and retailing, amongst others. They provide a more entertaining and engaging user-application interaction. The development of serious games lies in the necessity to reduce the uncertainty related to the usage of unknown technologies and to improve users' intrinsic motivations (Malone, 1981).

Although the origin of serious games is far, only 30 years later, in 2010, the term "gamification" in relation to serious games gained popularity in several industries (Yang *et al.*, 2017). The evolution and adoption of gamification (*i.e.* the use of game features for non-entertainment purposes – Deterding *et al.*, 2011a, b) goes hand in hand with the evolution and adoption of mobile apps. Gamification refers to the gameful and ludic experience felt by the individual when using an app augmented with game-mechanics. It is usually conceptualised as the use of game design elements in non-game contexts (Deterding *et al.*, 2011a, b). Although gamification is associated with no-gaming activities, the term is often improperly misled with playing games (Robson *et al.*, 2014). It originated from video games design and interfaces. However, whereas "*playing* denotes a more freeform, expressive, improvisational, even "tumultuous" recombination of behaviours and meanings, *gaming* captures playing structured by rules and competitive strife toward goals" (Deterding *et al.*, 2011a, b, p. 3). On the one hand, modern mobile apps are developed on previous video game interfaces and possess similar interactive and immersive features (Hsu and Chen, 2018). On the other hand, gamification enhances the customer intrinsic motivation and his/her naturally related behaviour (Gatautis *et al.*, 2016).

Today, all the contexts with high involvement and uncertainty are increasingly flanked by interactive and gamified mechanics to motivate the user to adopt technological tools along the time (Eisingerich *et al.*, 2019). In Table 1, we present the evolution of the gamification concept along the last decade, showing how gamified mechanics can be easily implemented in several marketing domains and how they are becoming increasingly sophisticated and effective in marketing strategies. Gamification influences the customer interaction with the interface and its efficacy concerns not only the customer relationship metrics (*e.g.* frequency-Herzig *et al.*, 2012; Rodrigues *et al.*, 2016) but also the experiential aspects related to the interaction with a gamified interface such as engagement, enjoyment and flow (Hamari, 2013; Hamari *et al.*, 2014; Yang *et al.*, 2017).

Gamification is gaining more relevance in the literature specifically addressed at studying the usage of interactive technologies to enrich the customer experience (Caboni and Hagberg, 2019; Flavián *et al.*, 2019; Piotrowicz and Cuthbertson, 2014; Siregar and Kent, 2019). Nevertheless, the marketing literature on the topic is still in its infancy (Hamari *et al.*, 2014) and is lacking of empirical evidence (Hamari, 2013; Hofacker *et al.*, 2016; Tobon *et al.*, 2020), above all considering the variety of marketing domains in which gamification may influence the interaction between the interface and the user.

Year	Author/s	Evolution of the game concept	Marketing domain	Paper methodology	Gamification dynamic	Findings
2011a, b	Deterding et al	"Whereas serious games describe the use of complete games for non-entertainment purposes, gamified applications use elements of games that do not give rise to entire games" p.2		Conceptual		The term gamification is not context-related. Joy of use, engagement and user experience may benefit from gamification in different marketing contexts
2012	Herzig et al.	"The adoption of game mechanics into serious contexts such as business applications (gamification) is a promising trend to improve the user's participation and engagement with the software in question and on the job" p.1	Business app	Semi-experiment – Structural equation model	Implement a real-time strategy game interface, such as the one of SimCity, into an ERP.	When the ERP interface is developed in a game prototype similar to a strategy-game, the intention to use the ERP software increases by 12.12%
2012	Houttari and Hamari	"Gamification refers to: a process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation" p.19	Service app (Foursquare)	Conceptual		Game-like elements used in non-gaming contexts enhance the experiential nature of services
2013	Blohm and Leimeister	"Enriching products, services, and information systems with game-design elements in order to positively influence motivation, productivity and behavior of users" p. 275	Loyalty programs	Conceptual		Game-features in loyalty programs represent a social and motivational incentive to participate in the loyalty mechanism
2013	Domínguez et al	Gamification does not represent the use of "videogames to educate, but on exporting good aspects of video games to non-gaming educative contexts. [. . .]it could be more narrowly defined as incorporating game elements into a non-gaming software application to increase user experience and engagement" p. 381	Education	Experiment – Qualitative and quantitative study	Students can access exercises of a university online ICT course by a Blackboard plugin to solve exercises in a gamified way. A competing and rewarding mechanic is introduced for students completing optional exercises	Gamification have a great emotional and social impact on students. The reward systems and competitive social mechanisms motivate them. Further, the e-learning platform allow a permanent interaction between students and professors/ researchers

Table 1.
Gamification in the marketing domain

Year	Author/s	Evolution of the game concept	Marketing domain	Paper methodology	Gamification dynamic	Findings
2013	Hamari	Enhance services with game elements (e.g. gamified activity, as well as social interaction within a service)	P2P trading service	Field experiment	A peer-to-peer trading service is gamified by implementing badges – rewards for favourable pre-defined behaviours	Gamifying a utilitarian service (i.e., P2P trading) does not lead to a higher usage of the service (frequency)
2013	Kumar	"Gamification attempts to make technology more inviting by encouraging users to engage in desired behaviours by showing the path to mastery, and taking advantage of people's innate enjoyment of play" pp. 528–529	Business app	Experiment	Sales representative, financial controllers, employees, suppliers, and customers are identified as players and have tasks to complete	Game mechanics create engagement and impact on both intrinsic and extrinsic motivations
2014	Insley and Nunan	"Games could play a role in enabling individuals to navigate the increasing abstraction of everyday life driven and the facets of an ever more technologically complex society" pp. 341–342	Retailing	Semi-structured interviews	Implement game mechanics in an online fashion clothes store	Gamification enhances consumer engagement. Amongst the main criticism of the introduction of game-mechanics in click stores, the authors found the psychological barrier of being able to interact with a gamified interface and that gamification is a "snake oil" and it is not sufficient to provide an overall positive online shopping experience
2016	Hofacker et al	"we define gamification as the use of game design elements to enhance non-game products and services by increasing customer value and encouraging value creating behaviours such as increased consumption, greater loyalty, engagement, or product advocacy" pp. 2–3	Retailing	Conceptual		Gamification enhances loyalty, customer engagement, and motivation

(*continued*)

Table 1.

Year	Author/s	Evolution of the game concept	Marketing domain	Paper methodology	Gamification dynamic	Findings
2016	Rodrigues et al.	Gamification is the introduction of "new game elements, such as mechanics and social cues, to traditional applications" p. 392	Banking	Experiment – Structural equation modelling	Development of a new business application for mutual funds (e-banking), that included both games characteristics and social cues	Gamification is strongly linked with socialness, that positively impacts on the customer's intention to use the application. Gamification in e-banking leads to a greater customer's usage and involvement
2017	Poncin et al.	Game types can be distinguished in Ludus and Paida. Ludus is based on Challenge mechanics (e.g. Leaderboard, contest) and Alea mechanics (e.g. Lottery, sweepstake). Paida is based on Fantasy mechanics (e.g. Colourful design, virtual environment) and Mimicry mechanics (e.g. Avatar, role playing)	Retailing	Experiment	Exp1: Different retail scenarios (challenge vs fantasy) are proposed to respondents. Exp. 2: two smart technology interfaces are implemented on challenge and fantasy mechanics	Gamified mechanics impact on the arousal and accordingly on patronage intentions. Nevertheless, when the challenge is too complex, retailers need to control for the ease of use of the mechanic introduced in the Smartstore
2017	Yang et al.	"Gamification describes a number of design principles, processes and systems used to influence, engage and motivate individuals, groups and communities to drive behaviors" p. 460	Brand loyalty	Experiment	A gamified app for the Oreo cookies is developed. Users had to play with it to get a score	The perceived usefulness and perceived enjoyment of using a gamified marketing activity are found to positively influence engagement and brand attitude
2018	Hsu and Chen	"game techniques provide an entertainment venue within which to position their online content, with built-in reward mechanisms" p. 119	Recycling and environmentally friendly behaviors	Structural equation model on an existing gamified website		Gamification improves users experience and participation
2020	Hwang and Choi	Amongst the elements of gamification there are "story, mechanics, aesthetics, and technology, all of which influence marketing outcomes, including engagement"	Loyalty program	Experiment – Structural equation modelling	A bingo mechanic is introduced in a Starbucks loyalty program	A gamified loyalty programme increases consumer loyalty towards the loyalty program and accordingly consumers' participation intention and app download intention

Table 1.

Literature review and hypotheses

The technology acceptance model (TAM – Davis, 1986), revolving from the previous social psychology theories (*e.g.* theory of reasoned action – TRA – Fishbein and Ajzen, 1980), combines motivation-intention aspects with intrinsic motivations to explain and predict consumers' technology acceptance and usage. Recently, it has been applied to predict the consumer's shopping behaviour in gamified smartstores (Poncin *et al.*, 2017). In the literature review conducted by Tobon *et al.* (2020), the authors found TAM to be the most relevant theory used to test empirically the impact of gamification on consumer engagement and shopping intention across several marketing domains.

Based on previous studies, this paper evaluates the main intrinsic motivations underpinning consumer engagement, and accordingly, the intention to use a mobile app. Unlike extrinsic motivations, intrinsic motivations arise simultaneously when consumer engagement occurs (O'Brien, 2010). Then, a mix of intrinsic motivations should be considered (Deterding *et al.*, 2011a, b). To this aim, this paper investigates shopping gamification (Insley and Nunan, 2014), and other related intrinsic motivations, such as focussed attention (O'Brien, 2010), shopping enjoyment and socialness (Rodriegues *et al.*, 2016; Shang *et al.*, 2005).

Shopping gamification (GAME)

The concept of gamification is fairly new in the retailing context but, as reported above, it has already been studied in related research areas. As highlighted in Table 1, gamification is relevant in enhancing individual motivation and engagement in several contexts. In the advertising literature, Choi *et al.* noted that "when gamers are cognitively loaded, simply perceiving the stimulus can directly transfer to judgement about the brand" (2013, p. 998). Thus, gamification affects consumers' commitment towards the promoted brand. The role of gamified mechanics consists in generating positive experiences for the user engaged in an activity (Fullerton, 2014). Indeed, a gameful experience is immersive and engaging (Seaborn and Fels, 2015). We consequently postulate the following hypothesis:

H1. Shopping gamification positively affects shopping engagement.

Focussed attention (FA)

Playing video games, individuals experience a sense of flow (Webster and Martocchio, 1995), which results in higher involvement in the task (Arnold and Reynolds, 2003; Webster and Martocchio, 1995). Focussed attention, also called flow state, represents the individual temporal and environmental dissociation derived by the total absorption in the performed task (Blazquez-Cano *et al.*, 2017). Both concepts express a cognitive absorption in which consumers' "awareness is narrowed to the activity itself" (Hsu and Lu, 2004, p. 856). Focussed attention represents one of the main elements of hedonic perception behind user engagement (Trevino and Webster, 1992). Aspects such as intrinsic interest, curiosity, focussed attention and intense concentration are strongly related to engagement (Agarwal and Karahanna, 2000). Thus, for example, in the business apps context, Herzig *et al.* (2012) found that flow has a strong positive effect on engagement, which is leading us to posit the following hypothesis:

H2. Focussed attention positively affects shopping engagement.

Shopping enjoyment (ENJ)

Perceived enjoyment was first introduced into the TAM by Davis (1986). According to Davis *et al.* "the activity [to use] technology is perceived to be enjoyable in its own right" (1992, p. 1113). At first, the role of enjoyment was studied in connection with computer games (Holbrook *et al.*, 1984; Malone, 1980). Nowadays, a number of studies aimed at investigating

the role of perceived enjoyment in other contexts, such as communication, loyalty programmes or shopping, amongst others arise. Shopping enjoyment can be defined as the state of enjoyment and pleasure determined by the shopping activity. It represents the consumer's positive mood experienced during the shopping task. Accordingly, during the shopping the consumer's buying behaviour is strongly affected by his/her emotional state (Beatty and Ferrell, 1998; Wolfinbarger and Gilly, 2001).

The literature is shedding some light on the role played by shopping enjoyment in the retailing context both offline and online. Thus, for example, mobile apps, with potentiated connectivity and interactivity, are increasingly encountering consumers' need for pleasure and fun (Caboni and Hagberg, 2019; Chong, 2013). Accordingly, shopping enjoyment has a key role in influencing consumers' shopping buying behaviour (Huang *et al.*, 2007), as it has been proved that consumers with a positive mood show higher levels of shopping engagement (De Canio *et al.*, 2019; Higgins 2006; Kim *et al.*, 2013). Consequently, our next hypothesis follows:

H3. Shopping enjoyment positively affects shopping engagement.

Socialness (SOC)
The spread of technological devices has made communication and social interaction both physical and digital. A number of social networks, online communities, thematic pages, blogs and mobile apps support the online social interaction (Katz and Rice, 2002), making socialization a pillar in the human–computer interaction analysis (Lazar and Preece, 2002). For example, in online games, the opportunity to socialise amongst users was recognised as the driver for the creation of a sense of group participation and membership (Holopainen, 2011). "Interaction is a natural feature of online games that enables users [. . .] to be entertained" (Lee and Tsai, 2010, p. 602). Its key role is confirmed also in the retailing context, where the opportunity to share the shopping task with relatives and friends is considered relevant to entice purchases (Arnould and Reynolds, 2003). This is even more important in the Chinese context, where a unique multifunctional app is allowing the consumer to buy and interact with relatives simultaneously (*e.g.* WeChat). For this reason, socialness towards the mobile app exerts a positive effect on shopping engagement, supporting the following hypothesis:

H4. Socialness positively affects shopping engagement.

Shopping engagement (ENG)
"Engagement has been defined as both the act of emotionally involving users and the state of being in gear and interacting directly with a system" (O'Brien, 2010, p. 345). It represents the ability of technology to captivate users' attention, engendering a sense of community and fun (O'Brien and Toms, 2008). When this concept is applied to consumers interacting with a mobile app, it can be outlined as "a psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (*e.g.*, a media)" (Brodie at el., 2011, p. 259). In this study, shopping engagement is conceptualised as developing from customer experiences while browsing through shopping applications on mobile devices (Thakur, 2016). It expresses the motivational experience that allows users to be "involved, occupied and interested in something" (Higgins, 2006, p. 442), determining the consumer's "intensity of attraction to or repulsion from something" (p. 439). This happens when intrinsically motivated individuals have a genuine desire to accomplish with the activity (Yang *et al.*, 2017). Consequently, the motivational force driving an individual at displaying, or not, a particular behaviour, results in a source of experience that could be related to the level of engagement. Consumers' engagement could result in both positive and negative conducts.

Van Doorn *et al.* defined customer engagement as a behaviour that goes beyond transactions, explaining it as a "customer's behavioural manifestation that has a brand or firm focus, beyond purchase, resulting from motivational drivers" (2010, p. 254).

Customer engagement expresses the experiential interaction between customers and brands, websites or other objects, and on the other hand, it represents the psychological and motivational state of the relationship (Vivek *et al.*, 2014). Therefore, we define shopping engagement as the state of engagement and commitment that the consumer experiences during the shopping task, able to captivate his/her attention and to engender a sense of self-identification with the retailer. As found by Lin (2007), web stickiness is related to both positive attitude and commitment concepts that in our analysis are included in the shopping engagement construct. "Strength of engagement contributes to the intensity of the motivational force experience" (Higgins, 2006, p. 439). Consequently, consistently with the motivation-intention path proposed in the TRA (Fishbein and Ajzen, 1980), that hypothesises a direct influence of motivations on intentions, we postulate a direct and positive effect of customer engagement on behavioural intentions, as follows:

H5. Shopping engagement positively affects intention to buy using a mobile app

Previous online shopping experience (EXP)
In the marketing context, the customer experience has been extensively investigated in relation to products, companies and brands (Siregar and Kent, 2019) and, recently, to online shopping channels (Castañeda *et al.*, 2007). The effect of past behaviours can be divided into frequency effects, in which intentions are formed by the *recognition heuristic* (Goldstein and Gigerenzer, 2002), and recent effects, where intentions are determined by recent behaviours – anchoring-adjustment heuristic effect – (Tversky and Kahneman, 1974). According to the Goal-Direct Behaviour model, the "frequency of past behaviour is a predictor of desires, intentions and behaviour, whereas recency of past behaviour predicts behaviour only" (Perugini and Bagozzi, 2001, p. 80).

The previous online shopping experience expresses the consumer's expertise and knowledge about how to buy online towards both electronic and mobile channels. The more expert and knowledgeable with online shopping platforms the consumer is, the more willing he/she will be to continue to buy online. Accordingly, when the consumer has previous experience with online shopping and knows the online platform (both electronic and mobile), he/she is more prone to buy online (Park and Stoel, 2005).

In extant literature, the previous shopping experience is considered as a moderator of online buying intentions too. Thus, for example, Pappas *et al.* (2014) found that low and high online experienced shoppers have different intentions to buy grocery products online. In the mobile banking context, Giovanis *et al.* (2018) showed that customer experience moderates the relationship between the intention to use a mobile banking account and several antecedents such as innovativeness, perceived trust and social influence. Accordingly, we can postulate the following hypotheses:

H6. Previous online shopping experience positively affects intention to buy using a mobile app.

H7. Previous online shopping experience positively moderates the effect of shopping engagement on intention to buy using a mobile app.

Figure 1 presents the overall theoretical model.

Figure 1.
Theoretical model
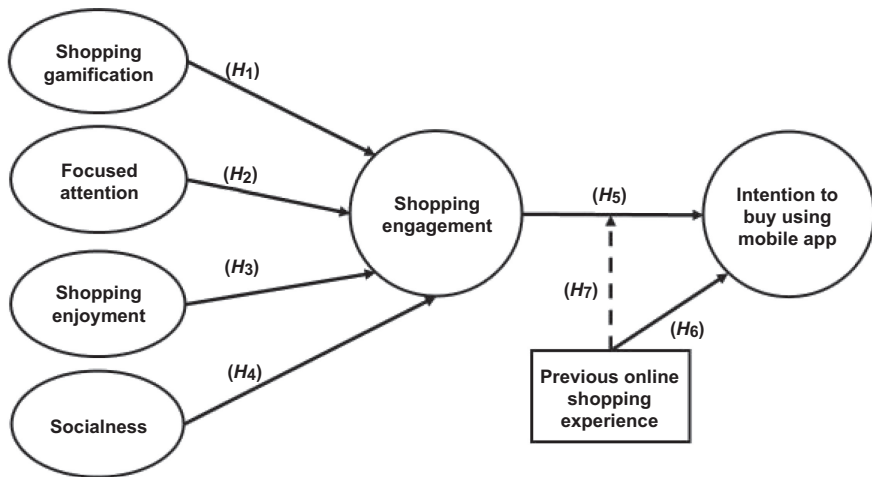
Research methodology
Measure development and data collection
The quantitative analysis is based on an online survey designed on the SurveyMonkey platform. A structured questionnaire was delivered via WeChat amongst Chinese consumers by means of a snowball sampling. The Chinese context was preferred for the empirical analysis as, differently from other countries (60% is the average global mobile market-share), in China it reaches a peak of over 80% (China Internet Watch, 2019). Sharing surveys through social networks allows to intercept the relevant target (Ploll and Stern, 2020). Following the Hsu and Chen (2018) procedure, an existing app incorporating game and social cues was used for the empirical analysis. WeChat was then selected for both sharing the survey with its one billion users, and as setting for the quasi-experimental empirical analysis. "WeChat is used daily by Chinese users for buying goods and services, transferring money, planning holidays [...] and a lot more" (QP Software, 2020). Further, to amplify the overall experience of participating in our study, a Chinese Key Opinion Consumer (KOC) helped us to share the survey link. KOCs are the newest social media influencers in China. KOCs are real consumers who share, with their followers, reviews and opinions on products and services they directly test.

The questionnaire was double translated English-Chinese and Chinese-English to avoid translation bias and to compensate the English literacy weakness featuring the majority of the Chinese population. Items were measured on a 7-point Likert-scale (1: completely disagree – 7: completely agree). Focussed attention (five items) and shopping engagement (three items) were both derived from O' brien and Toms (2013). A six-item scale was used to assess socialness, developed on the study of Arnould and Reynolds (2003). Shopping enjoyment was measured through a six-item scale developed using the previous study of Johnson *et al.* (2015). Intention to buy using a mobile app was measured through a four-item scale adapted from Overby and Lee (2006). Four items were adapted from Hsu and Chen (2018) to measure shopping gamification. Finally, previous online shopping experience was measured through an item adapted from Novak *et al.* (2000). The measurement scales are reported in Table 3.

The questionnaire, previously pre-tested on a small sample of respondents, was shared online in January 2019. 903 responses were collected. Responses with missing data were dropped from the dataset. A final dataset of 893 valid and complete questionnaires was used

for the empirical analysis. 893 surveys were collected with 60.5% male. Table 2 shows the main demographics of the sample and a list of the main retailers used for their online shopping: Taobao (63%), Tmall (15%) and JD.com (12%) are the most used.

Results

We applied partial least squares (PLS) structural equation modelling to test our measurement scales dimensionality and hypotheses with Smart PLS v.3.2.9 (Ringle *et al.*, 2015). According to the guidelines provided by Hair *et al.* (2019), we used a two-step approach to assess the model adequacy. In the first stage, we estimated a measurement model based on principal component-based estimation in order to analyse the dimensionality and validity of our measurement scales (Chin *et al.*, 2013). After, we estimated the structural parameters to test our hypotheses and the explanatory power of our model using 5,000 bootstrap samples. According to Henseler *et al.* (2009), the use of this level of bootstrapping provides standard errors and *t*-statistics to evaluate the significance of the structural coefficients.

Measurement scales: dimensionality, reliability and validity

All items were treated as reflective indicators and we evaluate their dimensionality, internal consistency and validity according to the procedures suggested by Hair *et al.* (2019). With regard to dimensionality, it was necessary to eliminate one item from the shopping enjoyment scale ("*I feel like online shopping is a safe place to shop*") and two items from the socialness scale ("*The links within the online store allow me to move back and forth easily between its different pages*" and "*Online retailers encourage me to make suggestions and to share my online shopping experience with my relatives, friends and other potential customers*") since these items showed a factor loading lower than 0.7. Internal consistency of the dimensions was assessed considering three indicators: Cronbach's alpha indicator exceeded the recommended

Gender	%	Age	%
Male	60.5	18–24 years	38.6
Female	39.5	25–35 years	51.1
		36–50 years	9.7
		>51years	0.6
Education level	%	Job	%
Junior high school certificate	0.6	Unemployed	2.6
High school	9.7	Part-time worker	2.6
Bachelor's degree certificate	71.1	Student	18.3
Master's degree	9.9	Full-time worker	76.3
Postgraduate	8.7	Pensioner	0.1
		Housekeeper	0.1
Origin	%	Family	%
1st tier city	52.7	Single	2.7
2nd tier city	27.4	Couple	7.8
3rd tier city	10.9	3 members	43.3
4th tier city	4.7	4 members	30.8
Rural area	4.2	5 or more members	15.4
Main online store	%		
Taobao	63.2		
T-mall	14.7		
JD.com	12.1		
Amazon	3.1		
Vipshop	1.2		
Dang Dang	1.2		
Alibaba	1.0		
Others	3.5		

Table 2.
Sample profile

threshold of 0.7 (Nunnally and Berstein, 1994), the composed reliability coefficient was greater than 0.7 (Anderson and Gerbing, 1988) and the average variance extracted (AVE) was over 0.5 (Fornell and Larcker, 1981) (Table 3).

Constructs	Item statements	Loading (t-Stat)	
Focussed attention (Cronbach's α = 0.896; CR = 0.924; AVE = 0.709)	FA1: I am so involved when I shop online that I lose the track of time	0.849**	(80.13)
	FA2: The time I spend buying online just slips away	0.730**	(36.18)
	FA3: I lost myself in shopping online	0.888**	(103.39)
	FA4: I block out things around me when I shop online	0.849**	(66.09)
	FA5: When I buy online, I am very absorbed	0.885**	(104.88)
Shopping enjoyment (Cronbach's α = 0.904; CR = 0.929; AVE = 0.723)	ENJ1: Shopping online makes me happy	0.794**	(34.84)
	ENJ2: I enjoy shopping online	0.840**	(53.22)
	ENJ3: I find it enjoyable to use online stores for buying products	0.879**	(75.15)
	ENJ4: I found online shopping exciting	0.874**	(98.76)
	ENJ5: Shopping online is funny	0.863**	(79.64)
Socialness (Cronbach's α = 0.836; CR = 0.891; AVE = 0.672)	SOC3: When I am chatting with friends on social networks I use to switch to online shopping	0.740**	(31.54)
	SOC4: I like to share my online shopping with my friends online	0.826**	(61.91)
	SOC5: Online shopping allows me to socialise my purchases	0.851**	(69.27)
	SOC6: I like shopping online as it allows me to ask suggestions to my friends	0.856**	(76.57)
Shopping gamification (Cronbach's α = 0.919; CR = 0.937; AVE = 0.713)	GAM1: When I shop online I feel like playing a game	0.839**	(69.07)
	GAM2: I complete several tasks when I shop online	0.812**	(51.25)
	GAM3: Online shopping makes me feel like a winner	0.871**	(90.22)
	GAM4: I like shopping online as it allows me to collect credits like in a game	0.862**	(74.38)
	GAM5: Shopping online is a gamified experience	0.891**	(105.02)
	GAM6: Shopping online is a challenging experience	0.787**	(42.93)
Shopping engagement (Cronbach's α = 0.779; CR = 0.872; AVE = 0.694)	ENG1: My shopping online experience is always rewarding	0.771**	(39.10)
	ENG2: Shopping online is an engaging task	0.886**	(109.80)
	ENG3: I am very committed with online shopping	0.839**	(61.07)
Intention to buy using a mobile app (Cronbach's α = 0.833; CR = 0.888; AVE = 0.666)	INTM1: I intend to continue to buy online using a mobile app	0.804**	(44.35)
	INTM2: I intend to increase the frequency of online shopping using a mobile app	0.793**	(42.52)
	INTM3: I am willing to recommend others to shop products online using a mobile app	0.823**	(56.59)
	INTM4: It is likely that I will shopping online in the next month using a mobile app	0.842**	(59.32)
Previous online shopping experience	EXP: I have experience about where and how to make purchases online	1	–
Age (control)	AGE	1	–
Sex (control)	SEX	1	–

Note(s): CR: Composite reliability; AVE: Average variance extracted. **: $p < 0.01$

Table 3.
Measurement model
(scale dimensionality,
reliability and validity)

We confirmed convergent validity as all the reflective indicators showed significant and high standardised loadings (>0.7; t-Stat>2.58) (Steenkamp and Van Trijp, 1991) (Table 3). We checked discriminant validity by linear correlation between each pair of dimensions. These values were less than the square root of the AVE in the scales, showing evidence that each reflective construct related stronger to its own scales than to the others (Table 4).

We analysed this validity in depth with heterotrait–monotrait ratio of correlations. These values, shown in Table 5, were lower than the threshold of 0.9 (Henseler *et al.*, 2015).

Hypotheses testing
After confirming the validity of the measurement scales, we proceeded to estimate two nested models to test the main direct effects and the moderation effect in order to verify the hypotheses. To test for interaction effects using PLS, we performed a hierarchical process to compare the results of two models: one without and one with the interaction construct following the product approach (Chin *et al.*, 2003). All variables were mean-centred to minimise any multicollinearity threat (Aiken and West, 1991). First, the model was estimated only with the interviewees' demographic variables (*i.e.* sex and age), that work as control variables. The results showed that neither of these two variables has a significant effect on intention to buy using a mobile app ($\beta_{sex} = 0.028$; t-Stat = 0.60; $\beta_{age} = -0.097$; t-Stat = 0.28). Secondly, the main effects of focussed attention ($\beta = 0.190**$; t-Stat = 5.78), shopping enjoyment ($\beta = 0.352**$; t-Stat = 10.82), socialness ($\beta = 0.107**$; t-Stat = 2.72), shopping gamification ($\beta = 0.234**$; t-Stat = 5.47), shopping engagement ($\beta = 0.327**$; t-Stat = 10.60) and previous online shopping experience ($\beta = 0.451**$; t-Stat = 14.32) on intention to buy using a mobile app were estimated, including the control variables – *i.e.* age ($\beta = 0.015$; t-Stat = 0.58); sex ($\beta = -0.025$; t-Stat = 1.04) (see Table 6).

	AGE	FA	INTBM	EXP	SEX	ENG	ENJ	GAME	SOC
			Correlations between constructs						
AGE (control)	*1*								
FA	−0.087	*0.842*							
INTBM	−0.016	0.238	*0.820*						
EXP	−0.001	0.141	0.570	*1*					
SEX (control)	−0.002	−0.168	−0.02	0.038	*1*				
ENG	−0.094	0.496	0.500	0.371	−0.05	*0.833*			
ENJ	−0.078	0.372	0.550	0.404	−0.106	0.589	*0.851*		
GAME	−0.170	0.532	0.320	0.269	−0.009	0.569	0.473	*0.845*	
SOC	−0.125	0.473	0.430	0.313	−0.092	0.528	0.523	0.631	*0.820*

Table 4. Descriptive statistics and scale correlations

	AGE	FA	INTBM	EXP	SEX	ENG	ENJ	GAME	SOC
AGE (control)									
FA	0.091								
INTBM	0.030	0.281							
EXP	0.001	0.153	0.624						
SEX (control)	0.002	0.177	0.031	0.038					
ENG	0.105	0.588	0.609	0.416	0.058				
ENJ	0.082	0.413	0.638	0.428	0.111	0.694			
GAME	0.176	0.579	0.369	0.281	0.015	0.672	0.515		
SOC	0.137	0.548	0.516	0.341	0.102	0.653	0.600	0.719	

Table 5. Heterotrait–monotrait (HT–MT) (discriminant validity assessment)

In the last stage, the two-way interaction effect of shopping engagement x previous online shopping experience was added (see Table 6 and Figure 2). In this last estimation phase, a positive and significant link between shopping gamification and shopping engagement ($\beta = 0.241$**; t-Stat $= 5.46$) emerged, confirming H_1.

Models Direct effects	Model 1 β	t	Model 2 β	t	Model 3 β	t
Control variables						
Age → Intention to buy using a mobile app	−0.097	0.276	0.015	0.58	0.013	0.48
Sex → Intention to buy using a mobile app	0.028	0.600	−0.025	1.04	−0.010	0.41
Main effects						
Focussed attention → Shopping engagement			0.190**	5.78	0.200**	5.73
Shopping enjoyment → Shopping engagement			0.352**	10.82	0.351**	9.97
Socialness → Shopping engagement			0.107**	2.72	0.094*	2.29
Shopping gamification → Shopping engagement			0.234**	5.47	0.241**	5.46
Shopping engagement → Intention to buy using a mobile app			0.327**	10.60	0.333**	9.92
Previous online shopping experience → Intention to buy using a mobile app			0.451**	14.32	0.433**	13.21
Interaction effect						
Previous online shopping experience x Shopping engagement → Intention to buy using a mobile app					0.066**	2.62
R^2 (intention to buy using a mobile app)		0.010		0.420		0.494
ΔR^2				0.410		0.074
SRMR				0.055		0.056
NFI				0.873		0.872
Note(s): *: $p < 0.05$; **: $p < 0.01$						

Table 6.
Structural model (direct and interaction effects on intention to buy mobile)
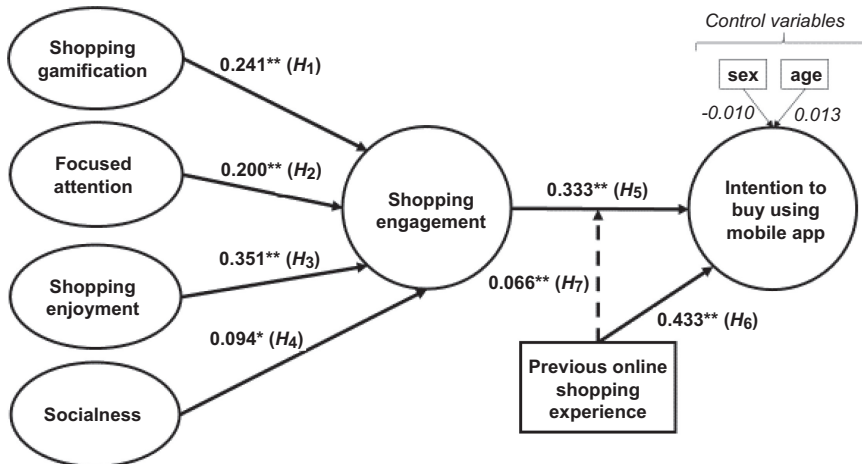

Figure 2.
Structural model (direct and interaction effects on intention to buy mobile)

Note(s): Fit indices: $R2 = 0.494$; SRMR $= 0.056$; NFI $= 0.872$
*: $p < 0.05$; **: $p < 0.01$

The results also showed a direct effect, and significant at least at 0.05 level, of focussed attention ($\beta = 0.200$**; t-Stat $= 5.73$), shopping enjoyment ($\beta = 0.351$**; t-Stat $= 9.97$) and socialness ($\beta = 0.094$*; t-Stat $= 2.29$) on shopping engagement, which allow us to confirm H$_2$–H$_4$. Moreover, shopping engagement significantly influenced the intention to buy using a mobile app ($\beta = 0.333$**; t-Stat $= 9.92$); hence, H$_5$ can be confirmed. With respect to previous online shopping experience, there was a positive and significant effect on intention to buy using a mobile app ($\beta = 0.433$**; t-Stat $= 13.21$), confirming H$_6$.

With regard to the effect of interaction, shopping engagement x shopping experience had a significant, positive influence on the shopping intention using a mobile app ($\beta = 0.066$**; t-Stat $= 2.62$). In order to determine the contribution of the interaction term, we calculated the effect size to reflect the increase of R^2. Based on Cohen (1988), the effect size was $f^2 = (0.494–0.420)/(1–0.494) = 0.146$. We can conclude that the interaction is deemed to be moderate (Cohen, 1988). Thus, H$_7$ is supported. For a deeper understanding, this effect is shown in Figure 3.

Conclusion and implications

This study is one of the first attempts to empirically analyse the effects of gamified elements in non-game contexts, with a specific focus on the mobile shopping experience. Although the recent marketing literature has turned the spotlight on the positive effect of gamification on consumer behaviour (Hamari *et al.*, 2014), scholars call for more studies providing empirical evidence of the role played by gamification within a wider range of marketing domains (Insley and Nunan, 2014; Poncin *et al.*, 2017). To this aim, this study explores gamification in the mobile shopping experience, when a multifunctional retailing app potentiated with game and social mechanics, is used, namely WeChat. The development of new technologies, the spread of new communication and retailing channels, as well as the increasing availability of innovative mobile, handled and wearable devices are changing consumers' habits. This is increasingly true in China, where a multitude of multifunctional apps is providing a potentiated shopping experience compared to the one provided in Western countries.

Our results confirm previous findings even in the retailing context. Thus, for example, we found that shopping gamification is one of the main motivations driving shopping engagement and indirectly impacting on consumers' intention to buy using a mobile app (Insley and Nunan, 2014; Hofacker *et al.*, 2016; Poncin *et al.*, 2017). Moreover, our findings
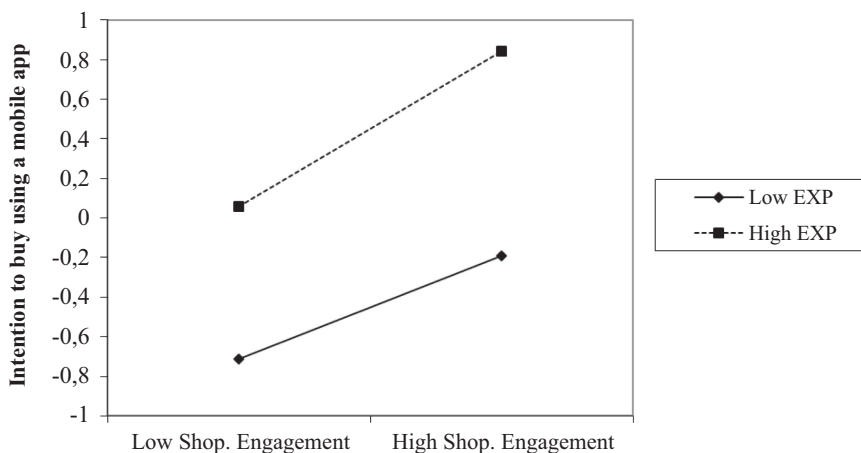

Figure 3.
Moderation effect of previous online shopping experience on shopping engagement-intention to buy using a mobile app

contribute to extant literature widening existing academic knowledge on the intensity of the effects exerted by other intrinsic motivations impacting on the engagement-intention to buy path, as suggested by Deterding *et al.* (2011a, b). First, we confirm the positive relationship between socialness and engagement identified by Rodriegues *et al.* (2016). Second, when a retailing app is investigated, both shopping enjoyment (*e.g.* De Canio *et al.*, 2019) and focussed attention (*e.g.* Herzig *et al.*, 2012) play a positive and relevant role in determining shopping engagement.

Concerning the previous online shopping experience, results confirm its dual role in influencing consumers' buying intentions using a mobile app. First, results settle that when consumers have expertise with the online channel, and in particular, with the mobile device, and accordingly they know where and how to buy online, they are more willing to use the app for shopping (*e.g.* Park and Stoel, 2005). Second, while previous studies have verified the moderating effect of the previous online shopping experience between different antecedents and the intention to buy online, to the best of our knowledge no previous study has investigated its moderating role on the engagement-intention path. This result adds a further piece of knowledge to the nascent literature on the use of game mechanics in retailing. Indeed, going further the results of Poncin *et al.* (2017) finding that the inclusion of simultaneous game-mechanics may be too complicated for the users when the challenge is too complex, making the overall gamification effect negative, our results show that when a multifunctional app is investigated, the previous online shopping experience both supports shopping intention and amplifies the positive impact of engagement on shopping intentions. Thus, controlling for the previous online shopping experience, it is possible to include more game mechanics simultaneously. Accordingly, our results provide a first answer to the RQ4 posed by Hofacker *et al.* (2016). Results provide empirical evidence that there is no demographic effect (*i.e.* gender and age) when gamification is studied as antecedent of mobile shopping engagement.

Findings offer some relevant implications also for practitioners. First, when retailers aim to introduce gamified mechanics into their mobile retailing apps, they should introduce game mechanics by challenge levels, similarly to what happen in video games. As done by WeChat, the app is introducing functionalities step by step; this approach is enabling the app to be China's first multifunctional app on which users spend over 360 min/day on it. Likewise the Chinese experience, online retailers, above all Western ones, should innovate their online stores with non-game tools to differentiate their offer and engage consumers. In this sense, as highlighted in the literature (Insley and Nunan, 2014), being able to leverage on consumers' intrinsic motivations can lead to acquiring consumers' preferences. Further, implementing communication campaigns aimed at clarifying and better explain how consumers might purchase online, companies can increase the level of online channels knowledge of their actual and prospective customers, reinforcing their engagement, enriching the previous online shopping experience and increasing their proneness to online purchase through mobile devices. Operationally, this can be purposed stressing the "shopping game" effect and arranging e-commerce web-sites and retailing platforms with funny and engaging tasks (*e.g.* review or rate products), competitions, bonuses and credits collections – better if based on an award-winning effect, boosting the self-empowerment sentiment of people and their feeling to be successful as well as increasing their level of amusement and pleasure. Similar tools have been successfully implemented in online banking transferring a quota of transactions, typically carried by consumers in banks, on mobile applications. Mobile applications potentiated with gamified elements can be then more flexible, convenient, interactive and engaging. Finally, as the social influence, as well as the influence of family members and relatives is very important for Chinese, it is mandatory for digital players to settle in a coherent way gamification and marketing strategies. Indeed, gamification is part of a wider company's strategy to improve the platform-user interaction, and social and gamified cues

should be coherently implemented by the platform in order to clearly impact on final users. Otherwise, gamification may lead to market strategies distortion.

Limitations and directions for further research

Despite the main contributions provided by this paper, further research exploring the role of gamified dynamics in the retailing sector is required. First, this study focusses on the intrinsic motives behind the intention to buy using a mobile app. Further studies should compare intrinsic and extrinsic motivations to understand if is more valuable for retailers to compete with price strategies or provide social, enjoyable and gamified shopping experiences.

Amongst the main limitations of this study, the use of cross-section data does not allow us to generalise results of causality between constructs. Future studies might also replicate the theoretical model considering other multifunctional apps and/or national contexts. The study took into consideration WeChat as the gamified retailing app. Nevertheless, in China, there are several other multifunctional apps allowing gamified retailing experiences. Accordingly, in future studies a comparison between multifunctional apps should be proposed to understand which gamified mechanic is more relevant in the retailing context. Future results should also be evaluated in the light of the overall interaction strategy proposed by the platform. As found by Hamari (2013) depending on the utilitarian vs hedonic function of the platform, gamification may have different impacts. Accordingly, further studies should confirm and deepen the proposed model bringing our results and expanding their coverage, for example in the area of e-commerce, sharing economy and social networking. Similarly, China is the place with the highest percentage of mobile shoppers and a country with a long tradition in video games and individual interaction with technological tools. The application of the proposed theoretical model comparing apps available in East and West countries can broaden the generalisability of our results.

Further, the emerging gamifying mechanics, identified in Table 1 show that several opportunities exist with different implications for platforms, requiring further empirical evidence on their value in companies' strategies.

Finally, future research should investigate the gamification concept in retailing apps enhanced by virtual tour and augmented reality (Caboni and Hagberg, 2019). Indeed, combine increasing interactive technologies (*i.e.* virtual and augmented reality) with game design elements can stimulate intrinsic motivations and generate consumer engagement in non-game contexts. Accordingly, game mechanics can profitably be combined with augmented mechanics.

ORCID iDs
Francesca De Canio http://orcid.org/0000-0003-4658-282X
Maria Fuentes-Blasco http://orcid.org/0000-0002-7082-7068
Elisa Martinelli http://orcid.org/0000-0002-7429-8829

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Corresponding author

Francesca De Canio can be contacted at: francesca.decanio@unimore.it