Empirical Generalisations and Multi-Brand E-Loyalty: The Case of Iran

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Submitted in total fulfilment of the requirements of the degree of
Doctor of Philosophy, Institute of Sustainable Industries and Liveable Cities
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2021

To MUM AND DAD.

Abstract

This thesis has three specific research objectives: i) to apply behavioural loyalty to the study of e-loyalty; ii) to incorporate a multi-brand loyalty concept to the study of e-loyalty; and iii) to apply three key *marketing empirical generalisations* (Duplication of Purchase, Double Jeopardy and Pareto Law) to the study of multi-brand e-loyalty in a Middle-Eastern country (Iran).

To attain these objectives, the theoretical element of this thesis incorporates foundational literature on loyalty (critically comparing attitudinal and behavioural loyalty), literature on multi-brand loyalty and repeat buying behaviour and current literature on e-loyalty (including research on websites stickiness). In doing so, it highlights important issues and gaps to the understanding of e-loyalty, which can be remedied by bringing into research of the online buying behaviour the body of marketing knowledge on empirical generalisations. The empirical element of this thesis consists of applying the three aforementioned key marketing empirical generalisations across three complementary studies that examine Iran, a buoyant Middle-Eastern online market. As such, this thesis is a 'double' *differentiated replication* study, which extends known patterns in offline multi-brand loyalty to the analysis of online purchasing in a geographical context underinvestigated in empirical research on leading 'marketing laws'. More details of the three studies follow below.

Study 1 (Duplication of Purchase) identifies a positive relationship between the market size (purchase penetration) of Iranian websites and the percentage of customers shared with other websites, suggesting that the Duplication of Purchase pattern holds in the Middle-Eastern digital domain. Specifically, this study is a 'case in point' for the theoretical and managerial value of the concept of multi-brand e-loyalty since: i) it advances consumer behaviour knowledge by demonstrating that, as in offline domains and other geographical areas, e-loyalty in this buoyant Middle-Eastern market is divided across a small number of e-brands; and ii) duplication of online purchases can assist e-brands to understand competition within the same digital market, including the existence of market partitions or e-brands groupings.

Study 2 (Double Jeopardy) reveals that an e-brand market share determines its purchase frequency (multi-brand e-loyalty). Specifically, this study empirically investigates whether larger e-brands (greater market share) have more customers (higher online purchase penetration) and greater levels of e-loyalty than smaller e-brands (lower market share). The

results confirm that this is the case for Iranian websites, suggesting that the Double Jeopardy pattern holds in this Middle-Eastern digital domain. The approach also reveals the existence of online niche brands and change-of-pace e-brands. Accordingly, this second study adds to Study 1 by clarifying how to grow the market performance for e-brands or websites.

Study 3 (Pareto Law) determines that the Pareto Law 'holds' for Iranian websites and, in terms of the share of contribution to sales, like the offline domains, heavy online buyers (those making frequent online purchases for a given e-brand) contribute between 40% and 70% of the sales. Therefore, light buyers contribute to the 30% to 60% of the sales and should not be ignored. This proportion is consistent across different product categories and time periods, highlighting the importance of light online buyers. Hence, this study further demonstrates the theoretical and practical value of the notion of multi-brand e-loyalty, showcasing the type of insights that can be gathered from customer segment-level analysis. The third study provides guidelines that help managers better understand online buyers' contribution to sales, which enables them to choose more potentially successful marketing strategies.

Declaration

I, Tara Naami, declare that the PhD thesis entitled *Empirical generalisations and multi-brand e-loyalty: the case of Iran* is no more than 80,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

I have conducted my research in alignment with the Australian Code for the Responsible Conduct of Research and Victoria University's Higher Degree by Research Policy and Procedures.

Signature Tara Naami Date in full : 19/08/2021

Declaration regarding Ethics Approval

All research procedures reported in the thesis were approved by the Victoria University Human Research Ethics Committee (HRE18-163).

Signature: Tara Naami Date: 19/08/2021

Acknowledgments

First and foremost, I am forever thankful to my amazing supervisor Dr Lara Stocchi from the University of South Australia for her guidance, motivation, enthusiasm, and immense knowledge. It means more than words can express, knowing that Lara was always there for me. This thesis would not exist without her support. I would also like to thank my supervisor Dr Romana Garma, for her feedback and help for the completion of my PhD. Finally, I would like to thank Dr Maxwell Winchester for recruiting me and for his assistance at the start of my PhD journey.

In addition to my supervisors, I would also like to express my sincere gratitude to Dr Zachary Anesbury from the University of South Australia for his encouragement, insightful comments, and generous help with the analysis. I acknowledge Dr Maria Flutsch for editing my thesis. Editorial intervention was restricted to the ACGR/IPED national guidelines for editing research theses and the current Australian Standards for Editing Practice, specifically parts D and E.

I would like to sincerely thank my father (Ebrahim), mother (Mehri), cousin (Hadi), sister (Tina), brother-in-law (Simon) and uncle (Mostafa) for all their unconditional love and spiritual support throughout my thesis. I am incredibly lucky to have you in my life.

Last but not least, I wish to thank Meisam, my beloved husband. Your love, encouragement, patience and support were truly instrumental. This would not have been possible without you.

Journal Articles

A modified version of Study 1 has been published in the *Journal of Consumer Behaviour*. The *Journal of Consumer Behaviour* is ranked A in the ABDC list and has an impact factor of 1.708. The journal develops consumer behaviour and consumer research by the publication of double-blind peer-reviewed papers that seek to exhibit innovative, alternative and challenged descriptions of consumer behaviour besides the latest improvements in established attitudes of consumer research (Wiley, 2021).

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1 CHAPTER ONE: INTRODUCTION

1.1 Chapter overview

This chapter provides an overview of the thesis and its key concepts: e-loyalty, multi-brand loyalty and empirical generalisations. It then provides the rationale behind this thesis and clarifies its importance to marketing research and practice, highlighting existing issues in the literature concerning attitudinal loyalty and e-loyalty. The key objectives of this thesis follow, together with an overview of the methodologies employed in the three empirical studies. Finally, the chapter outlines the structure and organisation of the thesis and the content of each chapter.

Since the Internet has become a significant channel for shopping, communication and searching for information (Brashear, Kashyap, Musante, & Donthu, 2009), researchers have shown considerable interest in investigating customer loyalty and consumer behaviour in the online domain (Anderson & Srinivasan, 2003; Martínez-Argüelles & Batalla-Busquets, 2016). A focal concept of interest is *e-loyalty*, which can be defined as the "customer's favourable attitude toward the e-retailer that results in repeat buying behaviour" (Srinivasan, Anderson, & Ponnavolu, 2002, p. 42). Several studies have considered different frameworks to examine e-loyalty, highlighting multiple shaping factors (Kaya, Behravesh, Abubakar, Kaya, & Orús, 2019; Khan, Zubair, & Malik, 2019; Quan, Chi, Nhun, Ngan, & Phong, 2020; Swaminathan, Anderson, & Song, 2018; Zhang & Liu, 2017). However, a general agreement is yet to emerge on the importance of these factors as drivers of e-loyalty. Moreover, seminal studies on loyalty (e.g., Dick & Basu, 1994; Oliver, 1999) posit that customers hold a deep commitment to consistently repurchasing a brand in the future, which is essential to creating a long term relationship with the company. Yet, other studies argue that customers are not committed only to a specific brand but routinely buy from a range of brands in the category (Ehrenberg, 1995; Romaniuk & Dawes, 2005; Uncles, Ehrenberg, & Hammond, 1995; Wilson & Winchester, 2019). This is a phenomenon known as *multi-brand loyalty* (Arifine, Furrer, & Felix, 2019; Dawes, 2008), which is defined as "the consistent repurchase of more than one brand from among a set of brands" (Olson & Jacoby, 1974, p. 447). Empirical research suggests that multi-brand loyalty is the norm and is much more common than deeply held commitment to a specific brand (Dawes, 2008; Ehrenberg, 2000; Felix, 2014). Despite the growth of e-commerce, the multi-brand loyalty approach to studying e-loyalty is yet to feature in the relevant marketing

literature stream. Therefore, building upon the notion of multi-brand loyalty in offline domains, this thesis introduces the concept of *multi-brand e-loyalty* and defines it as the ongoing repurchase from more than one website selling brands from the same online product category. Accordingly, the focus and main research objective of this thesis is to achieve a better understanding of online consumer buying behaviour and multi-brand e-loyalty. To fulfil this overarching research aim, this thesis draws upon well-established marketing *empirical generalisations*, which are patterns observed across various markets and conditions (Bass & Wind, 1995; Ehrenberg, 1995).

In essence, this thesis replicates and extends existing research on the empirical generalisations concerning multi-brand loyalty in offline contexts to the online domain. For example, this thesis explicitly investigates whether the Duplication of Purchase Law, Double Jeopardy and Pareto Law, three key marketing empirical generalisations, can be successfully implemented to improve the understanding of multi-brand e-loyalty, while considering websites as e-brands. Moreover, this thesis examines Iran's online market as it is the fastest growing e-commerce market in the Middle East, with the highest number of Internet users in the region. For instance, in 2018, Iran's e-commerce market experienced a rapid expansion of Internet penetration (up to 80%, see Internet World Stats, 2020a) and currently has the highest number of web-users in the Middle East (twice as many as Saudi Arabia, see Statista, 2020b).

1.2 Research objectives

1.2.1 Underlying issues with attitudinal loyalty

In the marketing literature loyalty has been generally conceptualised through two approaches: attitudinal and behavioural (Chaudhuri & Holbrook, 2001). The majority of published studies have focused on attitudinal loyalty, often inferred through scale (ranking and rating) measures embedded in self-reported surveys. Yet, there are three main concerns with this approach. First, most studies have placed great emphasis on uncovering the different potential factors that might shape loyalty (e.g., consumer involvement, positive predispositions, claimed purchase intention etc.); however, there is a lack of agreement on how to measure attitudinal loyalty and its underpinning factors (Bandyopadhyay & Martell, 2007). Moreover, past studies have not considered all the factors that might influence loyalty (Aydin & Özer, 2005), which is problematic, especially in highly dynamic domains such as online buying behaviour. Second, several studies have remarked that attitudinal loyalty fails to measure *brand* loyalty as

accurately as behavioural loyalty (Cheng, 2011; Foxall, 2016; Sharp, Sharp, & Wright, 1999), which is based on actual purchase behaviours and is generalisable to different conditions and markets (Anesbury, Greenacre, Wilson, & Huang, 2018; Dawes, Romaniuk, & Mansfield, 2009; Uncles & Wright, 2004; Wilson & Winchester, 2019). Finally, attitudinal loyalty does not always result in actual repurchase (Blery et al., 2009). To overcome these problems, this thesis concentrates on behavioural loyalty. Thus, the first research objective is:
Objective 1: To apply behavioural loyalty to the study of e-loyalty.

1.2.2 Underlying issues with e-loyalty

The core focus in existing research on e-loyalty is to find which factors (or drivers) influence customers to be loyal to a single brand (Anderson & Srinivasan, 2003; Ludin & Cheng, 2014; Hwang & Lee, 2019; Swaminathan et al., 2018), so that companies can gain profits by encouraging online customers to repurchase (Reichheld & Schefter, 2000). This focus assumes e-loyalty to be a multi-dimensional attitudinal construct, in line with the broader field of research on attitudinal loyalty. As this thesis highlights, this approach causes e-loyalty research to inherit the same issues evident in scholarly work on attitudinal loyalty. For example, there is still no consensus on which factors impact e-loyalty although past studies have examined numerous factors. Specifically, there are studies linking e-loyalty to e-satisfaction (Al-dweeri, Ruiz Moreno, Montes, Obeidat, & Al-dwairi, 2019; Al-Hawari, 2014; Fang, Chen, Wen, & Prybutok, 2018; Kaya et al., 2019), e-trust (Faraoni, Rialti, Zollo, & Pellicelli, 2019; Kaabachi, Ben Mrad, & Fiedler, 2019; Zheng, Lee, & Cheung, 1991), e-service quality (Belanche Gracia et al., 2015; Durmuş et al., 2013; Khan et al., 2019), perceived value (Fuentes-Blasco, Saura, Berenguer-Contrí, & Moliner-Velázquez, 2010; Peña García, Saura, & Orejuela, 2018; Qureshi et al., 2009), and perceived enjoyment (Fang, Shao, & Wen, 2016; Martínez-Caro, Cegarra-Navarro, García-Pérez, & Fait, 2018; Yao, Tsai, & Fang, 2015). Moreover, past research to date has only examined e-loyalty towards a single brand. To address these issues, the thesis focuses on *multi-brand e-loyalty* and defines it as the ongoing repurchase of more than one website or e-brand within the product category. The importance of multi-brand e-loyalty is confirmed by research that clearly shows that consumers have "high levels of commitment and emotional attachment to more than one brand within the same product category" (Felix, 2014, p. 474).

In light of the above discussion, the thesis addresses the following second research objective: *Objective 2: To incorporate a multi-brand loyalty concept to the study of e-loyalty.*

To achieve Objectives 1 and 2, the thesis presents a series of critical reflections based on the combination of multiple strands of marketing literature (see Chapter 2). It also establishes new theoretical and managerial evidence concerning multi-brand e-loyalty across three studies (Chapters 4, 5, and 6) based on three leading marketing empirical generalisations. As previously mentioned, empirical generalisations are patterns that are observed across various markets and conditions (Bass & Wind, 1995; Ehrenberg, 1995), forming the basis for *marketing science* (Sharp, 2010). Three key marketing empirical generalisations widely cited in the literature, due to their relevance to understanding loyalty and consumer buying behaviour are the Duplication of Purchase (Anesbury, Jürkenbeck, Bogomolov, & Bogomolova, 2020; Bennett & Ehrenberg, 2001; Lam, 2006; Tanusondjaja, Nenycz-Thiel, & Kennedy, 2016; Uncles, Kennedy, Nenycz-Thiel, Singh, & Kwok, 2012), the Double Jeopardy pattern (Anesbury, Greenacre, et al., 2018; Dawes, 2014; Ehrenberg, Goodhardt, & Barwise, 1990; Greenacre, Tanusondjaja, Dunn, & Page, 2015) and the Pareto Law (Anesbury, Talbot, Day, Bogomolov, & Bogomolova, 2020; Habel, Rungie, Lockshin, & Spawton, 2003; McCarthy & Winer, 2019). These marketing empirical generalisations are discussed in Chapter 3. Surprisingly, the majority of published studies on these three marketing empirical generalisations have concentrated on offline markets (e.g., Anesbury, Greenacre, et al., 2018; Dawes 2008; Mansfield, Romaniuk, & Sharp 2003; Uncles, Wang, & Kwok 2010; Wright & Riebe 2010). In contrast, the implications for the online domain are less understood. As this thesis shows, this knowledge void can be turned into an opportunity to address the issues discussed so far in e-loyalty research, further enhancing the proposed contribution of this thesis. Accordingly, the thesis first utilises the Duplication of Purchase (Study 1, Chapter 4) to investigate the online market structure, which determines the websites' competition levels in each product category and identifies any groupings or partitions in the examined categories. Second, the thesis examines the relationship between the market share and the level of brand loyalty through the Double Jeopardy (Study 2, Chapter 5), and any deviations therein. Finally, this thesis examines the Pareto Law (Study 3, Chapter 6) to discover the percentage of each website's purchases from different consumer segments differing in brand loyalty. Put more formally:

Objective 3: To apply three key marketing empirical generalisations (Duplication of Purchase, Double Jeopardy and Pareto Law) to the study of multi-brand e-loyalty in a Middle-Eastern country (Iran).

1.2.3 Research context

Following the argument presented by Amir and Sharon (1990) and Sharp, Wright, Kennedy, and Nguyen (2017), there is a need for more replications of research on empirical generalisations in marketing and for more researchers to accept the challenge to develop scientific 'laws' in marketing (Barwise, 1995; Bass, 1995; Ehrenberg, 1995), improving both "evidence-based theory and managerial decision-making culture (Sharp et al., 2017). In fact, replication has a crucial role in the establishment of empirical generalisations and their boundary conditions (Sharp, 2002).

To date, extant research on marketing empirical generalisations has mostly considered Western and European markets (e.g., Ehrenberg et al., 1990; Kooyman & Wright, 2017; Sharp et al., 2002; Uncles et al., 2012); it has not examined in equal detail more diverse geographical areas such as developing countries and growing consumer markets like the Middle East (Statista, 2021). More specifically, studies on the key marketing empirical generalisation considered in this thesis have been conducted primarily in the Western contexts such as Australia (e.g., Lam & Mizerski, 2009), the US (e.g., Uncles, Kennedy, Nenycz-Thiel, Singh, & Kwok, 2012) and Europe (e.g., Scriven, Yábar, Clemente, & Bennett, 2015). Consumers and brands in emerging markets might be different and researchers frequently advise marketers to rethink their strategic approaches (Faulkner, Truong, & Romaniuk, 2014; Pauwels, Erguncu, & Yildirim, 2013). To contribute to research in an under-explored but growing region, online customer data was gathered from Iran, a Middle Eastern country showing significant growth in e-commerce. In recent years, the Middle East has experienced a rapid expansion of Internet penetration and usage compared to the rest of the world and the global average penetration rate (Statista, 2017).

1.3 Methodology

As mentioned briefly, in terms of its empirical component, this thesis addresses the research objectives presented so far via three independent yet complementary empirical studies (reported in Chapters 4, 5 and 6). All three studies are based on a *quantitative research*

approach – i.e., the statistical analysis of numerical information included in two sets of data. One set comprises online panel data recording purchases for the telecommunications market over multiple time periods, while the second set is self-report survey data derived from an online questionnaire on online buying behaviour covering multiple product categories. Regarding the target population, the thesis utilises convenience samples representative of the wider population of Iranian online shoppers.

The data analysis performed in all three empirical studies included in this thesis employs a series of established techniques and methods adapted from extant literature on offline buying behaviour and the related empirical generalisations. For instance, Study 1 (Chapter 4) presents a Duplication of Purchase analysis and compares the values of key marketing metrics such as brand penetration, brand duplication and partitions in the product category (Dawes, 2008; Ehrenberg, 1988; Lam & Mizerski, 2017; Tanusondjaja et al., 2016). Study 2 (Chapter 5) examines the Double Jeopardy pattern using the Dirichlet model, a comprehensive account of expected buying behaviour trends (Anesbury, Greenacre, et al., 2018; Ehrenberg et al., 1990). Finally, Study 3 (Chapter 6) concentrates on the Pareto Law analysis, which requires calculation of the proportion or share of website-level purchases originating from different consumer segments, benchmarked against statistical distributions such as the Negative Binomial Distribution (Anesbury, Talbot, et al., 2020; Sharp, 2007). Table 1 summarises the analyses conducted in each of the three studies and the product categories considered.

Table 1. A summary of methods

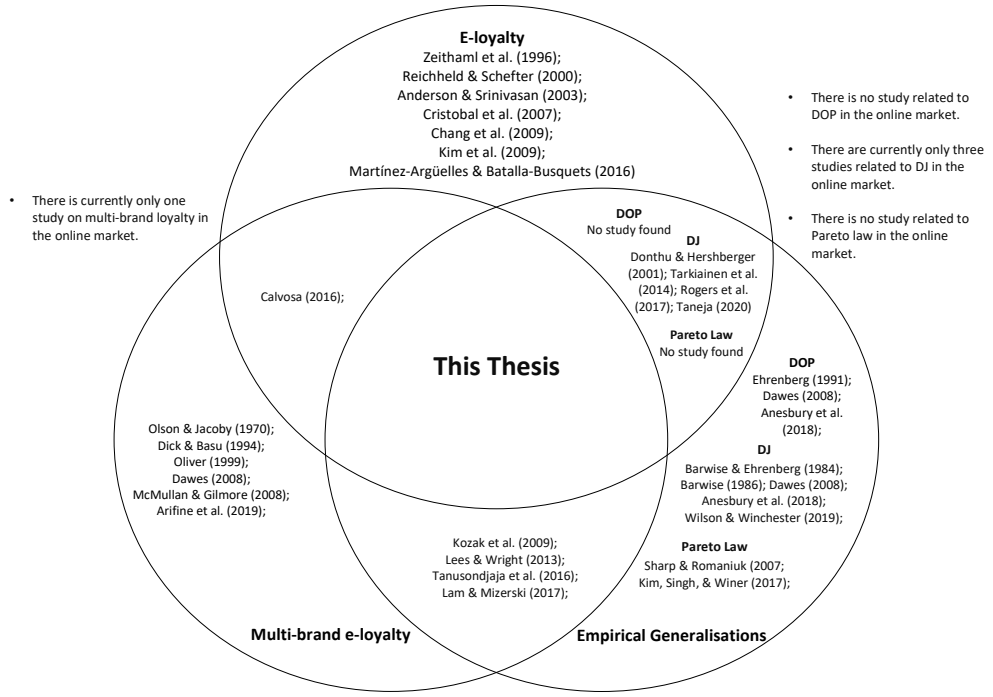
Analysis	Measures	Tests	Product Categories
Observed brand performance metrics	Market share, penetration and purchase frequency	Mean, Standard deviations, Coefficient of variations, Trends	Telecommunications (Panel data) Books Cosmetics Banking Groceries Home electronic and digital devices (Survey data)
Predicted brand performance metrics (Dirichlet model)	Market share, penetration and purchase frequency	Mean, Standard deviations, Coefficient of variations, Trends	
Double Jeopardy/Duplication of Purchase	Average Duplication, Predicted Duplication, Average purchase frequency	Mean Absolute Deviations	
Pareto Law	Purchase frequency (to identify light and heavy buyers) and market share (for contribution to sales)	Percentage of contribution to sales by heavy and light buyers	

1.4 Thesis originality

This thesis contributes to marketing knowledge on e-loyalty, multi-brand loyalty and empirical generalisations by examining the online market's structure and competition across three studies testing well-known offline loyalty patterns in the digital domain. To the best of the author's knowledge, no study has simultaneously combined insights from these three streams of research to improve the understanding of online buying behaviour and loyalty.

To further illustrate the originality and contribution of this thesis, Figure 1 shows where the thesis 'sits' in comparison to the relevant literature streams, highlighting how little attention the concept of multi-brand e-loyalty has gained in the literature thus far. Chapter 7 discusses the knowledge advancements produced as a result of this approach, together with the resulting implications for marketing practice.

Figure 1. Overview of existing literature and research gaps



Exploring e-loyalty through the lens of established empirical generalisations primarily examined offline is an important under-investigated aspect since the literature claims that online domains are somewhat different to offline. For example, online shopping is quick,

efficient, and reduces decision-making efforts (Chiu, Lo, Hsieh, & Hwang, 2019; Park & Hill, 2018). Online buyers can easily compare different sellers and get the best deals while they are at home. Moreover, online buyers can easily access extensive information about a product or service through price matching, reviews and expert evaluations (Goldenberg, Oestreicher-Singer, & Reichman, 2012; Park & Hill, 2018; Shin, 2017) that can affect their purchase decision. Accordingly, this thesis helps marketing scholars and practitioners to better understand the online domain with respect to: i) the competition and sharing of customers, which results from the existence of regular patterns in multi-brand e-loyalty (**Study 1**); ii) strategies and implications for e-brand growth (**Study 2**); and iii) the evaluation of the contribution to e-brand sales for customer segments differing in levels of loyalty (**Study 3**).

In essence, this thesis is a 'double' differentiated replication. It seeks to contribute to research on multi-brand loyalty through extension into a lesser understood context (online domain) and an under-researched geographical area (Iran). In fact, this study offers a 'case in point' for the theoretical and empirical relevance of the newly introduced notion of multi-brand e-loyalty.

1.5 Thesis organisation

This thesis comprises seven chapters. Figure 2 represents the organisation of all chapters, their key aspects and the logical links between each chapter.

Chapter 1 (the present chapter) provides an overview of the thesis and its objectives, and introduces the rationale of the three empirical studies. The chapter also briefly outlines the main methodological approaches of the thesis, the originality of this thesis and maps the logical organisation of the thesis chapters.

Chapter 2 first defines loyalty and its approaches, including *attitudinal loyalty* (Bowen & Chen, 2001; Mellens, Dekimpe, & Steenkamp, 1996) and *behavioural loyalty* (Chaudhuri & Holbrook, 2001). Second, the chapter presents a critical comparison of behavioural and attitudinal loyalty, and highlights the relevance of these concepts to this thesis. The chapter then provides a critical review of the existing literature on *multi-brand loyalty* and *e-loyalty*, in

order to reveal the key theoretical and managerial issues addressed in this thesis. The chapter ends with a formal definition of *multi-brand e-loyalty*.

Chapter 3 defines and explains the notions of *empirical generalisations* and *scientific replication*. It then introduces three well-known empirical generalisations explored in this thesis: the Duplication of Purchase, the Double Jeopardy and the Pareto Law. It also develops the rationale of each of the three empirical studies, explaining the link between the studies and the thesis objectives. Finally, the chapter provides an overview of the e-commerce context and the Iranian context, justifying the decision to focus on both.

Chapter 4 (**Study 1**) validates and extends the Duplication of Purchase to Iran, the Middle Eastern online market of interest. Specifically, using websites as e-brands, the study uses the Duplication of Purchase to evaluate how websites compete in six different online product categories, including telecommunications, books, banking, home electronics and digital devices, groceries, and cosmetics.

Chapter 5 (**Study 2**) examines the Double Jeopardy pattern in the same six online markets as Study 1. The chapter explores how e-brands can grow market performance, and compares current vs. expected levels of multi-brand e-loyalty and market penetration (number of buyers each e-brand has).

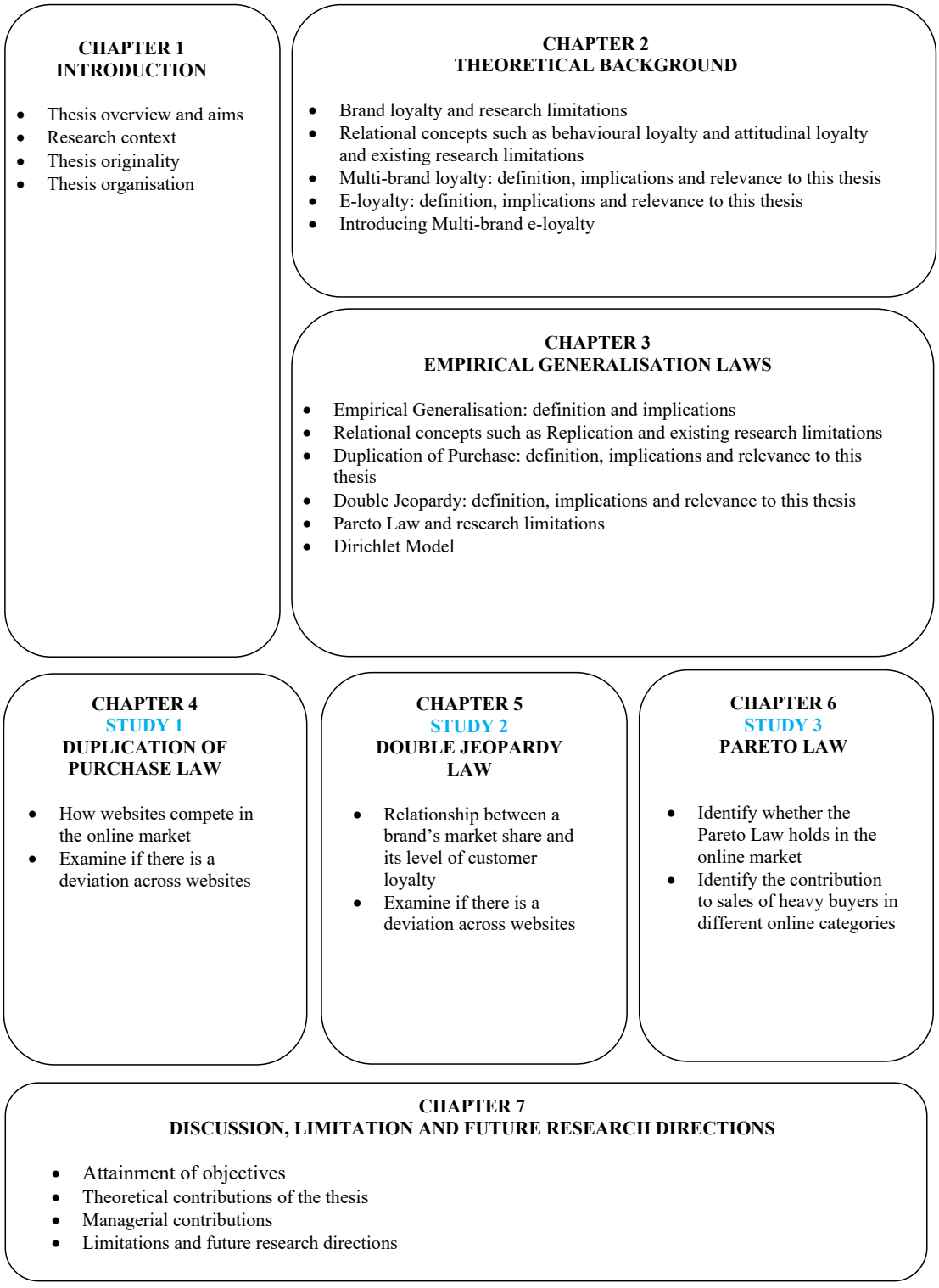
Chapter 6 (**Study 3**) examines whether the Pareto Law's share of 60/40, previously documented in offline domains, holds in the same online markets of interest as examined in Study 1 and Study 2. In particular, the chapter explores the contribution to e-brand sales resulting from different segments of online consumers displaying dissimilar levels of multi-brand e-loyalty.

In all three empirical studies, results are verified across the six different product categories and over multiple time periods.

Chapter 7 provides a summary and discussion of the thesis findings, linking them back to the thesis objectives and to the relevant strands of literature. Hence, the theoretical and managerial implications of this thesis are discussed in-depth. The chapter also highlights some potential

methodological contributions. Finally, the chapter includes a discussion of the thesis limitations and a series of suggestions for future research directions.

Figure 2. The organisation of thesis

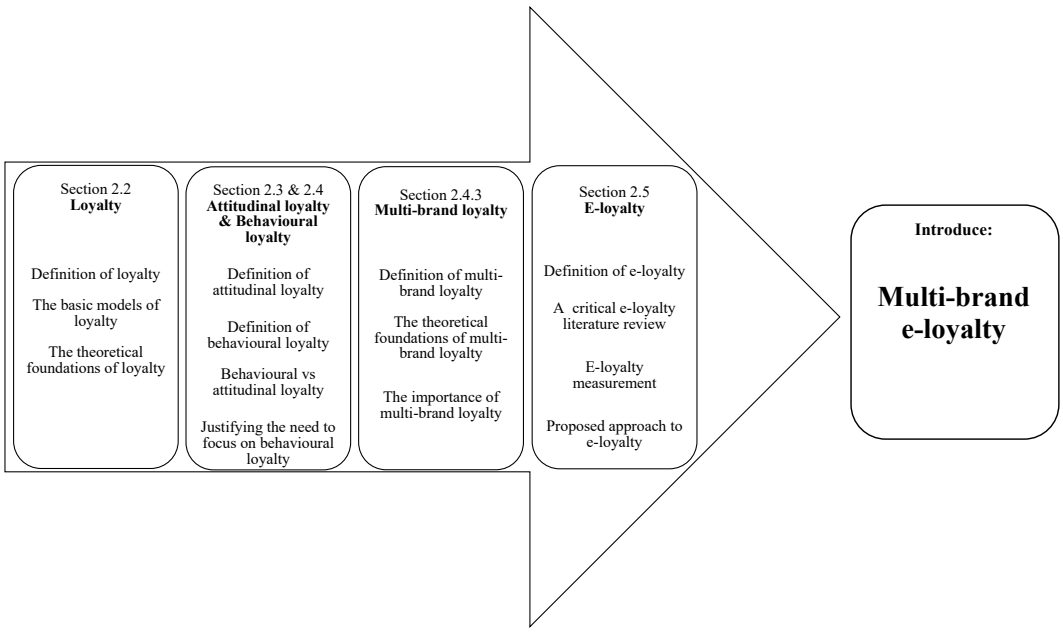


2 CHAPTER TWO: THEORETICAL BACKGROUND

2.1 Chapter overview

This chapter has two aims, as outlined in Figure 3. First, the chapter reviews the theoretical foundations of loyalty, including five selected concepts, and discusses their relevance to this thesis. These concepts include *loyalty* (Dick & Basu, 1994; Oliver, 1999), *attitudinal loyalty* (Bowen & Chen, 2001; Mellens et al., 1996), *behavioural loyalty* (Anderson & Srinivasan, 2003; Chaudhuri & Holbrook, 2001), *multi-brand loyalty* (Arifine et al., 2019; Dawes, 2008; McMullan & Gilmore, 2008) and *e-loyalty* (Gupta & Kabadayi, 2010; Srinivasan et al., 2002). The concepts of multi-brand loyalty and e-loyalty are the focus of this thesis, while the concepts of loyalty, attitudinal loyalty and behavioural loyalty provide foundational support for the key research questions addressed in the three empirical studies of the thesis.

Figure 3. Organisation of Chapter 2



A fundamental belief in brand loyalty literature is, "brand must demonstrate clear superiority" (Kotler & Keller, 2006, p. 313) to be chosen by customers among the other rival brands (Lamb, Hair, & McDaniel, 2005). Therefore, in consumer buying behaviour research, there is a strong reliance on attitudinal loyalty to find and measure the factors that influence consumers to choose the brands and be loyal to them. However, researchers embracing the behavioural loyalty approach state "not many consumers are likely to be convinced that one brand is

superior if they are routinely buying from a range of brands within a category" (Dawes, 2008, p. 200). This divide in scholarly opinion on loyalty represents a key theoretical gap in the advancement of brand loyalty research.

Second, extending from the above, this chapter aims to outline the importance of multi-brand loyalty research and to highlight the relevance of concepts and frameworks regarding e-loyalty and online multi-brand loyalty. Above all, the thesis contributes to the e-loyalty literature by introducing a new approach to the conceptualisation and measurement of e-loyalty, through the introduction of the *multi-brand e-loyalty* concept.

2.2 Loyalty

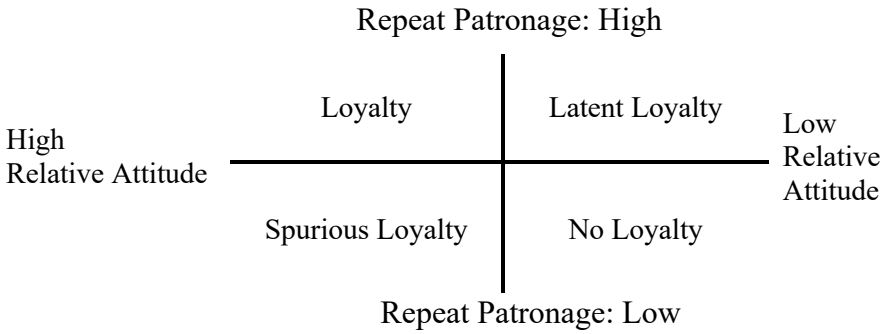
The definition of loyalty has evolved over the decades. Dick and Basu (1994) described it as the strength of the relationship between relative attitude and repeat patronage. Neal (1999, p. 21) defined loyalty as, "the proportion of times a purchaser chooses the same product or service in a specific category compared to the total number of purchases made by the purchaser in that category, under the condition that other acceptable products or services are conveniently available in that category." Thus, customer loyalty has been emphasised as being the critical goal for many firms (Agustin & Singh, 2005; Ngobo, 2017) to achieve profitability (Reichheld & Schefter, 2000) and long-term market survival (Agustin & Singh, 2005).

Loyalty was first defined as comprising primarily of two dimensions: *attitudinal loyalty* and *behavioural loyalty* (Day, 1969). Later on, scholars noted the need for more in-depth analysis and measurement of customer loyalty by revealing different dimensions (e.g., Jacoby & Kyner, 1973; Mittal & Lassar, 1998). Accordingly, several studies examined loyalty across multiple facets, including *attitudinal loyalty* (Bowen & Chen, 2001; Mellens et al., 1996), *situational loyalty* (Dubois & Laurent, 1999; Lim & Razzaque, 1997; Oliver, 1999), *complaining behaviour* (Ganesh, Arnold, & Reynolds, 2000; Ko, Martin, & Josée, 1998; Yu & Dean, 2001), *price sensitivity* (Narayandas, 1998; Odin, Odin, & Valette-Florence, 2001; Zeithaml, Berry, & Parasuraman, 1996) and *behavioural loyalty* (Chaudhuri & Holbrook, 2001). Although numerous studies have defined and measured loyalty in different ways, over the past five decades two main approaches to theorising and measuring loyalty have prevailed, as per Day's (1969) initial intuition: behavioural and attitudinal (Chaudhuri & Holbrook, 2001; Kim, Morris, & Swait, 2008; Kimmel, 2010; Oliver, 1999; Uncles, Dowling, & Hammond, 2003).

Attitudinal loyalty has been identified as a customer's beliefs and knowledge about a brand, which include commitment (e.g., Cunningham, 1967) and intentions (Chaudhuri & Holbrook, 2001). In contrast, based on the behavioural approach, loyalty has been defined as a behaviour which is inferred from repeated purchases (Kim et al., 2008) or the percentage of total purchases (Kabiraj & Shanmugan, 2011). On the basis of this distinction, one of the most famous extant *brand loyalty* frameworks is the model created by Dick and Basu (1994).

Dick and Basu's model describes four loyalty scenarios: no loyalty, spurious loyalty, latent loyalty and true loyalty. These four types of brand loyalty can be mapped and defined as shown in Figure 4.

Figure 4. Brand loyalty model



Source: (Dick & Basu, 1994)

No loyalty: The low repeat patronage occurs with a low attitude towards the brand (Dick & Basu, 1994). Customers attempt to avoid buying from the brand, willingly or unwillingly. Moreover, the similarity in the competitors' service/product might cause low relative attitudes.

Spurious loyalty: This is high repeat patronage that occurs with a low attitude towards the brand (Dick & Basu, 1994). It might happen in instances when customers purchase a brand motivated primarily by previous behaviour and experience, or if the choice within the services/product category is limited.

Latent loyalty: This is an indication of low repeat patronage occurring with a high relative attitude (Dick & Basu, 1994). According to Dick and Basu (1994), it could occur when situational factors impact brand loyalty.

True loyalty: This occurs when both high repeat patronage and a high relative attitude exist (Dick & Basu, 1994).

A few years later, Oliver (1999) proposed another conceptual framework consisting of four stages of brand loyalty. Specifically, Oliver (1999, p. 34) defined customer loyalty as "a deeply held commitment to rebuy or repatronise a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour." Accordingly, he suggested four stages of loyalty, as follows:

Cognitive loyalty: Cognitive loyalty refers to the information related to the brands in memory (including quality and price), which makes a specific brand superior among the others (Blut et al. 2007; Harris & Goode, 2004; Oliver, 1999).

Affective loyalty: Affective loyalty implies liking the brand or holding a positive attitude towards the brand (Oliver, 1999). It also implies satisfaction towards the brand, based on cumulative purchase experience and usage (Harris & Goode 2004; Moisescu, 2014). Hence, affective loyalty consists of both a cognitive and an affective dimension (Moisescu, 2014).

Conative loyalty: Conative loyalty concerns behavioural intentions towards the brand, such as the intention to continue purchasing the brand or repurchase intention (Evanschitzky & Wunderlich, 2006; Oliver, 1999).

Action loyalty: Action loyalty is the customers readiness and willingness to overcome obstacles to purchase the brand (Han & Hyun, 2012; Oliver, 1999).

In essence, Oliver's (1999) and Dick and Basu's (1994) models consider loyalty as developing through different "stages", rather than being static. Oliver proposed a model in which loyalty arises through sequential stages. In comparison, Dick and Basu presented a model with distinct

and separate pathways to loyalty. While these two models are different, there are also significant similarities, as discussed here below.

First, Dick and Basu's spurious and Oliver's cognitive stages are alike. Dick and Basu explained the spurious stage of loyalty as a low attitude that occurs with high repeat patronage towards the brand. Oliver defined the cognitive loyalty stage as existing when customers prefer a specific brand among the others based on the available knowledge of the brand. In both definitions, customers have a limited commitment and are likely to change their preferred brand. Second, there is also a similarity in Oliver's affective stage and Dick and Basu's latent stage. Oliver (1999) suggested that the affective stage is a positive attitude towards or liking of the brand, which implies satisfaction towards the brand based on cumulative satisfying purchase experience and usage. Dick and Basu presented the latent stage of loyalty as an indication of low repeat patronage, which occur with a high relative attitude. Both explanations proposed customers liking a brand but still potentiall choosing alternative brands. Finally, another parallel is apparent at the conative stage of Oliver's model and the true stage of Dick and Basu's model. Specifically, Oliver explained the conative stage as the behavioural intentions towards the brand to continue purchasing and reflective of a brand repurchase intention. Dick and Basu described the existence of true loyalty when both repeat patronage and attitude are high, that is, the most preferred loyalty stage. In both stages, loyalty has developed to true loyalty through repeat purchases and positive attitudes.

Although these two seminal models of loyalty are widely accepted, researchers faced challenges when examining them empirically (Curran, Varki, & Rosen, 2010). Dick and Basu's loyalty model is a plausible conceptualisation and is consistent with the dominant assumptions of the determinants (or drivers) of loyalty in the marketing literature. Nevertheless, it has limited, if any, empirical basis (Garland & Gendall, 2004). For example, two studies by Baloglu (2002) and Ngobo (2017) returned inconsistent results. Baloglu (2002) studied the model of Dick and Basu (1994) through cluster analysis for casinos' customers. The results only confirmed the presence of the low loyalty, spurious loyalty and true loyalty stages; the latent loyalty stage was not detected. In comparison, in the analysis of supermarket shopping Ngobo (2017) confirmed the existence of the low loyalty, latent loyalty and true loyalty stages, but did not find spurious loyalty. Garland and Gendall (2004) used Dick and Basu's seminal loyalty model to examine the banking market. They found that in the context of subscription markets such as banking Dick and Basu's model was of limited validity, due to customers

switching between brands and not being loyal to just one specific brand. They also suggested that further testing is needed, as they believed that the generalisability of the results is limited.

Similarly, many scholars have used Oliver's (1999) model (Harris & Goode, 2004; McMullan & Gilmore, 2008; Sivadas & Baker-Prewitt, 2000) and obtained inconclusive empirical outcomes. There are several possible reasons for these limitations. For example, while both Oliver (1999) and Dick and Basu (1994) conceptualised loyalty as a mix of cognitive, affective and conative dimensions, Oliver proposed four stages of loyalty, arguing that customers might have different loyalty levels at different stages, due to gradual attitude development. Thus, Oliver conceptualised loyalty as a continuum and did not compare loyalty and no loyalty or categorise low, spurious, latent and high loyalty. Bennett and Rundle-Thiele (2005) believed that the sequential process of loyalty is debatable, as the literature returned conflicting reports about the 'right' sequence of loyalty development (Li & Petrick, 2008a). For instance, according to Back (2001), the three stages of Oliver's loyalty model might not be a result of a continuous sequence. Buck found a positive association between affective loyalty, conative loyalty and behavioural loyalty, but reported that cognitive loyalty was not positively associated with behavioural loyalty.

In summary, there is no consensus on the structure and dimensions of loyalty. This continuing dispute needs a closer look, especially in light of different domains where loyalty manifests itself (e.g., online) and given the present proliferation of brands for consumers to choose from.

The following sections review the competing concepts of behavioural and attitudinal loyalty in the marketing literature, and discuss the differences between attitudinal and behavioural loyalty, highlighting the superiority of behavioural loyalty.

2.3 Attitudinal loyalty

The *deterministic theory* implies that customer behaviour is a result of marketing plans that influence the customer's attitudes and understandings (Rundle-Thiele, 2005) and indicates the relationship between variables (Hunt, 1991). Hence, researchers embracing a deterministic view explain the roles of attitudes and beliefs in creating loyalty (e.g., Jacoby & Kyner, 1973). Measuring loyalty as an attitude started in the early 1940s. Specifically, the concept of attitudinal loyalty has its origins in Guest's (1944) work describing the preference of research

participants to select the brand they liked. Since that time, many scholars researched loyalty in terms of preferences and attitudes, and assumed it to be an emotional (Mellens et al., 1996) and psychological process (Dick & Basu, 1994; Jacoby & Chestnut, 1978; Mellens et al., 1996). Ajzen and Fishbein (1980) argued that attitudinal loyalty includes cognition and affect. According to their model, attitude is a belief and a liking of the brand. Traylor (1981) added the commitment item to Ajzen and Fishbein's (1980) model. More recently, scholars argued that attitudinal loyalty comprises the cognitive, affective and conative preferences of the customer to keep the relationship with a brand (Harris & Goode, 2004; Jensen 2011; Torres-Moraga, Vásquez-Parraga Arturo, & Zamora-González, 2008; Yi & La, 2004).

Building on the attitudinal approach, scholars suggested different antecedents of loyalty (e.g., Cheng, 2011; Dick & Basu, 1994; Rauyruen & Miller, 2007), defined as a psychological attachment to a brand (Jay & Dwi, 2000; Rauyruen & Miller, 2007; Roy et al., 2018) despite the offers of the rival brands (Chaudhuri & Holbrook, 2001). Attitudinal loyalty has also been measured on the basis of customer commitment (Beerli, Martín, & Quintana, 2004; Cunningham, 1956; Jay & Dwi, 2000; Taylor, Celuch, & Goodwin, 2004; Traylor, 1981), intentions and preference of the brand (Ajzen & Fishbein, 1980; Chaudhuri & Holbrook, 2001; Jacoby & Chestnut, 1978; Olsen & Johnson, 2003; Ramli & Sjahruddin, 2015) and the willingness to recommend the brand to others or word-of-mouth (Cheng, 2011; Dick & Basu, 1994; Ganesh et al., 2000; Howat & Crilley, 2007; Yuen & Chan, 2010). In a similar vein, Rundle-Thiele (2005) asserted that there are six different types of attitudinal loyalty measures:

1) Repurchase intention: Some scholars described attitudinal loyalty as repurchase intention (Ganesh et al., 2000; Lee, Graefe, & Burns, 2004; Nijssen, Singh, Sirdeshmukh, & Holzmüeller, 2003). Söderlund (1998) defined purchase intention as the customer's desire to repurchase the brand. Some researchers recommended measuring intentions towards the brand, as measuring brand attributes is not a reliable measure of psychological attachment to the brand (Rundle-Thiele, 2005). However, there have been debates regarding the fact that intention does not lead to purchase behaviour (e.g., Bobalca, 2013).

2) Preference: Building on Guest's (1944) work, several researchers used preference as a measure of attitudinal loyalty (Butcher, Sparks, & O'Callaghan, 2001; Delgado-Ballester & Munuera-Alemán, 2001; Ostrowski & O'Brien, 1993). Preference captures

whether the brand is the first choice among rival brands during the decision-making phase pre-purchase (Bloemer, de Ruyter, & Wetzels, 1999; Taylor et al., 2004)

3) Commitment: Some scholars proposed attitudinal loyalty as commitment (Beatty Kahle, 1988; Beerli et al., 2004; Taylor et al., 2004). Brown (1996) claimed that commitment could be viewed as a promise; thus, commitment measures the customer's enthusiasm for a long-term relationship with the brand (Eriksson & Vaghult, 2000). Researchers suggested that commitment has two components: affective and calculative (Bansal, Irving, & Taylor, 2004; Delgado-Ballester & Munuera-Alemán, 2001). While affective commitment is related to the psychological and emotional attachment to the brand, calculative commitment indicates a relationship that is primarily based on switching brands and switching costs (Delgado-Ballester & Munuera-Alemán, 2001; Gundlach, Achrol, & Mentzer, 1995).

4) Word of mouth: Word of mouth (WOM) has also been employed as a measure of attitudinal loyalty (Butcher et al., 2001; Nijssen et al., 2003; Olsen & Johnson, 2003). Nijssen et al. (2003) defined WOM in terms of how likely customers are to recommend the brand to friends and relatives or to say positive things about the brand to others.

5) Purchase probability: In the 1960s, researchers, dissatisfied with the accuracy of extant measures for predicting future purchase behaviour (including measurement of attitudinal loyalty), introduced the use of the purchase probability scale, commonly known as the Juster Scale (Brennan & Esslemont, 1994). The purchase probability, or Juster scale has eleven points (0 to 10), ranging from “No chance, almost no chance” to “Certain, practically certain” (Juster, 1966) to determine respondents’ estimation of the likelihood that they might purchase a specific brand in the future. The scale has proved to be more accurate for predicting future purchases (e.g., Brennan & Esslemont, 1994; Parackal & Brennan, 1998; Singh, Dall Olmo Riley, Hand, & Maeda, 2012), than for measurement of attitudinal loyalty.

6) Affect or emotion: While Ajzen and Fishbein (1980) argued that attitudes are traditionally identified as the outcome of beliefs, Kim, Lim, and Bhargava (1998) proposed that attitudes are a combination of beliefs and emotions. Hence, affective

measures related to emotions have also been frequently used as a measure of loyalty in the marketing literature (Day, 1969; Dick & Basu, 1994; Russell-Bennett, 2001).

Attitudinal loyalty has been investigated in a variety of markets including fast-moving consumer goods or FMCGs (Fournier & Yao, 1997; Guest, 1944; Jacoby, 1971; Kim et al., 1998; Lichtenstein, Netemeyer, & Burton, 1990; Sheth, 1968), banking (Olsen & Johnson, 2003), services (Bitner, Gwinner, & Gremler, 1998; Caldow, 1998), motor vehicles (Peter & Ryan, 1976), airlines (Söderlund, 1998) and clothes retailers (Nijssen et al., 2003). However, attitudinal loyalty does not guarantee that customers will purchase the brand in the future (Cheng, 2011; Foxall, 2016; Sharp et al., 1999). Traditionally, attitudinal loyalty assesses the *intention* and previous behaviour (Ajzen & Fishbein, 1980), not the actual purchase behaviour (Bobalca, 2013). Foxall (2016, p. 119) pointed out, "To 'explain' why an individual acted in a given way by reference to his [sic] having a desire or need or being motivated to act in the manner in question actually explains nothing; at best it redescribes the behaviour." Moreover, Webb and Sheeran (2006) asserted that even if a customer has a clear intention to change behaviour, attitudinal loyalty can not accurately predict a change in behaviour. To address these issues, the following section discusses behavioural loyalty.

2.4 Behavioural loyalty

The *stochastic theory* proposes that customer behaviour is random rather than analytical (Bass, 1974; Hoyer, 1984; Odin et al., 2001; Oliver, 1997; Olshavsky & Granbois, 1979), due to the potential impact of various factors, making it difficult for marketers to reach a single explanation (McAlister & Pessemier, 1982) or to change behaviours (Li & Petrick, 2008b). Hence, scholars raised the need for a behavioural approach to the conceptualisation of loyalty (e.g., East, Sinclair, & Gendall, 2000; Ehrenberg, Goodhardt, & Barwise, 1990; Hammond, East, & Ehrenberg, 1996; Sharp, Rundle-Thiele, & Dawes, 1997).

Early behavioural loyalty research, conducted in the 1950s, focused on brand purchase frequency or repeat purchase (Anderson & Srinivasan, 2003; Cunningham, 1956; Jacoby & Chestnut, 1978). Although traditional customer behaviour models considered decision-making as a result of a more holistic (and complex) purchase process, behavioural scholars believe that there are many situations when customers buy without much thinking (Ehrenberg & Uncles,

1997; Olshavsky & Granbois, 1979). East (1997), confirming Olshavsky and Granbois's (1979) assumptions, asserted that full decision-making happens on the first purchase; following purchases are the outcome of external factors (e.g., habit, routine or promotions) rather than internal mental processes (e.g., extensive decision-making). East also stated that many repeat purchases occur automatically and, "although rational decision models might suggest what people ought to do, they are poor guide to what people *actually* do" (1997, p. 6).

In essence, a behavioural approach to conceptualising and measuring loyalty hinges on the actual purchasing behaviours of the customer (Anesbury, Nguyen, & Bogomolova, 2018; Mellens et al., 1996; Odin et al., 2001; Wilson & Winchester, 2019), or customer's self-reporting of their purchasing behaviour (Anesbury, Greenacre, et al., 2018; Dawes, 2008; Fujak, Frawley, McDonald, & Bush, 2018; Ganesh et al., 2000). While these might be the outcome of switching costs or attitudes, antecedents were not considered in behavioural research (Ehrenberg, 1988). Instead, researchers used a wide range of more objective measures; for instance, the proportion of the purchase of a specific brand (e.g., Cunningham, 1956; Zins, 2001; Iwasaki & Havitz, 2004) and purchase sequence (Iwasaki & Havitz, 1998; Mellens et al., 1996; Tucker, 1964).

2.4.1 Attitudinal loyalty vs. behavioural loyalty

Although extensive research on attitudinal and behavioural loyalty has been carried out, there is still a lack of agreement about how to measure loyalty and what items underpin it (Bandyopadhyay & Martell, 2007). Moreover, as mentioned earlier, attitudinal loyalty has dominated the marketing literature even though it is widely accepted that attitudes do not necessarily lead to repeat purchase (Blazquez-Resino, Gutiérrez-Broncano, & Arias-Oliva, 2020). In part, this is because attitudinal loyalty is seen as having considerable potential in predicting future behaviour and explaining how marketers can influence loyalty (Jacoby & Chestnut, 1978). However, this does not necessarily mean that the attitudinal perspective more closely measures 'true' loyalty; rather, it suggests that the attitudinal perspective simply holds an intuitive appeal for many researchers and practitioners. Moreover, Cheng (2011) compared and examined attitudinal loyalty and behavioural loyalty and found, "behavioural loyalty exhibits better performance" (Cheng, 2011, p. 149). In fact, many authors have exposed differences between behavioural and attitudinal loyalty (e.g., Chaudhuri & Holbrook, 2001; Day, 1969; Dick & Basu, 1994; Jacoby, 1971).

At present, in comparison to research on attitudinal loyalty, less work has been done to extend the scope and importance of the analysis on behavioural loyalty. Such efforts have focussed *repeat buying behaviour*, documenting recurring patterns and describing expectations for behavioural loyalty proven to hold across countries, product/service categories and time (Anesbury, Greenacre, et al., 2018; Dawes, Romaniuk, & Mansfield, 2009; Ehrenberg, 2000; Romaniuk & Dawes, 2005; Sharp et al., 2017; Tarkiainen, Ellonen, Ots, & Stocchi, 2014; Winchester & Lees, 2012).

Repeat buying behaviour is defined as customers repeatedly buying products or services from the same retailer (Dlamini & Chinje, 2019; Paul et al., 2009). Sharp and Wright (1999, p. 2) stated, "Much buying behaviour is repeat-purchase, each day people buy from product categories that are familiar to them." Hence, repeat purchase is vital for any brand's profits, and has been of great academic interest amongst scholars who embraced a behavioural loyalty approach. Repeat purchase markets typically fall into two types, 'repertoire' and 'subscription' markets (Sharp, 2007; Sharp et al., 2002). Evidence suggests that in both repertoire and subscription markets, buyers purchase from a range of brands and demonstrate behavioural loyalty towards more than one brand at the same time (Dawes, 2008). To better identify the conceptual basis of this thesis, the next section discusses repertoire buying.

2.4.2 Repertoire buying

Repertoire markets are repeat purchase markets that have few solely loyal buyers; most of the buyers buy across the repertoire of brands in the category (Dawes, 2008; Sharp & Wright, 1999). Typical examples of repertoire markets include brand choice, store choice, packaged consumer goods, media, fuel, and medical prescriptions (Ehrenberg et al., 2004; Keng & Ehrenberg, 1984; Sharp et al., 2002; Sharp & Wright, 1999; Tanusondjaja et al., 2016). *Repertoire buying patterns* reveal that "buyers routinely buy from a selection of brands, and there is not any necessarily conscious decision to switch or reject one over another" (Dawes, 2008). In essence, buyers are not buying from all brands in the category but also not just from one specific brand (Banelis, Riebe, & Rungie, 2013; Dawes, 2008; Sampson, 1994; Uncles et al., 1995); they make repeated purchases from a range of brands in the category (Dawes, Romaniuk, & Mansfield, 2009; Dawes, 2008; Sharp, 2010). The concepts of repeat purchase and repertoire buyer behaviour received in-depth evaluation in different industries and

countries (Dawes et al., 2009; Dawes, 2008; Ehrenberg, Uncles, & Goodhardt, 2004; Gupta & Zeithaml, 2006; Sharp, Driesener, & Rungie, 2006).

According to traditional views of customer behaviour, "the brand must demonstrate clear superiority" (Kotler & Keller, 2006, p. 313) to be chosen by customers from the other rival brands (Lamb et al., 2005). However, repertoire buying implies, "not many consumers are likely to be convinced that one brand is superior if they are routinely buying from a range of brands within a category" (Dawes, 2008, p. 200). Hence, the traditional definition of loyalty (especially attitudinal loyalty) appears to be in contradiction with repertoire buying, which is far better aligned with the notion of behavioural loyalty instead.

Indeed, behavioural loyalty research has led to the development of marketing *empirical generalisations* that have been shown to hold across countries, product/service categories and time (Ehrenberg, 2000; Sharp et al., 2017). Chapter 3 examines and explains this concept in greater detail; however, in brief, an empirical generalisation is "a pattern or regularity that repeats over different circumstances, and that can be described simply by mathematical, graphic or symbolic methods" (Bass, 1995, p. G7). The three empirical generalisations that yield significant implications for the theoretical and empirical work presented in this thesis are:

- *Duplication of Purchase* – This empirical generalisation states that any brand shares its customers with other large (high penetration) brands and far less with small (low penetration) brands (Ehrenberg, 1988). A deviation from this pattern, that is, brands sharing customers more or less than expected, is an indication of a market partition. Knowledge of this pattern "allows managers to correctly interpret market structure" (Sharp & Wright, 1999, p. 3).

- *Double Jeopardy* – The Double Jeopardy pattern has been consistently observed in repeat-purchase markets in both behavioural and attitudinal measures (Ehrenberg et al., 1990; McPhee, 1963). From a behavioural point of view, Double Jeopardy refers to the phenomenon where smaller brands (market share) have fewer customers (lower penetration) with lower average purchase frequency, i.e. those customers also buy the brand less often. Knowledge of this 'norm' allows managers to correctly assess repeat-purchase statistics and to spot deviations (Sharp & Wright, 1999).

- *Pareto Law* – The Pareto Law states that the top 20% of the buyers (i.e., heavy buyers) are accountable for nearly 60% of sales, and the remaining sales originates from the bottom 80% customers of customers (i.e., light buyers). Therefore consumer buying behaviour does not exhibit the 80/20 share (Graham, Sharp, Trinh, & Dawes, 2017; Sharp et al., 2019).

One of the renowned customer behaviour models that embraces the above empirical generalisations about repertoire buying and the behavioural approach to loyalty is the Dirichlet model by Goodhardt, Ehrenberg, and Chatfield (1984). The Dirichlet model specifies the probability of the repeat-purchase of the brand over a period of time (Sharp, Wright, & Goodhardt, 2002). Thus, it can accurately represent patterns in loyalty (Uncles et al., 1995; Wright, Sharp, & Sharp, 1998). In particular, the broad body of knowledge surrounding the Dirichlet model led to the following important tenet, articulated by Ehrenberg et al. (2004, p. 1316), "typically, consumers are polygamous rather than either promiscuous or monogamous (except possibly in 'subscription' markets). They usually have several steady partners—a repertoire—with one or two usually being favorites". The following section discusses this assumption in more detail, clarifying its relevance to the aims of this thesis.

2.4.3 Multi-brand loyalty

Similar to the general conceptualisation and definition of loyalty, Kimmel (2013, p. 166) defined *brand loyalty* as "a pattern of repeat product purchasing accompanied by an underlying positive attitude towards the brand." Moreover, brand loyalty has been often defined as a customer's deep commitment and intention to repurchase a service or product (Chahal & Bala, 2010; Oliver, 1999), and the level of a customer's attachment (Liu et al., 2012; Smith & Aaker, 1992) to their favourite brand.

Brand loyalty is the main aim of marketing plans and sales activities (Kabiraj & Shanmugan, 2011). According to Arjun (1995), higher sales are the result of brand loyalty and the outcome of the repeated purchase of the same brand despite the obstacles. Indeed, brand loyalty constitutes a crucial business goal, due to its contribution to competitive advantages (Dick & Basu, 1994; Kabiraj & Shanmugan, 2011), profitability (Smith & Aaker, 1992), brand equity and market share (Gounaris & Stathakopoulos, 2004). Hence, brand loyalty is often regarded as the main focus of marketing strategies (Benson & Kotler, 1977).

Although single-brand loyalty is desirable for companies, as indicated in the previous sections, buyers are not typically loyal to just one brand. For instance, scholars advised that multi-brand buying is not the exception, but the rule (Dawes, 2008; Ehrenberg, 2000; Felix, 2014). "Obviously, a buyer is loyal not only to one brand but to many brands in the market, although he [sic] may have greater loyalty to one particular brand over others" (Sheth, 1970, p. 348). In the marketing literature, the fact that customers are loyal to more than one brand within the category has been articulated in different terms including *multi-brand loyalty* (Arifine et al., 2019; Dawes, 2008; Dick & Basu, 1994; McMullan & Gilmore, 2008; Oliver, 1999), *polygamous loyalty* (Dowling & Uncles, 1997; Uncles & Kwok, 2013) and *divided loyalty* (Ehrenberg & Goodhardt, 1970; Uncles et al., 2003; Yim & Kannan, 1999). For example, Olson and Jacoby (1974, p. 447) defined multi-brand loyalty as "the consistent repurchase of more than one brand from among a set of brands". This is in line with the aforementioned stream of existing research on marketing empirical generalisations and repertoire buying.

Brown was the first scholar who recognised multi-brand loyalty and noticed that households purchased more than one brand regularly (Brown, 1953). Later, in the 1970s, scholars started to investigate the multi-brand loyalty phenomenon in greater depth (e.g, Ehrenberg & Goodhardt, 1970; Jacoby, 1971; Jacoby & Kyner, 1973; Olson & Jacoby, 1974). Nonetheless, other researchers, surprisingly, paid little attention to the concept of multi-brand loyalty (Arifine et al., 2019). Dowling and Uncles (1997) proposed that multi-brand loyalty is the consequence of consumers buying several brands for various occasions. Similarly, other scholars suggested that low risks, more options (Bennett & Rundle-Thiele, 2005) and a low level of perceived differentiation between brands in a category may result in an increased chance of multi-brand loyalty (Bennett & Rundle-Thiele, 2005; Dick & Basu, 1994). More recently, Uncles, Wang, and Kwok (2010) examined a year-on-year persistence of brand purchasing of packaged goods in China. Their study determined that Chinese consumers are not single brand-loyal, but multi-brand loyal.

Felix (2014) classified multi-brand loyalty to take three forms: *perfect substitute loyalty*, *specialised loyalty* and *biased loyalty*. He explained that when buyers divide their loyalty between two or more brands within a category, perfect substitute loyalty happens. Specialised loyalty occurs when buyers merge brands and differentiate among them according to various circumstances. Biased loyalty occurs when buyers have a preferred brand but are loyal to

different brands. In a similar vein, Ramaswami and Arunachalam (2016) combined customer value and brand equity premises, proposing two reasons for multi-brand loyalty: *equivalence* and *comparative advantage*. Equivalence implies that when customers believe the companies' value propositions are similar, they may develop alike and high levels of loyalty toward several brands. The comparative advantage posits that although companies offer differentiated value propositions, consumers can show multi-brand loyalty, because they believe that those value propositions are, in fact, similar.

Multi-brand loyalty is relatively under-researched. In the popular research databases such as Taylor and Francis, Emerald, JSTOR, ScienceDirect and Wiley, the terms "multi-brand loyalty", "multibrand loyalty", "divided loyalty", "horizontal loyalty" and "polygamous loyalty" as the primary keywords produced only 33 research papers published over the past decade. Moreover, on closer inspection of the content of those papers, only nine empirical studies actually had multi-brand loyalty as the main research objective.

A critical review of these studies shows that, despite the growing interest surrounding multi-brand loyalty in the marketing literature (Almeida-Santana & Moreno-Gil, 2018; Arifine et al., 2019; Dawes, 2014; Oliver, 1999; Olson & Jacoby, 1974; Quoquab, Yasin, & Dardak, 2014; Ramaswami & Arunachalam, 2016), there is still broad scope for further exploration. First, in the last decade scholars examined multi-brand loyalty in diverse consumption contexts including tourism (Almeida-Santana & Moreno-Gil, 2018), sports betting (Calvosa, 2016); mobile service providers (Quoquab et al., 2014) and packaged goods (Uncles et al., 2010). However, fewer studies have identified the importance of multi-brand loyalty in the brand loyalty and customer loyalty literature (Arifine et al., 2019), and most are complex modelling exercises or exploratory studies (Felix, 2014). Second, the outcomes of extant multi-brand loyalty studies have been argued to depend on consumer culture (Calvosa, 2016). Third, most of the prior studies focus on offline markets, ignoring the ever-growing online buying behaviour domains (e.g., Arifine et al., 2019; Ehrenberg & Goodhardt, 1970; Felix, 2014; Moor& Sekhon, 2005; Uncles et al., 2010). In fact, in the last decade, only one study that investigated multi-brand loyalty has been conducted in the online market (see Calvosa, 2016). Therefore, besides drawing scholarly attention to the analysis of multi-brand loyalty, this thesis explores this concept in the online context.

To further justify the importance of examining multi-brand behavioural loyalty in the online domain, the next sections describe a series of crucial limitations that can be found in the literature on e-loyalty.

2.5 E-loyalty

Although many scholars have noted the importance of loyalty in e-commerce (Anderson & Srinivasan, 2003; Chang et al., 2009; Cristobal, Flavián, & Guinalíu, 2007; Kim, Ferrin, & Raghav Rao, 2009; Martínez-Argüelles & Batalla-Busquets, 2016; Reichheld & Schefter, 2000; Zeithaml, Berry, & Parasuraman, 1996), there is no consensus on the definition of e-loyalty. E-loyalty has been mostly defined as the same as offline loyalty; for example, the most widely used definition in both offline and online markets is the one by Oliver (1999, p. 34). Accordingly, authors such as Srinivasan et al. (2002, p. 42) described it as "a customer's favourable attitude toward the e-retailer that results in repeat buying behaviour". Similarly, Gupta and Kabadayi (2010, p. 169) adopted both dimensions of website conceptualization including *stickiness* and revisiting behaviour, defining e-loyalty as "a deeply held willingness and commitment to revisit the website consistently and desire to stay more at the website at each visit, thereby causing sticky and repetitive visits." Other definitions of e-loyalty presented it as the intention to revisit a website to repurchase (Anderson & Srinivasan, 2003; Cyr et al., 2005; Islam, Khadem, & Sayem, 2012; Zeithaml et al., 1996) and not change the website to another one (Flavián & Guinalíu, 2006).

With the rapid growth of online retailing, customer loyalty has become a critical issue for marketing researchers and practitioners. Compared to offline markets, the Internet has revolutionised the way buyers and companies interact, generating more options for value creation and co-creation (Lee et al., 2003; Winchester & Lees, 2012). Firstly, online shopping is quick, efficient and convenient, and provides buyers with lower decision-making efforts (Chiu et al., 2019; Park & Hill, 2018). For instance, online buyers do not face traffic, which saves them time as well as the convenience of shopping at the office, home or wherever they have Internet access. Moreover, online buyers sometimes will receive an offer to buy the same product/service at a lower price compared to the physical store. Buyers can also access comprehensive information through price comparison, reviews and expert evaluations (Goldenberg el al., 2012; Park & Hill, 2018; Shin, 2017). Indeed, online buyers have many offers to choose from in different product categories (Katawetawaraks & Wang, 2011; Lim &

Dubinsky, 2004; Rahman, Islam, Esha, Sultana, & Chakravorty, 2018; Rastogi, 2010). Finally, companies can sell to millions of potential buyers (Nagar & Gandotra, 2016) globally, whom they might never reach offline.

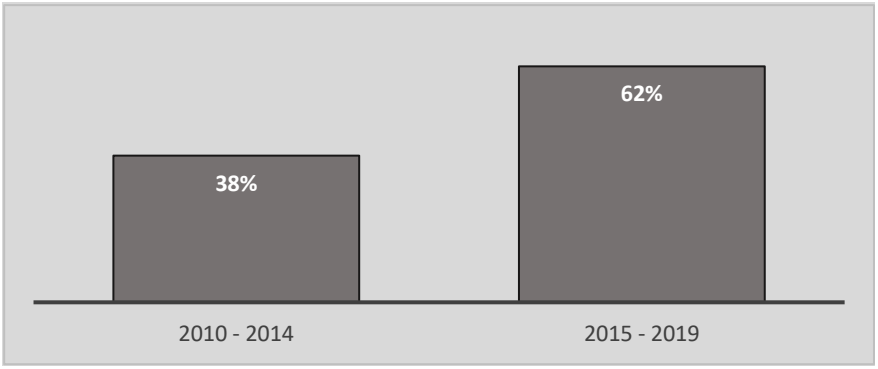
In light of the above, loyalty is very important for online brands or *e-brands* (Anderson & Srinivasan, 2003; Chang et al., 2009; Reichheld & Schefter, 2000), even though customer acquisition is arguably costlier and more complex than offline (Semeijn, van Riel, van Birgelen, & Streukens, 2005). Moreover, online loyal customers can be more price tolerant (Gefen, Karahanna, & Straub, 2003) and more likely to pay premium prices (Kim, Jin, & Swinney, 2009; Zeithaml et al., 1996). For example, a positive customer experience towards a particular website will increase the customer willingness to repurchase from that website (Anderson & Srinivasan, 2003; Islam et al., 2012) and spread positive WOM (Gruen, Osmonbekov, & Czaplewski, 2006; Islam et al., 2012; Zeithaml et al., 1996). Therefore, market survival (Kassim & Asiah Abdullah, 2010; Reichheld & Schefter, 2000; Sanz-Blas, Ruiz-Mafé, & Perez, 2014) and increases in profit (Anderson & Srinivasan, 2003; Ludin & Cheng, 2014; Hwang & Lee, 2019; Swaminathan et al., 2018) are consequences of a company's success in creating e-loyalty. Furthermore, to maintain and improve e-loyalty it is essential for companies and marketing researchers to understand the influencing factors (Gommans, Krishman, & Scheffold, 2001; Toufaily, Ricard, & Perrien, 2013; Wu, Chen, Chen, & Cheng, 2014). Accordingly, marketing scholars have called for more knowledge regarding the development of e-loyalty to achieve higher profit and market share (Parasuraman & Grewal, 2000). Moreover, Degeratu, Rangaswamy, and Wu (2000) contended that it is more difficult for online buyers to investigate product quality online. Therefore, buyers choose from a smaller range of brands when they purchase online (Andrews & Currim, 2004).

2.5.1 E-loyalty characteristics

Through key databases such as Taylor and Francis, Emerald, JSTOR, ScienceDirect and Wiley, it was possible to identify the key published studies on e-loyalty in the last decade. The terms “e-loyalty” and “online loyalty” were used as the primary keywords, and the search returned 88 research papers. However, in line with the aims of this thesis, only 60 empirical studies with e-loyalty conceptualisation and measurement as a primary focus were examined.

Figure 5 shows the five-year-period distribution of the relevant studies on e-loyalty. The number of studies increased over time, with a total of 37 research papers published accounting for 62% of the total publications. The Figure clearly shows growth in research on e-loyalty, logically mirroring trends in e-commerce.

Figure 5. Year-period distribution of the studies on e-loyalty



Upon closer inspection of the content of these studies, it is obvious that researchers used different approaches to conceptualise and measure e-loyalty, especially in terms of the factors considered to be drivers or antecedents of it. Some researchers applied one factor to measure e-loyalty (Azam, 2015; Kaabachi et al., 2019; Khan et al., 2019; Parra-Lopez et al., 2018); some scholars used two or three factors (Barreda, Nusair, Okumus, & Bilgihan, 2013; Faraoni et al., 2019; Fuentes-Blasco et al., 2010; Kaya et al., 2019; Park, Doreen Chung, Gunn, & Rutherford, 2015; Purani, Kumar, & Sahadev, 2019); others used four factors (Chocarro et al., 2015; Fang et al., 2018; López-Miguens & Vázquez, 2017), five (Christodoulides & Michaelidou, 2011; Fang et al., 2016) and even six factors (Swaminathan et al., 2018). Table 2 lists these factors, signalling a first significant issue in the conceptualisation and measurement of e-loyalty.

Table 2. Distribution of research papers by factors used to measure e-loyalty

Attribute/Factor	Research Papers	Attribute/Factor	Research Papers
E-Satisfaction	33	Site knowledge	1
E-Trust	25	Innovativeness	1
E-Service quality	6	Aggressiveness	1
Perceived value	4	Inertia	1
Website quality	3	Attitude toward travel websites	1

Attribute/Factor	Research Papers	Attribute/Factor	Research Papers
E-Quality	2	Switching barriers	1
Usefulness	2	Switching costs	1
E-Relationship satisfaction	2	Behavioural intention	1
E-Affective commitment	2	Cognitive	1
Enjoyment	2	Affective	1
Brand equity	2	Reciprocity	1
Flow	2	Interactivity	1
E-dissatisfaction	1	Commitment	1
Ease of use	1	Expectation disconfirmation	1
Offline perceived value	1	E-lifestyle	1
Offline loyalty	1	Advantages	1
Affection	1	Disadvantages	1
Website image	1	Risks	1
Acquisition value	1	Decision support satisfaction	1
Utilitarian value	1	Knowledge sharing	1
Hedonic value	1	Social capital	1
Social value	1	Service recovery	1
Social presence	1	Outcome quality	1
Business credibility	1	Process quality	1
Role (patient/caregiver)	1	Psychological ownership toward character	1
Active trust	1	Social identity in the guild	1
Efficiency	1	Contact	1
Brand emotional attachment	1	Responsiveness	1
Brand evaluation	1	ISO9001	1
E-recovery	1	Convenience	1
Variety seeking	1	Information seeking	1

In addition to the lack of studies examining and/or comparing all these factors together (Aydin & Özer, 2005; Cronin Jr. et al., 2000), the main issue that seems to plague e-loyalty literature is the lack of consensus on how to measure e-loyalty. The study of Peña García et al. (2018) is an example of inconsistency. They explored online customer behaviour in two different markets, Spain and Colombia. They proposed a model to investigate the antecedents of loyalty, but the results indicated that different factors shaped e-loyalty in the two countries. Specifically, while e-trust has a direct influence on Colombian customer's loyalty, it is not necessary for Spanish customer's loyalty. They also found that satisfaction with the website has an effect on loyalty in Colombian consumers, but not for Spanish customers. Similarly,

Sadeghi, Ghujali, and Bastam (2018) studied the organisational reputation on customer e-loyalty, and found that e-satisfaction and e-trust had no effect on e-loyalty.

In addition to the above, researchers used different conceptual models, antecedents and measurements to study e-loyalty (Al-dweeri et al., 2019; Blery et al., 2009; Durmuş et al., 2013; Kassi & Ismail, 2009; Kim et al., 2009), including customer e-satisfaction (Al-dweeri et al., 2019; Al-Hawari, 2014; Fang et al., 2018; Kaya et al., 2019), e-trust (Faraoni et al., 2019; Kaabachi et al., 2019; Zheng et al., 1991), e-service quality (Belanche Gracia et al., 2015; Durmuş et al., 2013; Khan et al., 2019), perceived value (Fuentes-Blasco et al., 2010; Peña García et al., 2018; Qureshi et al., 2009), and other variables such as perceived enjoyment, perceived usefulness, personal innovativeness, knowledge sharing, and social capital (Fang et al., 2016; Martínez-Caro et al., 2018; Yao et al., 2015).

Similar issues can also be detected in another area of the literature typically linked to e-loyalty: marketing research on *stickiness*.

2.5.2 E-loyalty and stickiness

Zott, Amit, and Donlevy (2000) defined stickiness as the website's ability to obtain and retain the customers' attention. A few years later, Li et al. (2006) explained stickiness as a deep commitment to reuse the website, which leads to repeated visits and usage of a favoured website despite future obstacles. Furthermore, Lin (2007, p. 507) explained stickiness as "the user's willingness to return to and prolong his/her duration of stay on a Web site". Racherla, Furner, and Babb (2012) added that stickiness is the website's ability to keep customers longer, persuade them to visit more pages on the website, and revisit the website more frequently. While there is no univocal definition of stickiness, all definitions cover the two factors of visit frequency and duration on the website (Roy, Lassar, & Butaney, 2014). Researchers claimed that customers with a high stickiness would spend more time on the website and would therefore be more easily influenced by marketing campaigns (Kim, Xu, & Koh, 2004; McCloskey, 2003). Thus, online companies invest in marketing activities to improve the stickiness of their websites (Li et al., 2006; Srinivasan et al., 2002) and to increase transaction volumes (Lin, 2007). Indeed, stickiness has been linked to websites' ability to keep users for profit (Bhatnagar & Ghose, 2004; Li, Browne, & Wetherbe, 2006; Walter, 2007).

Researchers considered different factors to measure stickiness such as perceived website's attributes (Bansal et al., 2004; Lin, 2007), positive attitude to websites (Lin, 2007), customer satisfaction (Bansal et al., 2004; Khalifa, Limayem, & Liu, 2002; Kurmiawan, 2000), commitment (Li et al., 2006), trust (Li et al., 2006; Lin, 2007) and service quality (Huang et al., 2015). However, as with the broader notion of e-loyalty, there is no agreement around the conceptualisation and measurement of stickiness. For instance, Khalifa et al. (2002) studied the stickiness of grocery products and found that satisfaction has a significant influence. Yet, they concluded that even satisfied customers might not repurchase from the website if they are not frequent online shoppers. Lin (2007) examined the effects and antecedents of customer's intention to stickiness and found that the willingness to visit a website has a significant influence on stickiness, which affects purchase intention. Huang et al. (2015) explored the antecedents of stickiness and e-loyalty. They found that information quality, service quality and system quality all have a positive impact. However, they stated that the result of their study might not be generalisable across different cultures, and that future research is required to explore the likely impact of cultural differences.

While most prior studies on stickiness focused on the attitudinal approach, Khalifa et al. (2002) suggested customers' actual behaviour should be considered rather than their intentions to repurchase from a website. Indeed, researchers found that stickiness is a crucial factor in the online market and has a significant impact on the repurchase intention (Lin, 2007; Shih-Tse Wang, 2010; Xu & Liu, 2010), positive WOM (Racherla et al., 2012) and e-loyalty (Horn, 2003; Khalifa et al., 2002; Xiaozhou, 2019). but very few studies explored stickiness through the behavioural approach. Xiaozhou (2019) considered the behavioural approach through an examination of the relationship between customer behaviour stickiness, customer value and motivation of consumption via a stochastic model in the C2C (consumer to consumer) market. He found a positive influence of customer behaviour stickiness on customer value. Accordingly, he contended that, since B2C (business to consumer) websites typically have many rivals and customers constantly switch, further research is needed to confirm whether his findings are generalisable beyond C2C. Clearly, there is a lack of studies of customer repurchase from a website (Lu, Ye, & Yan, 2018). Table 3 highlights the research approach of previous e-loyalty and stickiness studies.

Table 3. Overview of previous e-loyaty research approach

Author	Attitudinal/Behavioural	Country
Christodoulides and Michaelidou (2011)	Attitudinal	UK
Chocarro, Cortiñas and Villanueva (2015)	Attitudinal and behavioural	Spain
Fang, Chen, Wen and Prybutok (2018)	Attitudinal	China
Fang, Shao and Wen (2016)	Attitudinal	USA
Faraoni, Rialti, Zollo and Pellicelli (2019)	Attitudinal	Italy
Fuentes-Blasco, Saura, Berenguer-Contrí and Moliner-Velázquez (2010)	Attitudinal and behavioural	Spain
Huang, Jia and Song (2015)	Attitudinal and behavioural	China
Kaabachi, Ben Mrad and Fiedler (2019)	Attitudinal	France
Kaya, Behravesh, Abubakar, Kaya and Orús (2019)	Attitudinal	Turkey
Khan, Zubair and Malik (2019)	Attitudinal	Pakistan
López-Miguens and Vázquez (2017)	Attitudinal and behavioural	Spain
Lu, Ye and Yan (2018)	Behavioural	China
Park, Chung, Gunn and Rutherford (2015)	Attitudinal	USA
Parra-Lopez, Martínez-gonzález and Chinea-Martin (2018)	Attitudinal	Spain
Peña-García, Gil-Saura and Rodríguez-Orejuela (2018)	Attitudinal and behavioural	Spain/Colombia
Purani, Kumar and Sahadev (2019)	Attitudinal	India
Swaminathan, Anderson and Song (2018)	Attitudinal and behavioural	USA
Xiaozhou (2019)	Behavioural	China

2.5.3 Proposed new approach to e-loyalty

To this day, despite the plethora of research on e-loyalty and stickiness, scholars have been unable to forecast e-loyalty adequately, and there has been little success in achieving generalisable results. As emerged from the reflections presented in the previous sections,

similar to the issues inherent in research on attitudinal loyalty, the lack of generalisability can be attributed to the limited use of a behavioural approach. Studies examining online domains through notions of multi-brand loyalty and repertoire buying, as have been applied for decades to offline contexts, are particularly lacking in e-loyalty research. In brief, many e-loyalty models fail to realistically account for the fact that most customers are buying from multiple brands within a product category and are loyal to more than one specific brand (Almeida-Santana & Moreno-Gil, 2018; Ramaswami & Arunachalam, 2016; Uncles & Kwok, 2013).

To address these issues, this thesis expands existing knowledge on e-loyalty by: i) embracing a behavioural loyalty approach and, more specifically, a multi-brand loyalty approach; and ii) drawing on extant findings derived from research on well-established marketing empirical generalisations (discussed in the next chapter) .

In essence, the fact that consumers are loyal to more than one brand within any category has not been thoroughly examined in the online domain, despite the staggering growth of e-commerce worldwide that enables consumers to be loyal to more than one website at the same time. Specifically, very limited research has empirically examined online behavioural loyalty, despite the growing interest in online buying (Rogers, Daunt, Morgan, & Beynon, 2017). For instance, Rogers et al. (2017) examined online behavioural loyalty by employing Twitter data to investigate the Double Jeopardy pattern for beer brands and reported that larger brands have more loyalty; however, larger brands also experience more negativity. As a consequence of this knowledge void, researchers and marketers have been unable to benefit from the baseline benchmarks of loyalty that marketing empirical generalisations provide. This phenomenon has clear implications for this thesis and confirms the need for knowledge advancement.

In the last decade, only one study that investigated multi-brand loyalty has been conducted in the online market. Specifically, Calvosa's (2016) study of online betting websites found that most customers are multi-brand loyal rather than solely loyal to one gambling website. He found that most online gamblers classify some betting websites as their purchase choices, in some cases showing a notable loyalty to one or few of those websites, and in others showing an unfirm loyalty that shows unstable preference among gambling websites. Consequently, he confirms that Italian online gamblers are also shown to be multi-brand buyers. This thesis

makes a substantial contribution by identifying and empirically examining multi-brand loyalty in the digital domain, with the end goal to shed light on possible strategic plans that can improve the way managers and companies deal with online market competition. Moreover, although the marketing literature extensively confirmed the existence of multi-brand loyalty in offline domains (e.g., Dawes, 2014; Felix, 2014; Ramaswami & Arunachalam, 2016; Uncles & Kwok, 2013), the outcomes of the previous e-loyalty research on factors that affect loyalty are not generalisable, and might not be automatically applied to online contexts.

Scholars confirmed that online and traditional (offline) markets are somewhat different in terms of market structures, marketing activities and competitive strategies (Reichheld & Schefter, 2000). Likewise, Wang, Hao, Zhou, Wetzstein, and Wang (2019) examined offline and online markets using a Chinese home-scan dataset. They found that online markets have advantages in gaining customer loyalty compared to offline markets. "The Internet is a nearly perfect market because the information is instantaneous, and buyers can compare the offerings of sellers worldwide. The result is fierce price competition and vanishing brand loyalty." (Kuttner, 1998). For instance, while rival companies on the Internet are only a few clicks away, customers can match and compare rival brands and products/services with minimum investment on time (Srinivasan et al., 2002). Wang et al. (2019) asserted that even for the same brand, online and offline markets have different business models. Therefore, companies and managers have to to improve their understanding of the concept of e-loyalty in order to achieve a competitive advantage in the e-commerce market (Srinivasan et al., 2002). Hence, multi-brand behavioural loyalty and its implications constitute the conceptual focus of this thesis, in line with the research Objectives 1 and 2.

2.6 A definition of multi-brand e-loyalty

Understanding multi-brand loyalty is essential, as it affects companies' ability to harvest full market potential through consumer-firm relationships with customers who are choosing from a range of brands, rather than being solely loyal (Arifine et al., 2019). Moreover, despite the general belief that satisfied customers tend to be more loyal (Al-dweeri et al., 2017; Khan et al., 2019), Quoquab et al. (2014) found that high satisfaction might affect single-brand loyalty but, in general, it poses no obstacles to multi-brand loyalty. As mentioned above, the e-loyalty literature reveals that the main focus thus far has been on single-brand loyalty. Hence,

marketing research and practice could benefit from introducing the concept of multi-brand loyalty to the understanding of online loyalty.

Building on the reflections presented so far, this thesis introduces the concept of *multi-brand e-loyalty*, defining it as follows:

> *Multi-brand loyalty refers to the ongoing repurchase from more than one website selling brands in the same product category.*

Shedding light on multi-brand loyalty in the online context is a major contribution of this thesis, since the existence of multi-brand loyalty has only been demonstrated empirically in the offline market and has never been considered in existing conceptual and empirical research.

2.7 Chapter summary

This chapter reviewed critical literature on the concepts of loyalty (attitudinal and behavioural), multi-brand loyalty, e-loyalty and stickiness to offer theoretical support for the studies presented in Chapters 5, 6 and 7. Specifically, the first sections of the chapter justified the importance of behavioural loyalty (over attitudinal loyalty) as a more realistic way of understanding and measuring how people buy different brands within the same product category. Accordingly, building on the notion that consumers are constantly buying from a repertoire of brands in the product category, this chapter concentrated on the multi-brand loyalty concept to provide a more theoretically and managerially sound take on brand loyalty.

Furthermore, on the basis of what we currently know about multi-brand loyalty, this chapter provided a series of arguments leading to a formal definition of *multi-brand e-loyalty*. This definition addresses the issues detected in the e-loyalty and stickiness literature, such as the excessive focus on the attitudinal loyalty approach, the lack of generalisable results, the lack of agreement on the factors to be used to examine e-loyalty, the broad emphasis on single-brand loyalty, and the limitated accuracy in e-loyalty forecasting.

The following chapter (Chapter 3) provides an overview of the three empirical generalisations crucial to understanding and measuring multi-brand e-loyalty: the Duplication of Purchase, the Double Jeopardy and the Pareto Law. Importantly, Chapter 3 outlines the purpose, approach,

and key established findings of each of these three marketing empirical generalisations. The chapter also presents a series of research questions to be attained to address the objectives of this thesis.

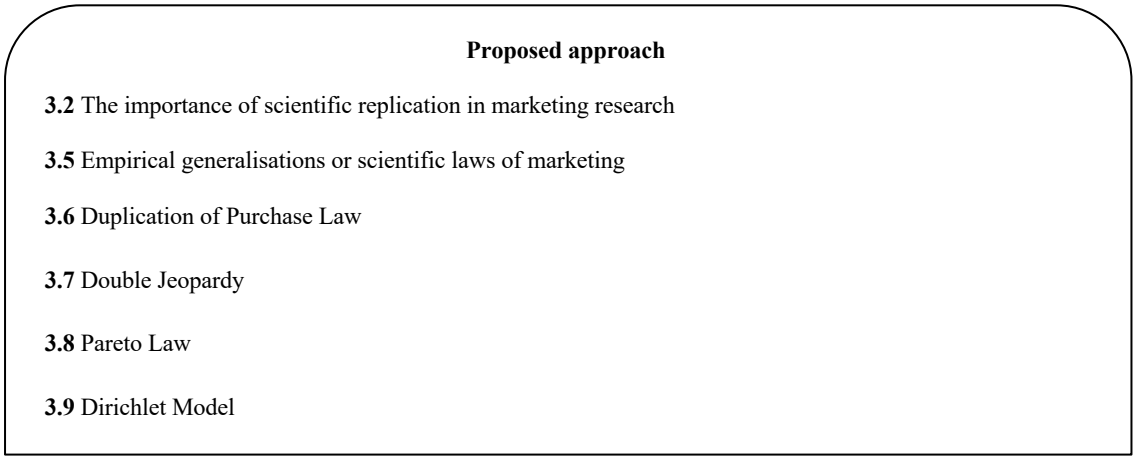
3 CHAPTER THREE: EMPIRICAL GENERALISATIONS

3.1 Chapter overview

Chapter 2 outlined the theoretical foundations of this thesis by comprehensively reviewing loyalty frameworks, the notion of multi-brand loyalty and the extant literature on e-loyalty and stickiness. Then, as the key theoretical contribution of this thesis, the previous chapter introduced the concept of *multi-brand e-loyalty* to remedy important concerns and knowledge gaps as identified in the first and second overarching research objectives.

This chapter, as Figure 6 illustrates, presents additional marketing literature on the importance of scientific replication and empirical generalisations to outline the innovative approach that this thesis uses to examine the newly introduced notion of multi-brand e-loyalty.

Figure 6. Organisation of Chapter 3



In particular, this chapter reviews and discusses further theoretical and empirical principles that support the three empirical studies described in full in Chapters 4, 5 and 6. The chapter commences with a definition of *replication study*, confirming the importance of replication to marketing science. In this regard, the chapter builds a case for the importance of replication studies in the online context and in the Middle-East context. The chapter then explores the key characteristics of empirical generalisations and discusses their role in the development and advancement of marketing science.

In the second half of the chapter, the focus shifts to three well-known empirical generalisations, which are respectively the focus of Studies 1, 2 and 3: the Duplication of Purchase, the Double Jeopardy and the Pareto Law. The chapter then discusses the Dirichlet model, a comprehensive theory of buying behaviour and multi-brand loyalty, which encompasses these three empirical generalisations. The final section foreshadows the overarching methodological approach used in this thesis, which Chapter 4, 5 and 6 discuss in greater depth.

3.2 The importance of scientific replication in marketing research

Replication is defined as a duplication of earlier empirical studies in different situations or subjects, with the aim to explore whether findings of the original study can be re-achieved (Hubbard & Armstrong, 1994). Amir and Sharon (1990) asserted that before a result can be used as the basis for a theory, it should be replicated under reproducible and variable conditions, such as different populations and cultures. Similarly, Sharp (2002) stated that replication has a crucial role in the establishment of new marketing knowledge. Selmer (2016) suggested that replication is based on the principle of reproducibility. He implied that the literature would otherwise be filled with results of unknown validity. Bass (1995, p. G6) stated, "science is a process involving the interaction between empirical generalisations and theory". By empirical generalisations we mean a similar result that has been seen under different circumstances and is therefore expected (Ehrenberg, 1995).

While there is considerable debate sorrounding the value of replication studies within the field of the philosophy of science (Anderson, 1983; Sharp, 2002), the role of replication in all the predominant schools of thoughts (e.g., Positivism/Logical Empiricism) is clearly evident (Sharp, 2002). Rosenthal and Rosnow (1984, p. 9) contended, "replicability is almost universally accepted as the most important criterion of genuine scientific knowledge". Likewise, Hubbard and Armstrong (1994) confirmed the role of replicability as a benchmark of the scientific method. Moreover, two critical roles of replication are: i) the validation (or rebuttal) of past findings; and ii) the establishment of the new conditions where known findings hold (Lindsay & Ehrenberg, 1993). In fact, the integrity of a discipline's empirical results is often determined by worthwhile replications and extensions (Hubbard & Armstrong, 1994).

Unfortunately, compared to the other disciplines, replications in marketing literature are rare (Danaher & Brodie, 2000; Hubbard & Vetter, 1996). According to Sharp (2002, p. 27), "as replication promotes confidence in the veracity of a discipline's cumulative knowledge base, this should mean that replication is seen as critical and constitutes a large part of the empirical activity." Likewise, Amir and Sharon (1990) stated that, while there is a variety of empirical research in the marketing literature, there is limited effort to perform validation studies. Uncles and Wright (2004) discussed the possible reasons behind this knowledge void, highlighting that marketing scholars often perceive replications as time-consuming and miss the important opportunity for the establishment of new empirical generalisations. Moreover, replication studies are usually harder to publish in scholarly journals. These issues add to methodological issues, such as the difficulty to concisely determine the correct number of new data points to be examined, or the appropriate number of replications needed (Uncles & Wright, 2004).

Replication studies have been classified on their difference to the original study (Hubbard & Armstrong, 1994; Lindsay & Ehrenberg, 1993), with the two most common replications being *close replication* and *differentiated replication* (Ehrenberg & Bound, 1993; Lindsay & Ehrenberg, 1993; Uncles & Wright, 2004). Close replications examine whether the original result will hold in the replication study (Lindsay & Ehrenberg, 1993); for instance, checking whether a new result is repeatable at all (Ehrenberg & Bound, 1993). A differentiated replication is a replication under different conditions, like repeating the original study of a developed country context in an underdeveloped economy, radically extending or challenging the predictability of findings (Ehrenberg & Bound, 1993). As discussed in the next sections, this thesis is a 'double' differentiated replication, since it seeks to contribute to research on multi-brand loyalty through extensions into a lesser understood research context (online domain) and an under-researched geographical context (Iran).

3.3 Differentiated replication 1: Online context

The number of Internet users worldwide was 4.13 billion in 2019. More than 2.14 billion people around the world are expected to buy products and services online in 2021, up from 1.66 billion in 2017 (Statista, 2019a). These statistics alone justify the study of buyer behaviour in the online domain. Moreover, in line with the aims of this thesis, there is ample conceptual and empirical scope for replicating well-established marketing knowledge on multi-brand loyalty in the online context, as discussed below.

Firstly, the Internet is a place where buyers from different cultures and locations have limitless access to different brands and websites. Degeratu et al. (2000) noted that it is more difficult for online buyers to investigate product quality, due to the lack of tangibility. Therefore, online buyers choose from a smaller range of brands when they purchase online (Andrews & Currim, 2004). However, online buyers can do multi-brand buying or repeat brand buying. In light of this, loyalty is much more critical for online brands (Reichheld & Schefter, 2000). Hence, since the Internet has more choices and users, it is paramount to examine empirically whether known patterns in loyalty (e.g., those included in key empirical generalisations such as the ones that this thesis addresses) hold online.

Secondly, as discussed in Chapter 2, much research on loyalty in the marketing literature has embraced an attitudinal approach (e.g., Bowen & Chen, 2001; Jay & Dwi, 2000; Mellens et al., 1996; Rauyruen & Miller, 2007; Roy et al., 2018), rather than a behavioural approach (e.g., East et al., 2000; Ehrenberg et al., 1990; Hammond et al., 1996; B. Sharp et al., 1997). The behavioural approach is based on the actual purchasing behaviours of the customer (Anesbury, Nguyen, et al., 2018; Mellens et al., 1996; Odin et al., 2001; Wilson & Winchester, 2019), and it has led to a good understanding of repeat-purchase patterns (Ehrenberg, 2000; Sharp et al., 2017), which form the basis for some of the key empirical generalisations in marketing. Thus, by examining the extent to which these empirical generalisations can be utilised to better understand loyalty in the online domain, this thesis provides much needed new knowledge through scientific replication of extant findings from the offline domain.

Thirdly, as also discussed in Chapter 2, the evidence that customers are loyal to more than one specific brand within any category (Arifine et al., 2019; Dawes, 2008; Dick & Basu, 1994; McMullan & Gilmore, 2008; Oliver, 1999) has not been thoroughly examined in the online context. This is notwithstanding the growing e-commerce market worldwide, in which consumers can be loyal to more than one website at the same time. This gap calls for an examination of these concepts with the focus on multi-brand e-loyalty.

Fourthly, while some of the key empirical generalisations that this thesis considers have been examined in online contexts (e.g., Double Jeopardy), to the best of the thesis author's knowledge, no empirical research has examined other important empirical generalisations online (e.g., the Duplication of Purchase and Pareto Law). In light of this additional knowledge

gap, it is worthwhile determining whether these three well-known empirical generalisations can be successfully deployed to improve the understanding of loyalty online.

Finally, Table 4 shows that the e-loyalty concept has been applied in many different product categories, predominantly in the last two decades. However, little attention has been given to some important product categories. For instance, while food and beverages are becoming the fastest-growing product category purchased online (Statista, 2020a), the literature lacks studies that examine this product class in digital contexts. The same applies to electronics and media, and personal care and cosmetics. Therefore, in line with the past empirical generalisation and e-loyalty studies, this thesis investigated both highly and rarely investigated categories in the single-brand loyalty literature to compare the results with previous empirical studies and also offer valuable insights for e-loyalty researchers. Moreover, consistent with the panel data available for this thesis and to guarantee a more transparent comparison against established offline patterns, each website that Iranian consumers shopped from was treated as a brand. In light of this, this thesis concentrates on the analysis of six different product categories, including home electronic and digital devices, cosmetics, groceries, books, banking and telecommunications.

Table 4. Distribution of research papers by industry and period

Industry	Research papers 2010-2019
Online shopping	24
Online hotel booking; Online traveling; Travel blogs; Tourism	8
Online banking	6
Online retailing	4
Online airline websites; Online tickets	2
Online cancer information websites; Health	2
Online grocery shopping	2
Online shopping for clothes	2
Online museums	1
Online video-streaming	1
Online wine shopping	1
Virtual communities	1
Online education	1
Online social networks	1
Online financial service	1
Online gaming	1
Online book shopping	1

Table 5 presents an overview of different journals that have published the above examined e-loyalty studies.

Table 5. Journals with e-loyalty studies (2010-2019)

Journal (2010-2019)	Journal (2010-2019)
Behaviour and Information Technology	International Journal of Electronic Commerce
Business Research Quarterly	International Journal of Human – Computer Studies
Computers in Human Behavior	International Journal of Information Management
International Journal of Bank Marketing	International Journal of Operations and Production Management
International Journal of Contemporary Hospitality Management	International Journal of Retail and Distribution Management
International Journal of Culture, Tourism and Hospitality Research	Journal of Air Transport Management
Journal of Electronic Commerce Research	Journal of Indian Business Research
Journal of Hospitality and Tourism Technology	Journal of Internet Commerce
Journal of Marketing Channels	Journal of Islamic Marketing
Journal of Marketing Management	Journal of Marketing Channels
Journal of Services Marketing	Journal of Marketing Management
Service Industries Journal	Journal of Research in Interactive Marketing
Total Quality Management and Business Excellence	Journal of Retailing and Consumer Services
British Food Journal	Journal of Services Marketing
Computers and Education	Journal of Travel and Tourism Marketing
Computers in Human Behavior	Nankai Business Review International
Economic Modelling	Social and Behavioral Sciences
European Journal of Information Systems	Qualitative Market Research: An International Journal
European Journal of Management and Business Economics	Service Industries Journal
European Journal of Marketing	South Asian Journal of Business Studies
Industrial Management and Data Systems	Technological Forecasting and Social Change
Information and Management	Total Quality Management and Business Excellence

Journal (2010-2019)	Journal (2010-2019)
International Journal of Bank Marketing	Tourism Review

3.4 Differentiated replication 2: Geographical location

E-loyalty has been investigated in many countries. In particular, in the last decade, extant e-loyalty studies have covered over 22 countries, as shown in Table 6. However, past research has mostly considered Western and European markets; it has not examined in sufficient detail developing countries and growing online markets such as Middle Eastern markets. Similarly, studies on empirical generalisations have been conducted primarily in Western countries, such as Australia (e.g., Lam & Mizerski, 2009), the US (e.g., Uncles et al., 2012) and European countries (e.g., Scriven et al., 2015) (see Tables 7, 8 and 9).

The body of knowledge argues that consumer buying behaviour differs across cultures (Luna & Forquer Gupta, 2001; Peter & Olson, 2010; Pratesi, Hu, Rialti, Zollo, & Faraoni, 2021; Shavitt & Barnes, 2018). Moreover, since consumers and brands in emerging markets are presumably different compared to the Western markets, researchers frequently advise that marketers need to rethink their strategic preferences (Faulkner et al., 2014; Pauwels et al., 2013). Yet, emerging markets and other areas of the world, such as the Middle East, remain inadequately studied (especially in comparison to Western markets). Therefore, as Amir and Sharon (1990) and Sharp et al. (2017) argued, there is a need for replication studies of different geographical areas. Accordingly, this thesis uses online customer data from Iran, a Middle East country showing significant growth in e-commerce.

Table 6. Distribution of e-loyalty research papers by country

Country	E-loyalty research papers 2010-2019
Europe	20
USA	9
China	8
India	6
UK	4
Turkey	3
Taiwan	3
Australia	2
Canada	2
Malaysia	2

South Korea	2
Jordan	1
Argentina	1
Saudi Arabia	1
UAE	1
Colombia	1
Pakistan	1
Japan	1

The next sections discuss the key empirical generalisations that are the basis of the 'double' differentiated replication undertaken in this thesis.

3.5 Empirical generalisations (scientific laws of marketing)

Empirical generalisations are considered the building blocks of scientific investigation and more sophisticated knowledge (Lindsay & Ehrenberg, 1993; Uncles & Wright, 2004). An empirical generalisation is defined as "a data-based regularity" (Ehrenberg, 1995, p. G20) or "an empirical observation which has been found to generalise" (Barwise, 1995, p. G30). Ehrenberg (1995) defined empirical generalisation as a similar result that has been seen under different circumstances leading to the result being expected under those circumstances. Similarly, Bass (1995, p. G7) defined empirical generalisation as "a pattern or regularity that repeats over different circumstances, and that can be described simply by mathematical, graphic or symbolic methods. A pattern that repeats but need not be universal over all circumstances". When the observed patterns have been extended over varied circumstances, data analysis becomes scientific (Sharp, 2002).

The fundamental bases of empirical generalisation originated from the work of Andrew Ehrenberg in the late 1950s. Specifically, there are two key characteristics of empirical generalisation: 'generalisation' and 'repeated empirical evidence' (Barwise, 1995; Ehrenberg, 1994). Accordingly, empirical generalisations are grounded in a 'data first' approach, rather than the 'theory/model first' (Barwise, 1995; Bass & Wind, 1995); hence, knowledge is typically generated based on the patterns found in the empirical data, rather than through theory to be empirically tested (Bass & Wind, 1995).

Wright and Kearns (1998, p. 5) declared that knowledge development could be obtained by "developing falsifiable theories, overcoming uncertainty through replication, attempting to extend our theories to new situations, and by identifying areas in which the theory or technique systematically fails". According to Sharp (2002, p. 25), "while much empirical research takes place in marketing, little is generalisable and thus we have limited knowledge of marketing phenomena and are sadly lacking in empirical generalisations". Therefore, empirical generalisations contribute to the production of knowledge that is validated through observed patterns and findings known as *knowledge prior*. These observed patterns are then brought together into a single 'law-like' formal trends, or empirical generalisations (Ehrenberg, 2000).

Barwise (1995) proposed five characteristics of a good empirical generalisation:

1. *Scope*: The empirical generalisation holds under a broad range of circumstances, such as countries and situations.
2. *Precision*: The empirical generalisation is a description of a regularity that has been reported several times.
3. *Parsimony*: The empirical generalisation is straightforward and involves only a few variables (Ehrenberg, 1995).
4. *Usefulness*: A good empirical generalisation yields practical or managerial relevance.
5. *Link with theory*: An empirical generalisation is better if it can be linked in some way with or defined by a theory. This means that the theory accounts for the empirical generalisation (i.e., predictions are consistent with it).

Empirical generalisations have gained considerable attention by many marketing researchers aiming to develop the knowledge of customers' behaviour (Bass, 1995; Dawes, 2008; Ehrenberg, 1995; Uncles & Kwok, 2008; Uncles & Wright, 2004). However, scholars have called for more knowledge development based on replications and extensions of previous findings (Sharp & Wright, 1999), calling for more researchers to accept the challenge to develop scientific laws in marketing (Barwise, 1995; Bass, 1995; Ehrenberg, 1995) improving both "evidence-based theory" and the "managerial decision-making" culture (Sharp et al., 2017). While prior studies found that there is a low rate of publication of replications in marketing (Danaher & Brodie, 2000; Hubbard & Vetter, 1996; Zinkhan et al., 1990), there have been notable contributions to new marketing knowledge using empirical generalisations (e.g., Dawes, 2008; Ehrenberg, 1995; Ehrenberg et al., 1990; Hammond, Ehrenbeig, et al., 1996; Sharp et al., 2012; Uncles et al., 2012; Winchester et al., 2015; Worthington et al., 2010).

"The building block of science is empirical generalisation, and replication and extension research is the key to generalisation" (Hubbard & Vetter, 1996, p. 154). Indeed, the need for further research and replication of empirical generalisations has been highlighted by many (Dawes, 2008; Faulkner, Truong, & Romaniuk, 2014; Wright & Kearns, 1998).

This thesis answers the call for more empirical research and scientific replication, by presenting conceptual and analytical solutions to the issues identified in extant marketing literature on online loyalty. In doing so, the focus is on three key marketing empirical generalisations: the *Duplication of Purchase* (Study 1, Chapter 4), the *Double Jeopardy* (Study 2, Chapter 5) and the *Pareto Law* (Study 3, Chapter 6).

3.6 Relevance of the three studies to the thesis objectives

The three empirical studies included in this dissertation each support the attainment of the objectives, as recapped in Table 7.

Table 7. Thesis objectives

Objective	Explanation
1	To apply behavioural loyalty to the study of e-loyalty.
2	To incorporate a multi-brand loyalty concept to the study of e-loyalty.
3	To apply three key marketing empirical generalisations (Duplication of Purchase, Double Jeopardy and Pareto Law) to the study of multi-brand e-loyalty and in a Middle-Eastern context (Iran).

Objectives 1 and 2 have been attained through the arguments and assumptions discussed in the previous chapter (Chapter 2). Furthermore, these objectives are more widely, empirically tested across the three empirical studies this thesis presents (Chapters 4, 5 and 6). Table 8 outlines the relevance of each study to achieving Objective 3.

Table 8. The relevance of the thesis' objectives to the three empirical studies

Study	Relevance to thesis objectives
Study 1:	Study 1 facilitates the achievement of the thesis objectives by i) investigating and describing the level of overall competition in several online markets; and ii)

Study	Relevance to thesis objectives
Duplication of Purchase	identifying if there are specific deviations from expected trends of customers' sharing or multi-brand e-loyalty. As such, it is a 'case in point' for showcasing the theoretical and practical relevance of the multi-brand e-loyalty concept.
Study 2: Double Jeopardy	Study 2 facilitates the achievement of the thesis objectives by i) investigating the links between market share, purchase penetration and multi-brand e-loyalty in online markets; and ii) shedding light on how to improve a website performance; for example, by identifying which strategy, between enhancing purchase penetration or the number of an e-brand's buyers, successfully grows the market share of an e-brand. As such, it showcases the theoretical and managerial implications of multi-brand e-loyalty.
Study 3: Pareto Law	Study 3 facilitates the achievement of the thesis objectives by i) investigating the concentration of 'heavy' and 'light' online buyers, as determined by their level of behavioural loyalty (frequency of purchases for a given e-brand); and, accordingly, ii) by discovering the share of contribution to sales of these different customer segments. As such, Study 3 demonstrates the level of detail of strategic market analyses that can be performed based on the notion of multi-brand e-loyalty.

Each of the marketing empirical generalisations examined in this thesis' three studies is introduced in the next sections, and then discussed in greater depth in the following chapters.

3.7 Duplication of Purchase

The Duplication of Purchase has its origins in the works of Ehrenberg and Goodhardt (1970), Ehrenberg (1972) and Bass (1974). Ehrenberg and Goodhardt (1970) found that, in a given period, the share of customers who buy one brand and also buy other brands is proportional to the number of the second brand's buyers. Notably, a key implication of this regular pattern is the provision of evidence of multi-brand loyalty and repertoire buying. Multi-brand loyalty, discussed in Chapter 2, implies that most customers of the brand buy across the repertoire of brands in the category, and this pattern is similar from brand to brand (Ehrenberg, 1988). Later on, Bass (1974) introduced the theory of stochastic preference which proposes the stochastic nature of brand choice and brand switching. In this regard, the term 'stochastic' implies that a customer's prior purchase does not impact their future purchases. In essence, the combination of multi-brand loyalty, repertoire buying and the stochastic preference theory form the conceptual basis of the Duplication of Purchase (Pare, 2011).

Based on the premises discussed so far, Ehrenberg (1988, p. 353) defined the Duplication Purchase as "buyers of one brand generally purchase other brands strictly in proportion to that other brand's penetration". Accordingly, the critical factor for market success is the market share of each brand (Romaniuk & Dawes, 2005; Sharp & Wright, 1999; Uncles et al., 1995), as it is expected that smaller brands share many of their customers with larger brands (Ehrenberg, 1988; Romaniuk & Dawes, 2005; Sharp, 2010; Sharp & Sharp, 1997). In other words, the percentage of buyers that any two brands share is related to their market shares, rather than idiosyncratic marketing strategies such as brand positioning (Ehrenberg, 1988). Thus, the Duplication of Purchase law refers to a brand's level of competition for loyalty vis-à-vis other brands competing within the same market or product category (Ehrenberg, 1988).

The robustness and relevance of the Duplication of Purchase pattern hinges not only on its replicability across multiple conditions such as different product categories; it also depends on this pattern's capability of being treating as a baseline benchmark for the detection of exceptions or deviations in the competitive structure of a given market. In fact, the Duplication of Purchase pattern highlights instances whereby some brands clearly share fewer or more buyers than expected, given their market share. These deviations indicate *market partitions* (Ehrenberg, 1988; Wright et al., 1998) and *groupings* (Tanunsondjaja et al., 2016), respectively. Partitions happen when brands share fewer buyers than expected, while groupings occur when brands share more buyers than expected, or 'over-share' buyers (Tanusondjaja et al., 2016). Details of these typical deviations are expanded upon in Chapter 4.

Table 9 presents a chronological overview of extant studies of the Duplication of Purchase in the marketing literature, highlighting the particular product category and geographical context examined (a critical review of these studies appears in Chapter 4).

Table 9. Overview of Duplication of Purchase research

Author	Context/Market	Country
Ehrenberg and Goodhardt (1969)	Television viewing	USA
Ehrenberg and Goodhardt (1970)	FMCGs	UK
Goodhardt, Ehrenberg and Collins (1975)	Television viewing	USA
Headen, Klompmaker and Rust (1979)	Television viewing	USA
Keng and Ehrenberg (1984)	Store choice	UK

Author	Context/Market	Country
Barwise and Ehrenberg (1987)	Television programs	USA, UK
Uncles and Ehrenberg (1990b)	FMCGs	USA
Uncles and Ehrenberg (1990a)	Aviation fuel	European Airports
Ehrenberg (1991)	Politicians	UK
Colombo, Ehrenberg and Sabalava (2000)	Cars	UK, France
Bennett and Ehrenberg (2001)	Fast food	Australia
Stern (2002)	Pharmaceuticals	UK
Mansfield, Romaniuk and Sharp (2003)	Tourism destination	Japan, USA
Romaniuk and Dawes (2005)	Wine	Australia
Murphy (2006)	Wine	Australia
Lam (2006)	Gambling	USA
Dawes (2008)	Beer	Australia
Lam and Mizerski (2009)	Gambling	Australia
Dawes (2009)	Clothing	UK
Dawes, Romaniuk and Mansfield (2009)	Tourism destinations	USA, UK, Japan, Singapore
Kozak, Baloğlu and Bahar (2009)	Tourism destinations	UK, Germany, Netherlands, Japan, USA
Hand (2011)	Arts	UK
Cohen and Tataru (2011)	Wine	France
Lam and Ozorio (2013)	Gambling	USA, Australia, Macao
Lees and Wright (2013)	Radio listening	New Zealand
Dawes (2014)	Cigarettes	USA
Winchester, Arding and Nencyz-Thiel (2015)	Fair trade coffee and tea	UK
Scriven, Yábar, Clement and Bennett (2015)	Leisure activities	UK
Tanusondjaja, Nencyz-Thiel and Kennedy (2016)	FMCGs	UK, USA
Lam and Mizerski (2017)	Gambling	Australia
Anesbury, Greenacre, Wilson and Huang (2018)	Fruits and vegetables	USA, India
Wilson and Winchester (2019)	Wine	English-speaking European countries

Despite the fastest-growing market worldwide, little work has been done to understand multi-brand loyalty and repertoire buying in the online market. Therefore, the extension and replication of the Duplication of Purchase in the online context in Study 1 provides new knowledge about the competition for loyalty among various websites or e-brands. This new

knowledge can generate the most effective and beneficial strategic decisions for market success in digital domains.

In particular, Study 1 addresses the following research questions:

> **Research Question 1**: *Does consumer purchasing in the Iranian online market follow the Duplication of Purchase law?*
>
> **Research Question 2**: *What level of multi-brand e-loyalty (excessive, deficit or regular) do websites demonstrate when analysing the partitioning index?*

3.8 Double Jeopardy

The Double Jeopardy pattern evolved from the discoveries of William McPhee in 1963, who examined consumer responses to both radio presenters and newspaper comic strips. In the survey on radio presenters, people were asked to first indicate the presenters they knew from a list; next, they were asked to choose the ones they like. McPhee (1963) noted that the lesser-known presenters were unknown to many people, who therefore could not choose them from the list. Moreover, he found that the few people who knew the lesser known presenters often still did not choose them, or at least to a lesser extent than choosing the better known presenters. Similarly, he found the same pattern in the survey where people were asked to rate the best three comic strips they regularly read in the newspaper. Accordingly, McPhee concluded that the less renowned options suffer twice: fewer people know about them and even fewer people choose them – a phenomenon that he labelled as 'Double Jeopardy'.

When attempting to explain this pattern, McPhee (1963) suggested that exposure (sometimes referred to as familiarity) is a potential underlying explanation of the asymmetry in people's preferences, which leads to the Double Jeopardy pattern. Ehrenberg et al. (1990) corroborated this conclusion by studying two restaurants: one widely known, and a much lesser known one, assuming both restaurants to be similar in service, quality and cost. They found that most people who knew the popular restaurant were not aware of the existence of the less known one. Thus, those people could not choose it as their favourite restaurant. Moreover, people who were aware of the lesser known restaurant were also aware of the popular one and, while both restaurants had equal merits, votes of preference were spread between the two restaurants with

the majority picking the better known restaurant. Ehrenberg and colleagues (1990) concluded that this is a classic Double Jeopardy effect.

In the buyer behaviour world, Ehrenberg et al. (1990) further contended that Double Jeopardy is a statistical effect relating to market share. They explained that Double Jeopardy occurs when everything is equal between the product offerings, and the only exception is in terms of the market size of each offering. Specifically, Double Jeopardy states that brands with a lower market share have fewer buyers and also experience less (behavioural) loyalty than larger brands, which have more buyers and greater (behavioural) loyalty (Ehrenberg, 1972; Ehrenberg et al., 1990). From this trend, it can be inferred that brands compete in line with the number of people who buy them, rather than how loyal these buyers are.

Stocchi, Driesener, and Nenycz-Thiel (2015, p. 317) point out, "In analyses of brand buying, the Double Jeopardy pattern has been used as a benchmark in understanding unexpected patterns in buying behaviour." For example, the Double Jeopardy pattern has been adopted to distinguish four typical deviations: (i) *niche brands*, (ii) *change-of-pace brands*, (iii) *private labels*, and (iv) *excess behavioural loyalty* for large brands (Stocchi et al., 2015). Niche brands are brands with lower penetration (a low number of buyers), but higher than expected behavioural brand loyalty (high purchase frequency) (Kahn, Kalwani, & Morrison, 1988; Stocchi et al., 2015). In comparison, change-of-pace brands typically show medium to high penetration, but lower than expected behavioural brand loyalty (Kahn et al., 1988; Stocchi et al., 2015). Private labels are related to the retailers that distribute them and typically show higher penetration as well as higher than expected behavioural brand loyalty (Kristof, Gaby, Frank, & Gino, 2005; Scriven & Bound, 2004). Finally, excess behavioural loyalty is often observed for large brands or market leaders, which show higher penetration as well as higher than expected behavioural brand loyalty (Ehrenberg et al., 1990). To the best of the thesis author's knowledge, the presence of these deviations in online buying behaviour has never been investigated. Therefore, this thesis examines the potential deviations from the Double Jeopardy pattern in online purchases.

Table 10 presents a chronological overview of different studies of Double Jeopardy in the literature, including the product category or context considered and the country examined (critical details of these studies appear in Chapter 5).

Table 10. Overview of Double Jeopardy research

Author	Context/Market	Country
Barwise, Ehrenberg and Goodhardt (1982)	Television viewing	USA
Barwise and Ehrenberg (1984)	Television viewing	USA, UK
Keng and Ehrenberg (1984)	Store choice	UK
Barwise (1986)	Television viewing	USA
Barwise and Ehrenberg (1987)	Television viewing	USA
Ehrenberg, Goodhardt and Barwise (1990)	FMCGs	UK, Europe, Japan, USA
Ehrenberg, Goodhardt and Barwise (1990)	Daily newspapers and radio programming	UK
Ehrenberg, Goodhardt and Barwise (1990)	Instant coffee	USA
Ehrenberg (1991)	Politics	UK
Webster and Wang (1992)	Television viewing	USA
Donthu (1994)	Television viewing	USA
Solgaard, Smith and Schmidt (1998)	Political parties	Denmark
Keng, Uncles, Ehrenberg and Barnard (1998)	FMCGs	Japan
Michael and Smith (1999)	Forest products	USA
Donthu and Hershberger (2001)	Search engines	n/a
Kennedy and Singh (2002)	FMCGs	UK
McDowell and Dick (2005)	Radio listening	USA
Yang, Bi and Zhou, (2005)	FMCGs	China
Dawes (2008)	Beer	Australia
Pleshenko and Al-Wugayan (2009)	Banks	Kuwait
Dawes (2009)	Clothing	UK
Wright and Riebe (2010)	Television viewing and packaged goods	UK, Australia
Uncles, Wang and Kwok (2010)	FMCGs	China
Dawes (2014)	Cigarettes	USA
Tarkiainen, Ellonen, Ots and Stocchi (2014)	Magazine websites	Finland
Greenacre, Tanusondjaja, Dunn and Page (2015)	Instant coffee	USA
Baker, McDonald and Funk (2016)	Professional sport teams	Australia
Kooyman and Wright (2017)	Politicians	New Zealand
Rogers, Daunt, Morgan and Beynon (2017)	Twitter (Beer brands)	Australia, Canada, Ireland, New Zealand, South Africa, UK, USA
Anesbury, Greenacre, Wilson and Huang (2018)	Fruits and vegetables	USA, India
Wilson and Winchester (2019)	Wine	English-speaking European countries
Taneja (2020)	Digital media (desktop vs. mobile)	USA

As shown, the literature confirms that Double Jeopardy holds over extensive geographies and offline markets. However, there is comparably less empirical evidence related to online contexts, especially in terms of research exploring the relationship between a website's market share and the level of multi-brand e-loyalty. In particular, there are only five studies empirically evaluating Double Jeopardy within online contexts, including search engines and e-retailers (Donthu & Hershberger, 2001), magazine websites (Tarkiainen et al., 2014), social media platforms like Twitter (Rogers et al., 2017), and digital media (desktop vs. mobile) (Taneja, 2020). For instance, Donthu and Hershberger (2001) reported that smaller music websites users were less likely to return to those websites than larger ones. Tarkiainen et al. (2014) examined the applicability of the Double Jeopardy in the magazine websites context. They compared the online and offline presence of the magazine publishers and reported that "the magazine publishers who have been able to build market share in the online environment seem to have more loyal customer-base in their websites" (Tarkiainen et al., 2014, p. 1). Rogers et al. (2017) investigated the occurrence of Double Jeopardy effects for beer brands on Twitter. More recently, Taneja (2020) examined the relationship between the usage and popularity of US websites, and found the existence of the Double Jeopardy pattern in some categories.

As this thesis shows, the Double Jeopardy pattern is a useful tool to understanding e-loyalty, because it provides a cogent view of the relationships between market penetration, purchase frequency (multi-brand e-loyalty), and thus how e-brands can thrive. Above all, novel insights gained from the analysis of Double Jeopardy online could shed light on trajectories for e-brand growth and market performance improvement for e-brands and websites. To generate these much needed insights, this thesis addresses the following research questions:

> **Research Question 3**: *Do e-brands (websites) with higher purchase penetration also experience higher levels of multi-brand e-loyalty than e-brands (websites) with purchase market penetration?*
>
> **Research Question 4**: *Do deviations from the Double Jeopardy pattern (e.g., niche or change of pace e-brands) exist among e-brands (or websites), and if so, what might be the potential reasons for these deviations?*

3.9 Pareto Law

The fundamental basis of the Pareto Law or principle (also known as 80/20 rule) originates from the work of Vilfredo Pareto, an Italian economist of the late 1890s. He recognised an imbalance in the model for property allocation, as most of the wealth (80%) belonged to a few families (20%) (Pareto, 1896). Since then, the Pareto Law has been observed in different contexts, such as quality management issues (Koch, 1998), computer science (Yamashita, McIntosh, Kamei, Hassan, & Ubayashi, 2015), libraries (Yang & Shieh, 2019), medicines (Institute of Medicine, 2001) and gambling (Tom, LaPlante, & Shaffer, 2014). In general, the Pareto Law states that, on many occasions, 80% of consequences come from 20% of the causes. In the marketing literature, several scholars have argued that the Pareto Law explains that 80% of a company's sales are coming from the top 20% of the company's customers (Sanders, 1987). However, according to Habel et al. (2003), there are few studies that quantitatively examined the Pareto Law's share by focusing on the customers' purchases (e.g., Rungie, Laurent, & Habel, 2002; Schmittlein, Cooper, & Morrison, 1993). Relevant to the objectives of this thesis, none of these existing studies were conducted in the online context. Moreover, marketing studies noted that the Pareto Law's share varies across time (Schmittlein et al., 1993; Sharp, Romaniuk, & Graham, 2019) and in line with market-level statistics such as brand penetration (Rungie et al., 2002). Both these aspects have a strong bearing on the dynamics of online loyalty, and are worth exploring in this thesis.

More recently, Sharp et al. (2019) stated that there is a law-like pattern similar Pareto Law's shares in competing brands in the category and within different categories. They asserted, "it could generally be expected that, in a year, a consumer brand's heaviest (most frequent) 20% of buying consumers contributed around half of the brand's total sales that year." (Sharp et al., 2019, p. 2). Importantly, marketing research found empirical evidence of different Pareto Law's shares than the conventional 80/20. In more detail, while the Pareto Law's basic tenet widely holds, consumer buying behaviour does not exhibit the 80/20 share; rather, it is closer to a 40/60 or 50/50 share (Graham et al., 2017; Sharp et al., 2019).

Table 11 shows in chronological order the marketing studies that examined the Pareto Law, the main outcome (in terms of the Pareto Law's share empirically detected) and the product category and country considered (these studies are examined in detail in Chapter 6).

Table 11. Overview of Pareto Law research

Author	Context/ Market	Country	Outcome

Habel, Rungie, Lockshin and Spawton (2003)	Beer, wine and spirits	Australia	For a period of one year, regarding wine consumption, the top 20% of customers contributed to 75% of sales, and the top 20% of beer and spirits customers contributed to 80% of sales.
Sharp and Romaniuk (2007)	FMCGs	USA	The top 20% of customers are responsible about 59% of sales.
Brynjolfsson, Hu and Simester (2011)	Clothing	N/A	The top 20% of the products are accountable for nearly 60% of sales.
Kim, Singh and Winer (2017)	FMCGs	USA	The top 20% customers are responsible for 73% of sales.
McCarthy and Winer (2019)	B2B	USA	The top 20% of buyers are responsible for 67% of sales of product companies and 66% for service companies.
Anesbury, Talbot, Day, Bogomolov and Bogomolova (2020)	Fresh fruits and vegetables	USA	The top 20% of buyers are accountable for about 60% of sales.

In brief, the existing literature shows that the Pareto Law's share explains the the relative strategic importance and contribution to sales of customer segments displaying dissimilar multi-brand loyalty across several offline contexts. These outcomes support detailed analyses concerning multi-brand e-loyalty, which can be conducted at the level of individual customer segments. However, to the best of the thesis author's knowledge, no empirical research has explored Pareto Law in the online market. Moreover, some scholars have implied that the Pareto Law might not hold on the online market (e.g., Horowitz, 2006; Peoples, 2013), leading to the following research questions, which are addressed in this thesis:

> **Research Question 5a**: *What is the typical contribution to an e-brand sales of light vs. heavy online buyers?*
>
> **Research Question 5b**: *To what extent does the contribution to sales of light vs. heavy online buyers vary across different online markets?*
>
> **Research Question 5c**: *To what extent does the contribution to sales of light vs. heavy online buyers vary over time?*
>
> **Research Question 6**: *How accurately does the Negative Binomial Distribution (NBD) predict the frequency of e-brands purchases?*

The following section discusses the Dirichlet model, which includes the Duplication of Purchase, the Double Jeopardy and the Pareto Law. The Dirichlet model is the most widely

researched marketing empirical generalisation, documented to accurately describe and forecast key patterns in buying behaviour concerning rival brands within a given product category, which yield theoretical and managerial relevance (Ehrenberg, 1988). Hence, it provides a sound basis for addressing the research questions in the three studies of this thesis.

3.10 The Dirichlet model

The Dirichlet model has been used over the last fifty years in academic research and industry practice to understand consumption patterns in different industries, especially consumer packaged goods (Anesbury, Greenacre, et al., 2018; Goodhardt et al., 1984) and store choice (Keng, Uncles, Ehrenberg, & Barnard, 1998), among many other product categories and contexts under conditions of stationarity – i.e., over-time fluctuations in individual consumption levels (household-level or individual consumer-level buying) turning into stable aggregated patterns (Ehrenberg et al., 2004; Ehrenberg & Uncles, 1997). Under this premise, we usually observe little variation in individual brands' sales levels, and limited market partitioning or segmentation. Moreover, Ehrenberg (1988) claims that brands do not continuously 'lose' or 'acquire' customers; rather, people usually buy infrequently and tend to develop small repertoires of brands among which they split their loyalty, selecting brands as-if-random with no recency effect or feedback (the so-called 'zero-order' effect). Indeed, individual preferences are largely heterogeneous, with consumers differing greatly in their choices. Therefore, "the model assumes consumers choose a small portfolio from the available options (split loyalty), with on-going as-if fixed propensities to choose any one entity" (Bound, 2009, p. 2). These widely confirmed assumptions match the notion of multi-brand loyalty, and thus are inherent to the focal concept of this thesis: multi-brand e-loyalty.

Table 12 presents in chronological order some examples of extant studies of the Dirichlet model in the marketing literature, highlighting the product category and the country examined.

Table 12. Previous research on the Dirichlet model

Author	Context/Market	Country
Dunn, Reader, and Wrigley (1983)	Individual stores	UK
Keng and Ehrenberg (1984)	Store choice	UK
Barwise and Ehrenberg (1987)	Television programs	USA, UK
Ehrenberg, Goodhardt and Barwise (1990)	Instant coffee	USA
Uncles and Ehrenberg (1990a)	Aviation fuel	European Airports

Fader and Schmittlein (1993)	FMCGs	USA and Japan
Bhattacharya (1997)	FMCGs	USA
Keng, Uncles, Ehrenberg and Barnard (1998)	FMCGs	Japan
Kearns, Millar and Lewis (2000)	N/A	New Zealand
Colombo, Ehrenberg and Sabalava (2000)	Cars	UK, France
Sharp, Wright and Goodhardt (2002)	Bank credit cards	Australia and New Zealand
Scriven and Bound (2004)	FMCGs	UK
Habel and Rungie (2005)	Prescription	UK
Uncles, Wang and Kwok (2010)	FMCGs	China
Sharp, Wright, Dawes, Driesener, Meyer-Waarden, Stocchi and Stern (2012)	FMCGs	USA and UK
Baker, McDonald and Funk (2016)	Professional sport teams	Australia
Driesener, Banelis and Rungie (2017)	FMCGs	UK
Trinh, Anesbury and Driesener (2017)	Supermarkets	UK
Anesbury, Greenacre, Wilson and Huang (2018)	Fruits and vegetables	USA, India

Given the strong knowledge basis of the Dirichlet model in Western and European markets, this thesis draws upon the model as the analytical lens for the three studies presented, each focusing on a different empirical generalisation that this model conceptually and empirically caters for. The rationale behind using a Dirichlet model is threefold. First, it is shown to be a robust and broadly applicable method to capture a range of marketing empirical generalisations (Baker, McDonald, & Funk, 2016; Habel & Rungie, 2005; Ken & Ehrenberg, 1984; Sharp et al., 2012, 2002). Second, the model provides theoretical predictions of different brand performance measures, which can be compared against observed (actual) brand performance measures such as market penetration, market share and purchase frequency (Ehrenberg et al., 2004; Jarvis et al., 2003). In essence, the Dirichlet model can provide descriptive information and the prediction of the purchase probability and loyalty for brand-level and product category-level statistics (Rungie & Goodhardt, 2004). For instance, the Duplication of Purchase Law is typically examined by calculating the proportion of Brand A buyers who will also be a Brand B buyer in a period, and vice versa, at an aggregate level. Then, this information is benchmarked against the estimated level of duplication of buyers between brands in the category returned by the Dirichlet model. Similarly, the Dirichlet model has also been introduced as the benchmark for Double Jeopardy (Ehrenberg et al., 1990). The Double Jeopardy states that the level of behavioural brand loyalty is determined by the brand market size or purchase penetration. The Dirichlet model provides estimates of these metrics and the underlying relationship between the two, highlighting deviations from the basic norms (Ehrenberg et al., 2004).

There are alternative methods to the Dirichlet model (especially for survey data), such as Structural Equation Modelling – i.e., a multivariate analysis method for exploring relations between latent constructs and measured variables (Hartwell, Khojasteh, Wetherill, Croff & Wheeler, 2019); Complex Econometric Models – i.e., a model consists of a set of assumptions that describe an economy's behaviour, or more generally, a phenomenon (Danaher & Brodie, 1992); and other models with different assumptions. This thesis chose the Dirichlet model. Despite criticism (see Sharp et al., 2012), Dirichlet is configured as a set of probability density functions that accurately and parsimoniously predict purchasing behaviour patterns irrespective of contingencies and contextual factors, all assumed to be exogenous (Sharp et al., 2012). Therefore, comprehensively, this mathematical model is a suitable analytical approach and provides a common empirical ground for addressing the research questions at the heart of the three studies presented in the following chapters.

3.11 Chapter summary

This chapter reviewed two important concepts: scientific replication and empirical generalisations, demonstrating the relevance of both to marketing science. In relation to the importance of scientific replication, the chapter argued this thesis is configured as a 'double' differentiated replication, as it addresses the need for further research on key established patterns in loyalty in the online context and in Iran, a Middle Eastern market. Subsequently, the chapter critically reviewed current literature on the three well-known marketing empirical generalisations that are examined in this thesis: the Duplication of Purchase, the Double Jeopardy and the Pareto Law. The chapter offered a brief explanation of each of these empirical generalisations and outlined the overall implications for the objectives of this thesis. A series of key research questions were generated from the literature on each of the three empirical generalisations. The summary of extant studies also offered justification for more research on the three empirical generalisations in the online domain and in non-Western geographical contexts.

Additionally, this chapter discussed a well-known stochastic model of buyer behaviour: the Dirichlet model. This is a widely validated ensemble of statistical distributions, performance measures and empirical tests that caters for the Duplication of Purchase, the Double Jeopardy and the Pareto Law. Specifically, the model can accurately predict the three empirical generalisations considered in this thesis and can be used to identify deviations from established

patterns. Hence, it forms a common underlying conceptual and empirical basis for the three studies, which are presented in the following three chapters.

4 CHAPTER FOUR: STUDY 1 – DUPLICATION OF PURCHASE

Relevance to the thesis objectives	***Study 1*** *facilitates the achievement of the thesis objectives by i) investigating and describing the level of overall competition in several online markets; and ii) identifying if there are specific deviations from expected trends of customers' sharing or multi-brand e-loyalty.* *As such, it is a 'case in point' for showcasing the theoretical and practical relevance of the multi-brand e-loyalty concept.*

4.1 Study abstract

This study contributes to the understanding of how e-brands (websites) compete in the Middle East by solving theoretically and managerially relevant issues from the digital era. Specifically, based on the analysis of two sets of data, a cross-sectional online survey of five product categories with an average sample size of 525 and a longitudinal telecommunications panel of more than two million respondents, this study detects a positive relationship between the market size of Iranian websites and the percentage of customers shared with other websites. The results show that the *Duplication of Purchase pattern* holds for Iranian websites. Accordingly, this study advances consumer behaviour knowledge by demonstrating that, similar to offline domains, consumers allot loyalty to multiple brands (*multi-brand e-loyalty*) and develop small *e-repertoires* of websites. Besides addressing problems of the e-loyalty literature (e.g., excessive reliance on attitudinal rather than behavioural loyalty and the lack of generalisable patterns), the present research also translates its findings into a series of practical guidelines for e-brands to compete and grow.

Keywords*: duplication of purchase; e-loyalty; behavioural loyalty; online buying; repertoire buying*

4.2 Study introduction and rationale

The *Duplication of Purchase* is a well-established empirical generalisation that helps marketing practitioners and academics to understand and evaluate the competition between brands (Ehrenberg, 1988, 2000; Sharp, Wright, Kennedy, & Nguyen, 2017). In particular, the striking pattern of *repertoire buying* that the Duplication of Purchase captures (Goodhardt et al., 1984; Tanusondjaja et al., 2016) highlights that customers buy across a range of brands within each product category (Anesbury, Greenacre, Wilson, & Huang, 2018; Bennett & Ehrenberg, 2001; Ehrenberg & Goodhardt, 1970; Lam & Ozorio, 2013). Established knowledge about these concepts covers many contexts, including store choice (Keng & Ehrenberg, 1984), pharmaceuticals (Stern, 2002) and beer (Dawes, 2008). It also covers many countries, including the US (Goodhardt, Ehrenberg, & Collins, 1975) and Europe (Uncles & Ehrenberg, 1990; Cohen & Tataru, 2011). However, there is a knowledge void concerning how branded websites compete, especially in geographical areas experiencing immense growth in digital transactions such as the Middle East. These aspects form the focus of the present study, in line with the following rationale.

The number of Internet users worldwide has reached almost five billion (Internet World Stats, 2020b) and more than two billion people are expected to buy products and services online in 2021, spending over 3.5 trillion US dollars (Statista, 2020b). Several geographical areas in the world underpin these trends, including under-researched contexts such as the Middle East. For example, in 2018, Iran's e-commerce experienced a rapid expansion, thanks to high Internet penetration (up to 80%, see Internet World Stats, 2020a) and Iran has the highest number of web-users in the Middle East (twice as many as Saudi Arabia) (Statista, 2020b). Nonetheless, there are significant challenges when studying online consumer buying behaviour. For instance, as discussed in detail in Section §2.5.3, on the Internet, rival brands are only clicks away from each other and consumers can compare competing offers with minimal effort (Christodoulides & Michaelidou, 2011; Khan et al., 2019; Srinivasan et al., 2002; Swaminathan et al., 2018). Consequently, empirical research examining how websites brands (or e-brands) compete is highly relevant and would offer new empirical knowledge.

In addition, as discussed in detail in Chapter 2, *e-loyalty* research (i.e., research on loyalty towards websites or e-brands, including online repurchasing behaviour and/or favourable predisposition toward the brand, see Srinivasan et al., 2002) is plagued by several issues that hinder the translation into generalisable guidelines. For example, extant studies on e-loyalty

often propose complex frameworks with multiple drivers (Kaya et al., 2019; Khan et al., 2019; Quan et al., 2020; Swaminathan et al., 2018; Zhang & Liu, 2017). Furthermore, a general agreement is yet to emerge on the key factors underpinning e-loyalty and each factor's strategic importance. The absence of such an agreement prevents the establishment of simple conclusions that can be easily adapted by managers to compete in the ever-evolving digital landscape. Additionally, the majority of research on e-loyalty focuses on attitudinal loyalty. Although, more broadly, loyalty has been conceptualised as behavioural and/or attitudinal (Chaudhuri & Holbrook, 2001), as discussed in Sections §2.3 and §2.4, attitudinal loyalty is somewhat problematic. Above all, attitudinal loyalty fails to predict *brand loyalty* as accurately as behavioural loyalty (Cheng, 2011; Foxall, 2016; Sharp et al., 1999). Moreover, there is ample empirical evidence critiquing attitudinal loyalty for the weak correlations with the resulting behaviour (see, among others, Blery et al., 2009). Existing studies on attitudinal loyalty also concentrate on investigating one brand at a time (Almeida-Santana & Moreno-Gil, 2018; Ramaswami & Arunachalam, 2016). This assumption is due, at least in part, to the fact that seminal studies on loyalty (e.g., Dick & Basu, 1994; Oliver, 1999) posit that customers hold a deep commitment to repurchase a brand consistently in the future, and this commitment originates from positive attitudes and long term consumer-brand relationships. Nevertheless, this postulation ignores the overwhelming empirical evidence showing that consumers routinely purchase from a range of brands in the category (Ehrenberg, 1995; Romaniuk & Dawes, 2005; Uncles, Ehrenberg, & Hammond, 1995; Wilson & Winchester, 2019), naturally displaying *multi-brand loyalty* (Arifine et al., 2019; Dawes, 2008). Indeed, although single-brand loyalty is desirable for companies, as discussed in Section §2.3, several scholars contend that multi-brand buying is 'the rule' (Dawes, 2008; Ehrenberg, 2000; Felix, 2014); an assumption, which is theoretically and empirically consistent with the Duplication of Purchase.

In line with this reasoning, this study introduces a multi-brand loyalty approach to analysing online loyalty and shopping behaviour in the Middle-East, bringing the well-established benchmarks of the Duplication of Purchase into the e-loyalty literature. Empirically, these aims are executed via the analysis of two sets of data from Iran: a set of cross-sectional online survey data covering five product categories (N > 500, on average, per category) and a longitudinal telecommunications panel (N > two million).

Besides making a significant contribution to two important areas of consumer buying behaviour research (i.e., e-loyalty literature and the body of knowledge on the Duplication of

Purchase), this study yields numerous practical/managerial contributions. In brief, it has long been argued that online and traditional (offline) domains are somewhat different in terms of market structures, marketing activities and competitive strategies (Reichheld & Schefter, 2000). It has also been argued that managers need to improve their understanding of e-loyalty to achieve a competitive advantage in e-domains (Srinivasan et al., 2002; Swaminathan et al., 2018). In this regard, the present research sheds light on possible methods and strategies that can improve the way managers track and handle competition in modern digital contexts, growing the market performance of websites or e-brands.

4.3 Background and research questions

4.3.1 Duplication of Purchase

Over fifty years ago, Goodhardt examined television program viewing behaviour, publishing a seminal duplication study in *Nature* (Goodhardt, 1966). Four years later, Ehrenberg and Goodhardt (1970) extended the same analysis to consumer goods, noting that, in a given period, the proportion of customers who buy one brand and also buy other brands is proportional to the number of the second brand's buyers – a robust empirical pattern labelled as Duplication of Purchase (see also Ehrenberg, 1988; Romaniuk & Dawes, 2005; Sharp, 2010; Sharp & Wright, 1999; Uncles et al., 1995). According to this pattern, a basic expectation is that, in a given product category, smaller or less popular brands share many of their customers with larger or more popular brands (Ehrenberg, 1988; Romaniuk & Dawes, 2005; Sharp, 2010; Sharp & Sharp, 1997). A further implication of this pattern is the evidence of repertoire buying – i.e., the fact that most consumers buy multiple brands within a product category (Ehrenberg, 1988). A fundamental underlying premise of this pattern is the theory of stochastic preferences, or the as-if-random allocation of purchase preferences across substitutable alternatives (Goodhardt, 1966). Further details and relevance of this pattern to this thesis objectives were discussed in Sections §2.4 and §3.7.

4.3.2 Review of key Duplication of Purchase studies

Early studies in the 1960s and 1970s have mainly focused on exploring the Duplication of Purchase in the context of media/audience duplication. There is only one early study (e.g., Ehrenberg & Goodhardt, 1970) that investigated the pattern in the context of the FMCGs markets. In the 1980s, the Duplication of Purchase analysis was extended from the television

context (e.g., Goodhardt, 1966; Goodhardt et al., 1975) to store choice (Keng & Ehrenberg, 1984). Keng and Ehrenberg (1984) observed that consumers buy from a range of stores, and stores share buyers in line with their market shares. In the 1990s, more empirical studies based on the Duplication of Purchase appeared in the literature and the pattern was detected in various product categories. To date, as presented in Table 9, scholars have investigated Duplication of Purchase in the wine industry (Murphy, 2006; Romaniuk & Dawes, 2005; Wilson & Winchester, 2019), multiple FMCGs (Tanusondjaja et al., 2016), beer (Dawes, 2008), gambling (Lam & Mizerski, 2009, 2017), aviation fuel (Uncles & Ehrenberg, 1990), politicians (Ehrenberg, 1991), cars (Colombo et al., 2000), fast food (Bennett & Ehrenberg, 2001), clothing (Dawes, 2009), tourism destinations (Dawes et al. 2009; Kozak, Baloğlu, & Bahar 2009), fresh fruits and vegetables (Anesbury, Greenacre, et al., 2018), and arts (Hand, 2011). Moreover, with respect to the media/audience studies, Lees and Wright (2013) focused on examining repeat buying concerning radio stations. Lees and Wright (2013) reported that station A audiences would listen to station B directly in line with the penetration of station B. Thus, radio stations compete primarily based on the audience size rather than audience loyalty. It is also worth highlighting that although most studies were based on the analysis of panel data, authors such as Bennett and Ehrenberg (2001) used survey data with smaller sample sizes, reporting results that broadly conformed to the Duplication of Purchase pattern.

Although there are many examples of different product categories and contexts where the Duplication of Purchase 'holds', to the best of the thesis author's knowledge, all the studies have been conducted in offline domains. Moreover, past studies have confirmed the pattern's generalisability in Western contexts such as Australia (e.g., Bennett & Ehrenberg, 2001; Dawes, 2008; Lam & Mizerski, 2009; Romaniuk & Dawes, 2005), the US (e.g., Anesbury et al., 2020; Lam, 2006; Uncles et al., 2012) and Europe (e.g., Dawes, 2009; Scriven et al., 2015; Tanusondjaja et al., 2016). This collection of empirical evidence makes the Duplication of Purchase a law-like widely generalisable pattern, which is useful for examination of 'new' or simply 'different' domains (Mansfield, 2004), and for finding solutions to novel problems of theoretical and managerial relevance as per the focus of this study, and this thesis.

4.3.3 Deviations from the underlying pattern

An important benefit of the Duplication of Purchase lies in identifying meaningful exceptions or deviations from the expected trend. For example, in certain instances, some brands might

share fewer or more buyers than expected, given their market size or popularity level. As mentioned in Section §3.6, these exceptions or deviations indicate *market partitions* (Ehrenberg, 1988; Wright, Sharp, & Sharp, 1998) or *groupings* (Tanusondjaja et al., 2016). Partitions are brands sharing more customers with other similar brands and fewer customers than expected with dissimilar brands; groupings are brands sharing more customers with similar brands, but sharing customers with dissimilar brands in line with expectations (Tanusondjaja et al., 2016). Past studies found that partitions and groupings might result from functional differences, location or different end-users. For instance, partitions have been found in radio stations broadcasting different genres (Lees & Wright, 2012), leaded vs. unleaded petrol (Ehrenberg & Uncles, 2000), luxury cars (Ehrenberg & Bound, 2000), healthy vs. unhealthy foods (Anesbury, Nguyen, & Bogomolova, 2018), and different geographical locations (Mansfield et al., 2003; Sharp & Sharp, 1997). Therefore, analysis of potential deviations offers additional information yielding important implications for brand positioning, brand development (or growth) and customer's brand knowledge (Nenycz-Thiel, Sharp, Dawes, & Romaniuk, 2010). Moreover, the presence of deviations underlines the sub-markets' existence in the category, which is highly informative of competition dynamics (Wright et al., 1998).

Considering the online domain, the basic tenet of the Duplication of Purchase and likely deviations from the expected pattern would suggest that websites share more or fewer customers than expected with other websites, depending on the market size or popularity of each website. It would also suggest that any partition or groupings of websites within a category might come down to functional differences or dissimilarities of end-users. Indeed, research that has examined online competition found that product variety (Chang, 2011; Sethi et al., 2018; Yaraş et al., 2017), price (Bucko et al., 2018; Usman & Kumar, 2020; Yaraş et al., 2017) and availability of a physical store (Yaraş et al., 2017) impact customers' intention to buy online. In a similar vein, studies comparing e-banking in the private and public sector concentrated on differences resulting from user intentions and satisfaction (Agrawal, Chauhan, & Kukreti, 2017; Hada, 2016; Raveendran, 2016). However, the literature is still lacking sufficient empirical evidence of how websites or e-brands linked to the same product category compete (or share customers), and of the factors likely to cause partitions or groupings of websites. Unfortunately, as discussed next, these important insights are also missing from the literature on e-loyalty.

4.3.4 e-Loyalty and stickiness

As discussed in Chapter 2, although many scholars have established the importance of loyalty in e-commerce (Anderson & Srinivasan, 2003; Chang et al., 2009; Cristobal et al., 2007; Kim et al., 2009; Martínez-Argüelles & Batalla-Busquets, 2016; Reichheld & Schefter, 2000; Zeithaml et al., 1996), there is no consensus on its definition and measurement. In terms of the factors considered to be drivers of e-loyalty (see Section §2.5.1), some researchers concentrated on a single factor, such as attitudes, behavioural intentions, inertia or switching barriers (Azam, 2015; Kaabachi et al., 2019; Khan et al., 2019; Parra-Lopez et al., 2018). Other scholars considered two or three factors, establishing links with service quality and customer satisfaction research (Barreda et al., 2013; Faraoni et al., 2019; Fuentes-Blasco et al., 2010; Kaya et al., 2019; Park et al., 2015; Purani et al., 2019). Other researchers considered four factors (Chocarro et al., 2015; Fang et al., 2018; López-Miguens & Vázquez, 2017), five factors (Christodoulides & Michaelidou, 2011; Fang et al., 2016) or even more factors (Swaminathan et al., 2018). This variety signals a significant issue in e-loyalty literature; that is, the impossibility to draw straightforward guidelines to consistently appraise e-loyalty across ever-evolving digital domains. Moreover, as already anticipated in Section §2.5.1, the use of different and complex conceptual models conflates e-loyalty with other highly subjective performance indicators (Al-dweeri et al., 2019; Blery et al., 2009; Durmuş et al., 2013; Kassim & Ismail, 2009; Kim, Jin, & Swinney, 2009).

Besides the absence of studies critically examining and/or comparing extant approaches to e-loyalty conceptualization and measurement (Aydin & Özer, 2005; Cronin Jr. et al., 2000), a second issue is the excessive emphasis on measurement of attitudinal loyalty. In this regard, there are three main problems of theoretical and managerial relevance. First, attitudinal loyalty does not accurately measure brand loyalty (Cheng, 2011; Foxall, 2016; Sharp et al., 1999), especially multi-brand loyalty (Arifine et al., 2019; Dawes, 2008). Second, attitudinal loyalty yields weak correspondence with actual buying behaviour (Blery et al., 2009). Third, market competition implications are poorly understood, due to studying e-loyalty as an idiosyncratic brand performance indicator, rather than a market-level benchmark.

The same issues discussed so far also appear in research that conceptualise and evaluate e-loyalty in terms of *stickiness* (see Section §2.5.2). Similar to research on e-loyalty, there is no agreement around the conceptualisation and measurement of stickiness. Above all, in both the

e-loyalty and stickiness literature there is a lack of studies based on the analysis of observed repeat purchase behaviour across multiple websites (Lu, Ye, & Yan, 2018).

In addressing the knowledge gaps and problems discussed so far, this study extends and replicates the Duplication of Purchases analysis to the online context and in an under-explored geograhical area, the Middle-East. Besides addressing the issues inherent to the e-loyalty and stickiness literature outlined, the proposed approach extends the generalisability and relevance of the body of knowledge on the Duplication of Purchase to the resolution of current issues of theoretical and managerial relevance. Specifically, understanding and empirically measuring multi-brand loyalty is essential to maximise returns on consumer-firm relationships, while accepting that online customers shop from a range of websites or e-brands (Arifine et al., 2019). Indeed, despite the general belief that satisfied customers tend to be more loyal (Al-dweeri et al., 2017; Khan et al., 2019), high satisfaction might impact single-brand loyalty, but does not generate an obstacle to multi-brand loyal (Quoquab, Yasin, & Dardak, 2014). Accordingly, this study concentrates on the newly introduced notion of *multi-brand e-loyalty*, defined as the *ongoing repurchase of more than one website selling brands from the same product category* (see Section §2.6). Thus, in line with the basic premises of the Duplication of Purchase, this study addresses the following research questions:

> **RQ 1**: *Does consumer purchasing in the Iranian online market follow the Duplication of Purchase law?*

> **RQ 2**: *What level of multi-brand e-loyalty (excessive, deficit or regular) do websites demonstrate when analysing the partitioning index?*

4.4 Methodology

4.4.1 Data description

This study analyses two sets of data gathered from Iranian online shoppers. The first set of data originated from a cross-sectional online survey, collected in the second half of 2020, using a snowballing approach by sharing the survey hyperlink across social media platforms, targeting five different product categories (home electronics and digital devices, banking, groceries, books, and cosmetics) and a total of 33 e-brands or websites. Overall, 3,222 responses were collected, out of which 2,669 were valid and employed for the analysis (incomplete and invalid

responses that were illogical were removed). The survey was conducted in September 2020, and respondents were asked about their online purchases. Specifically, the survey's first question asked if the respondent made an online purchase in the last six months (back from the survey date) for any of the five product categories. Then, respondents were asked additional specific questions about their online purchases of e-brands in each of the relevant product categories. The timeframe for the groceries category was three weeks, while for the home electronic and digital devices category it was six months. The snowball sampling technique (Abbes, Hallem, & Taga, 2020; Baltar & Brunet, 2012; Khan, Fatma, Shamim, Joshi, & Rahman, 2020; Sadler, Lee, Lim, & Fullerton, 2010) captured hard to reach participants with ease, thanks to reliance on popular social networks for recruitment. The sample sizes for each product category ranged between 262 and 1,114.

The second set of data originated from a longitudinal panel including four time periods (beginning in 2013) and more than 13 million records of online purchases across five e-brands, by more than two million customers of telecommunications. The panel data had the customer records of Irancell, one of the main mobile operators in Iran. In 2016, Irancell had slightly more than 30 million active simcards (Cra, 2017). The panel data included the mobile number, purchase date and time, the amount paid and the name of the websites the customers bought from. These websites are service e-brands that sell different plans to recharge mobile SIM cards. While there were some joint customers across the four time periods, the customers were not entirely the same. Nevertheless, this second dataset allowed for two additional 'built-in' checks. First, unlike the first dataset, it concentrated on the measurement of revealed behaviour, not recalled or claimed purchases, which are sometimes subject to response bias (Ludwichowska, Romaniuk, & Nenycz-Thiel, 2017). Second, it allowed the evaluation of the consistency of expected Duplication of Purchase across time.

Table 13 presents the demographic profile of the survey data, showcasing a suitable alignment with Iran's online buyers. According to Iran's annual e-commerce report, in 2020, of the online

buyers, 37% were female, and 63% were male (E-commerce Development Centre, 2021). Demographic information was not available for the panel data.

Table 13. Sample gender and age

Survey data (N=2,669 in total, across all categories)	
	Gender (%)
Female	38
Male	60
Prefer not to say	2
	Age (%)
18-24	36
25-34	38
35-44	18
45-54	5
55-64	1
Prefer not to say	2

4.4.2 Key measures and empirical tests

In line with past Duplication of Purchase studies, for both data sets Duplication of Purchase tables were created and screened, concentrating on the measurement of *brand duplication* – i.e., for each brand, the proportion of brand buyers who also bought other brands within the same category (Anesbury, Greenacre, et al., 2018; Dawes, 2014; Lam & Ozorio, 2013). The calculation of brand duplication hinges on the measurement of *purchase penetration* for each brand – i.e., the proportion of customers who bought the brand compared to the total market buyers (Ehrenberg, 1988; Goodhardt et al., 1984). Then, within each table, the observed percentages in each column are expected to decrease in line with the overall brand size (Dawes 2008; Dawes et al. 2009; Romaniuk & Dawes 2005; Wilson & Winchester 2019). Specifically, to discover any potential deviation from this expected pattern, it is also necessary to input brand duplication and purchase penetration into the calculation of a *duplication coefficient (D)* (Ehrenberg, 1988). The adoption of the duplication coefficient reveals if buyers are more or less likely to buy category pairings (Tanusondjaja et al., 2016).

There are multiple ways of calculating the duplication coefficient. In this study, it was calculated by dividing the average duplication by the average penetration of the brands (Dawes et al., 2009; Ehrenberg, 2000; Ehrenberg & Goodhardt, 1970) – see Equation 1.

Equation 1 - the duplication coefficient

$$D = \sum b_{xy} / \sum b_x \; b_y$$

The above formula was first introduced by Ehrenberg and Goodhardt (1970) and has since been extensively replicated using the simplified formula presented in Equation 2:

Equation 2 - the Duplication of Purchase pattern

$$b_{xy} / b_x = Db_y$$

whereby:

b_{xy}: the percentage of buyers of brand Y who also bought brand X for a given time

b_x: the penetration of brand X for a given time

b_y: the penetration of brand Y for a given time

D: the average value of all brands divided by the average penetration of all brands

A higher duplication coefficient typically indicates 'switching' between the brands in the product category (Dawes & Nenycz-Thiel, 2014). The expected duplication for each brand is then calculated by multiplying the duplication coefficient value with the market penetration of that brand. Accordingly, after calculating the expected duplications, it is possible to benchmark observed and expected sharing of buyers, or multi-brand loyalty (multi-brand e-loyalty in this study). This comparison involves examining arithmetical differences between observed and expected figures; for example, by considering the Mean Absolute Deviation values (or MADs) or the differences between the average duplication and the expected duplication in absolute terms (Dawes et al., 2009; Hammond, East, et al., 1996) or the Mean Absolute Percentage Error (or MAPE) (Sjostrom, Maria Corsi, Driesener, & Chrysochou, 2014). The focus on MADs and MAPEs values helped address Research Question 1 (see also the approach by Dawes et al., 2009 and Ehrenberg & Uncles, 2000).

To address Research Question 2, this study also used the Partition Sharing Index (PSI). A PSI represents higher or lower than expected levels of sharing for more than one brand, given their levels of market penetrations (Anesbury et al., 2018). Equation 3 presents the PSI formula that this study deployed.

Equation 3 – Partition Sharing Index
$PSI_{ij} = S_{ij}/(D*P_i)$

whereby according to Sjostrom et al. (2014):

S_{ij}: the Duplication of Purchase for brand i with brand j

D: the average value of all brands divided by the average penetration of all brands

P_i: Penetration of brand i

A PSI of 1.0 indicates two or more websites share customers as expected, in line with their penetration. For example, a PSI of 1.1 indicates that the two websites share 10% more buyers than expected, while a PSI of 0.9 indicates the two websites share 10% fewer buyers than expected. However, there is a meaningful market partition when groups of websites share more than 20% buyers (Sjostrom et al., 2014). Hence, in line with past studies the present research assumes that: i) a *market partition* (sub-categories, i.e. e-brands sharing a functional similarity sharing more buyers with each other and fewer buyers with the rest of the category) occurs when the *intra-PSI is ≥1.20* and the *inter PSI is ≤0.80*; and ii) a *grouping of e-brands* (i.e., e-brands sharing a functional similarity sharing more buyers with each other, but the expected level of buyers with the rest of the category) occurs when the *intra-PSI is ≥1.20* and the *inter PSI is ≥0.80* (see also Tanusondjaja et al., 2016; Wright et al., 1998).

4.5 Results

4.5.1 Duplication of Purchase pattern

The results of the analysis of the survey data were as follows. As an example, Table 14 outlines the percentage of customer duplication for Iranian bank websites in 2020. The largest e-bank brand, Mellat, had a penetration of 28%, meaning that nearly one in three category buyers had used their e-banking service in the previous four weeks. Of those customers, 22% also used the second largest brand Melli; 8% also used the third largest brand Pasargad; and 4% also used the second smallest brand Sepah. In turn, on average, 21% of the 11 other e-brands shared their customers with Mellat. These figures already indicate an underlying Duplication of Purchase pattern. Additionally, the correlation between each e-bank penetration and the average duplication was 0.99; the duplication coefficient was 0.69; the average MAD was 0.69; and the average MAPE was 10%. Therefore, comprehensively, there was a strong indication that a Duplication of Purchase pattern was present in this market.

Table 14. Duplication of Purchase for banking category

	Pen (%)	Percentage of users who also used…											
		Mellat	Melli	Pasargad	Saman	Tejarat	Saderat	Parsian	Ayandeh	Eghtesad novin	Shahr	Sepah	Day
Mellat	28		22	8	9	8	11	9	7	3	7	4	0
Melli	23	26		8	7	8	8	6	4	4	5	3	2
Pasargad	16	14	12		8	4	7	8	4	6	2	3	2
Saman	11	21	15	12		9	6	8	5	2	5	1	2
Tejarat	11	21	18	6	10		12	4	5	3	3	3	2
Saderat	11	30	18	11	7	12		4	7	3	3	4	2
Parsian	10	23	14	13	9	4	4		9	6	3	2	2
Ayandeh	8	25	13	10	7	7	10	12		8	4	2	5
Eghtesad novin	7	13	14	13	3	4	4	9	9		6	1	1
Shahr	6	32	18	6	9	6	6	6	5	8		3	2
Sepah	5	24	13	11	2	6	9	4	4	2	4		0
Day	2	4	15	15	11	7	7	7	15	4	4	0	
Average duplication		**21**	**16**	**10**	**7**	**7**	**8**	**7**	**7**	**4**	**4**	**2**	**2**
Expected duplication		**19**	**16**	**11**	**8**	**7**	**7**	**7**	**5**	**5**	**4**	**3**	**2**

Duplication Coefficient =0.69 , MAD =0.69 , MAPE =10% , Correlation =0.99

The same analysis was extended to all four product categories (see Table 15). The results show that there is a strong Duplication of Purchase pattern except in the home electronics and digital devices category, which revealed a more modest 'fit'. Wright et al. (1998) reported a MAD of up to 3% as a good fit of expected buying behaviour patterns such as the Duplication of Purchase. However, an average MAD of 2.1 is still reasonably within the range (Lewis, 1982), while, according to Ehrenberg (1994), a higher correlation (close to +1) between the two variables represents a reasonably good fit. Hence, it was plausible to conclude a clear relationship between the market size of Iranian websites or e-brands (number of buyers) and the proportion of customers shared or multi-brand e-loyalty.

Table 15. Overview of Duplication of Purchase analysis results

	Average Duplication	Average Penetration (%)	Correlation	Duplication Coefficient	MAD	MAPE
Banking	8	12	0.99	0.69	0.69	10
Books	13	15	0.98	0.84	3.07	52
Cosmetics	10	19	0.99	0.53	2.01	43
Home electronic & digital devices	22	25	1.00	0.88	5.91	183
Groceries	20	32	0.99	0.63	0.87	5
Telecommunications (Y1)	14	28	1.00	0.50	1.73	18
Telecommunications (Y2)	12	27	1.00	0.45	2.06	24
Telecommunications (Y3)	12	27	0.99	0.45	1.98	23
Telecommunications (Y4)	9	22	0.99	0.38	0.95	16
Average	13	23	0.99	0.59	2.14	42

Regarding the panel data, the Duplication of Purchase pattern appeared for the telecommunications category across all four years. As an example, Table 16 shows the Duplication of Purchase in 2016. It demonstrates that of the 71% of buyers who bought from website A, 13% also bought from website B, and 1% also bought from website C (brand names are anonymised for confidentiality). The same result emerged across the three additional years, confirming that these e-brands share customers in line with their market penetration. Moreover, the results across all four years (see Table 15 again) presented the average correlation of 0.99 and the average duplication coefficient of 0.45. Also, the average MAD was 1.7 and the average MAPE was 20%. Accordingly, the findings show that the Duplication of Purchase 'holds' in the telecommunications category.

The results for all other categories and data are available in Appendix A.

Table 16. Duplication of Purchase for telecommunications category – Panel data – Year 4 (2016)

Brands	**Pen (%)**	**A**	**B**	**C**	**D**	**E**
E-brand A	71		13	1	1	0
E-brand B	35	27		2	1	0
E-brand C	3	34	22		1	1
E-brand D	2	23	16	1		0
E-brand E	1	15	10	1	1	
Average duplication		25	15	1	1	0
Expected duplication		27	13	1	1	0

Duplication Coefficient =0.38 , MAD =0.95 , MAPE =16% , Correlation =0.99

4.5.2 Deviations

Considering the results for the survey data first, as an example, Table 17 shows the detailed PSI calculations for Iranian banks, highlighting that the two public banks (Melli and Sepah) shared 19% fewer customers than expected (intra-PSI=0.81). In contrast, the ten private banks (Mellat, Tejarat, Saderat, Pasargad, Saman, Parsian, Ayandeh, Eghtesad Novin, Shahr and Day) shared 5% more customers than expected given their penetration (intra-PSI=1.05). While there was slight excess sharing of customers for private banks, the inter-PSI (i.e., the sharing between private and public banks) is 0.84 – they shared 16% fewer customers than expected. This suggests that there is just one overall banking market within Iran and the 'public vs. private' delineation is only slightly impacting multi-brand e-loyalty. Similar results emerged for the other categories, as follows.

Table 17. PSI scores for banking category

	Pen (%)	Sepah	Melli	Mellat	Tejarat	Saderat	Pasargad	Saman	Parsian	Ayandeh	Eghtesad Novin	Shahr	Day
Sepah	5		0.8	1.3	0.7	1.3	1.0	0.2	0.5	0.7	0.4	0.9	0.0
Melli	23	0.8		1.4	1.1	1.1	0.7	0.9	0.9	0.8	0.9	1.1	0.9
Mellat	28	1.3	1.4		1.1	1.6	0.8	1.1	1.2	1.3	0.7	1.7	0.2
Tejarat	11	0.7	1.1	1.1		1.6	0.5	1.3	0.6	1.0	0.5	0.8	1.0
Saderat	11	1.3	1.1	1.6	1.6		1.0	0.9	0.6	1.3	0.5	0.8	1.0
Pasargad	16	1.0	0.7	0.8	0.5	1.0		1.0	1.2	0.8	1.2	0.5	1.3
Saman	11	0.2	0.9	1.1	1.3	0.9	1.0		1.1	0.9	0.3	1.2	1.4
Parsian	10	0.5	0.9	1.2	0.6	0.6	1.2	1.1		1.7	1.3	0.9	1.0
Ayandeh	8	0.7	0.8	1.3	1.0	1.3	0.8	0.9	1.7		1.7	0.9	2.8
Eghtesad novin	7	0.4	0.9	0.7	0.5	0.5	1.2	0.3	1.3	1.7		1.6	0.8
Shahr	6	0.9	1.1	1.7	0.8	0.8	0.5	1.2	0.9	0.9	1.6		0.9
Day	2	0.0	0.9	0.2	1.0	1.0	1.3	1.4	1.0	2.8	0.8	0.9	
		Public Banks		Private Banks									

Table 18 shows the intra and inter-PSI values for all product categories. The books market revealed some deviations most likely underpinned by the variety of the products sold, meaning that the websites with wide product variety (30book.com, Shahreketabonline.com and Gisoom.com) shared 347% more customers than expected given their size. Since the inter-PSI (i.e., the sharing between these websites and the rest of the category) was 0.94, this outcome indicates a grouping of e-brands for this product category. Similarly, within the cosmetics

category, while there was excess sharing of customers for premium e-brands and for middle-of-the-range and budget e-brands, the intra-PSI were 1.34 and 3.89 respectively, and the inter-PSI was 0.93, suggesting that these are two groupings of e-brands, rather than partitions.

Table 18. Overview of PSI scores analysis

	Intra-PSI		Inter-PSI
Banks	**Public banks** 0.81	**Private banks** 1.05	0.84
Books	**Wide product variety** 4.47	**Limited product variety** 0.95	0.94
Cosmetics	**Premium** 1.34	**Mid-range and budget** 3.89	0.93
Home electronic and digital devices	**High product variety** 0.89	**Limited product variety** 6.03	2.40
Groceries	**No physical stores** 1.21	**Has physical stores** 0.92	0.97
	Using Google Ads	**Not using Google Ads**	
Telecommunications (Y1)	1.90	0.90	1.02
Telecommunications (Y2)	2.21	0.79	0.99
Telecommunications (Y3)	1.95	0.83	1.07
Telecommunications (Y4)	1.26	0.85	1.02
Average	1.78	1.80	1.13

The home electronic and digital devices market results revealed that e-brands offering high product variety shared 11% fewer customers than expected (the index was 0.89). In contrast, e-brands offering limited product varieties shared 500% more customers than expected. In this instance, there are some unique characteristics in the website with more limited variety. For example, Baneh.com offers 120% refunds if the customers claim and prove that the product they purchased is not original. Alldigital.ir provides second-hand products at a lower price, and it does not sell home electronic devices, while Baneh.com provides brands and products that are not available in the Alldigital.ir website. Yet, while there was clear oversharing between these e-brands, they formed a grouping, rather than a partition – a conclusion confirmed by the inter-PSI value (i.e., the sharing between the two sub-categories, which was 2.40).

Finally, in the groceries category, two websites that also have physical stores (Snapp.market and Okala.com) shared 8% fewer customers than expected, compared to the two websites that do not have physical stores (Digikala.com and Snappfood.ir), which shared 21% more customers than expected given their size. Here, there was some oversharing between two of the four brands, but since the inter-PSI was 0.97; this is again a grouping of e-brands, rather than a market partition.

The analysis of the longitudinal panel data (see again Table 18) returned a PSI of 1.90 and a grouping for the e-brands B and C across all four years. Based on additional information available within the data (not relevant to the duplication of purchase analysis, but adding context to the online marketing strategy of these e-brands), these two websites consistently used Google Ads across all four time periods to attract more buyers – a strategy most likely underpinning excess behavioural e-loyalty for these e-brands, in comparison to the other two e-brands. Indeed, taking the example of Year 4, when three websites were using Google Ads (B, C and E), the intra-PSI was 1.26 for the three e-brands deploying online advertising, whereas the two other websites (A and D) returned a intra-PSI of 0.85 (thus sharing 15% fewer customers than expected). Nonetheless, it is worth highlighting that in light of the intra-PSI score in all four years (≥1.20), there is just one overall telecommunication category within Iran (no market partitions evident).

4.6 Brief discussion

Despite the growing interest in online buying, very few studies have empirically examined online behavioural loyalty (Rogers et al., 2017). As a consequence, the understanding of multi-brand e-loyalty is very limited. In addressing this problem, the present study makes two novel theoretical contributions. First, this study makes a significant contribution to the e-loyalty literature by focussing on multiple brands rather than on the focusing on a single brand, as is the case in most extant research (e.g., Al-dweeri et al., 2019; Al-Hawari, 2014; Belanche Gracia et al., 2015; Fang et al., 2018; Kaya et al., 2019; Khan et al., 2019), often focused on the analysis of the relationship between e-loyalty and other concepts such as e-service quality (e.g., Durmuş et al., 2013; Khan et al., 2019). Second, this study contributes to the body of empirical knowledge dedicated to the Duplication of Purchase, by applying what we currently know to a new domain (i.e., online consumer buying behaviour) and a new geographical context (i.e., Iran, a growing Middle-Eastern digital market).

The outcome of this study refutes the implication of some prior studies that online customers show single-brand loyalty (e.g., Al-dweeri et al. 2019; Belanche Gracia et al. 2015; Fang et al. 2018; Kaya et al. 2019; Khan et al. 2019). Specifically, the results of this study suggest that customers are multi-brand e-loyal and they purchase from a range of websites serving the same product category, which, like brick and mortar domains, operate in a predictable pattern. In this regard, the key novel finding is that websites or e-brands compete in line with the level of purchase penetration within a given online product category, and the benchmarks of the

Duplication of Purchase are widely applicable. Therefore, in addition to confirming the conceptual and empirical relevance of the Duplication of Purchase (Bennett & Ehrenberg, 2001; Dawes, 2008; Goodhardt, 1966; Keng & Ehrenberg, 1984; Lam & Mizerski, 2009; Romaniuk & Dawes, 2005) in two 'new' contexts (online buying and Iran, chosen as an exemplar Middle-Easterm marketplace), the finding suggests that marketers can improve market performance of e-brands by attracting more buyers rather than focusing on customer loyalty (c.f. Anesbury et al., 2020; Faulkner et al., 2014). This conclusion is also corroborated by the absence of noteworthy market partitions and the emergence of groupings of e-brands based on objective similarities, such as a similar width of product assortment.

The resulting theoretical and managerial implications (briefly summarised here and elaborated upon in Chapter 7) are as follows.

4.6.1 Theoretical implications

The core focus in research on e-loyalty is to find the factors (or drivers) that influence customers to be loyal to a brand (Anderson & Srinivasan 2003; Hwang & Lee 2019; Swaminathan et al. 2018) for companies to gain profits by encouraging customers to repurchase (Reichheld & Schefter, 2000). Despite the growing scholarly attention on e-loyalty in the marketing literature, the theoretical limitations of most published studies formed the momentuum for this study. For instance, extant research has examined the implications of e-loyalty in terms of consumers' intentions towards a single e-brand, mostly through composite attitudinal measures, ignoring the empirical evidence supporting both multi-brand buying and the importance of studying behavioural rather than attitudinal loyalty. By bringing into the e-loyalty literature assumptions and empirical benchmarks inherent to the body of knowledge on the Duplication of Purchase, this study formally demonstrates the theoretical and managerial value of the concept of multi-brand e-loyalty. This study also expands on how websites compete in fast-changing online domains. Moreover, a secondary theoretical implication of this research concerns the application of empirical research on the Duplication of Purchase to the analysis of online consumer buying behaviour and in an underinvestigated geographical context – Iran.

4.6.2 Managerial implications

The outcomes of this study offer brand managers valuable insights on how to evaluate competition in the online domain. Firstly, based on the finding that buyers are multi-brand loyal, this study suggests that managers of e-brands or websites need to have a realistic view of the relevance of website loyalty, given that consumers naturally establish repertoires of e-brands and are not 'solely loyal'. This finding enables managers to robustly measure and evaluate multi-brand e-loyalty across different product categories and time periods. Secondly, by confirming the existence of the Duplication of Purchase pattern, demonstrating that websites compete with other websites satisfying the same product category needs in line with their market share, this study provides valuable insight into market competion in digital domains. Above all, this study highlights implications for setting norms and reasonable expectations for the interpretations of websites or e-brands performance – e.g., managers of small-share websites should not be concerned by the fact that their customers also shop from large-share websites. Finally, this study also recognised some market deviations in some categories (presenting higher or lower sharing between websites than expected). Such deviations will help managers and marketers identify which websites they have to heighten/lower competition to achieve better results.

4.7 Study summary

This study examined and validated the applicability of the Duplication of Purchase in the analysis of e-loyalty matters for different online markets across two sets of data from Iran (longitudinal panel data and a cross-sectional online survey). Specifically, this study analysed and predicted how websites compete in different online markets and further examined deviations across websites in the form of market partitions or grouping of e-brands. This approach advances knowledge on e-loyalty by demonstrating that, similar to offline domains, e-loyalty is shared between multiple brands (a phenomenon labelled as *multi-brand e-loyalty*). This study also meets the need to replicate and extend scientific evaluations of marketing by application of the most relevant empirical generalisations or 'laws', such as the Duplication of Purchase. In this regard, this study contributes by proving the generalisability of the Duplication of Purchase to online markets in a prominent Middle Eastern country. To the best of the study author's knowledge, very limited research, if any, has explored Duplication of Purchase in these two domains.

Limitations and future research directions for this study are presented in Chapter 7.

5 CHAPTER FIVE: STUDY 2 – DOUBLE JEOPARDY

Relevance to the thesis objectives	***Study 2*** *facilitates the achievement of the thesis objectives by i) investigating the links between market share, purchase penetration and multi-brand e-loyalty in the online markets; and ii) shedding light on how to improve a website performance; for example, by identifying which strategy, between enhancing purchase penetration or the number of an e-brand's buyers successfully grows the market share of an e-brand.* *As such, it showcases the theoretical and managerial implications of multi-brand e-loyalty.*

5.1 Study abstract

Study 2 of this thesis concentrates on the Double Jeopardy pattern to discover if the market share of an e-brand (or website) determines its level of behavioural loyalty (frequency of purchasing). Specifically, this study seeks to empirically confirm whether e-brands with greater market share have more customers (higher purchase penetration) and greater levels of multi-brand e-loyalty than e-brands with lower market share. The study also aims to identify any potential deviations from this expected pattern, such as niche e-brands or change-of-pace e-brands. Finally, this study seeks to outline basic guidelines and benchmarks for growing e-brands, discerning the effectiveness of different marketing tactics, such as strategies aimed at increasing market penetration vs. enhancing customer loyalty. These aspects are examined using data from Iranian online buyers, collected through an online survey and a longitudinal panel. The results confirm the existence of a positive relationship between the market share of Iranian websites and the level of multi-brand e-loyalty of each e-brand, suggesting that the Double Jeopardy pattern 'holds' in this bouyant Middle-Eastern digital market. However, there are also some deviations, especially change-of-pace e-brands – i.e., websites with high market share, but lower than expected levels of multi-brand e-loyalty. In light of these findings, this study advances two strands of marketing research: e-loyalty research and the literature on marketing empirical generalisations. The study also contributes to practice by making recommendations about how to improve market performance for e-brands.

Keywords*: e-loyalty; online markets; Double Jeopardy; Dirichlet model*

5.2 Study introduction and rationale

The *Double Jeopardy* pattern is a well-established marketing empirical generalisation, which can assist academics and managers in evaluating brand performance. It also offers viable tactics for the effective development of customer relationships (Bennett, 2004; Bennett & Ehrenberg, 2001; Kooyman & Wright, 2017). The basic tenet of the Double Jeopardy posits that brands with a small market share typically have fewer customers compared to bigger brands (brands with a greater market share), and these customers are also somewhat less loyal – e.g., they purchase the brand less frequently (Anesbury, Greenacre, Wilson, & Huang, 2018; Baker, McDonald, & Funk, 2016; Ehrenberg, Goodhardt, & Barwise, 1990; Ehrenberg & Uncles, 2000; Kennedy & Singh, 2002; Sharp et al., 2012). Conversely, larger brands have more buyers, who also make more purchases and are somewhat more loyal (Dawes, 2008; Ehrenberg et al., 1990; Wright & Riebe, 2010). This pattern is assumed to result from the fact that smaller and less popular brands are typically known by fewer people, who find and purchase more easily more popular brands (Sharp, 2010).

The Double Jeopardy pattern has been detected in several product and service categories, countries and contexts (Anesbury et al., 2018; Barwise & Ehrenberg, 1987; Dawes, 2014; Ehrenberg et al., 1990; McDowell & Dick, 2005; Wright & Riebe, 2010). However, empirical studies concerning the Double Jeopardy pattern in online contexts are limited. For example, there are studies that have explored the implications of this pattern for search engines and e-retailers (Donthu & Hershberger, 2001), online magazine (Tarkiainen et al., 2014), Twitter (Rogers et al., 2017) and comparisons of digital media (desktop vs. mobile) (Taneja, 2020). The need for more empirical examinations of Double Jeopardy in digital domains is pressing, especially in geographical areas facing a tremendous increase in online buying, such as Middle Eastern countries. This knowledge void forms the reasoning behind this study, together with the following intended contributions to theory and practice.

The Internet has become a key channel for shopping, communication and searching for information (Brashear et al., 2009); hence, undeniably, e-commerce maximises marketing opportunities (Pereira, Salgueiro, & Rita, 2016). Above all, from the customer viewpoint, the Internet facilitates finding products and services and related information much more conveniently than offline, with seamless comparison of multiple e-brands during decision-making. E-commerce also yields the benefit of accessibility from any place, seven days a week,

twenty-four hours a day (Statista, 2019b). It is therefore not surprising to see that, worldwide, e-commerce sales are projected to reach 22% by 2023, compared to 14% recorded in 2019 (Statista, 2019a).

Nonetheless, there are some issues in the marketing literature examining online buying behaviour, which hinder the provision of clear theoretical and practical guidelines on how to harvest the economic benefits of e-commerce's staggering growth. For example, as discussed in Chapter 2 and in Chapter 4 (Study 1 of this thesis), the majority of extant studies on e-loyalty have highlighted the role of idiosyncratic brand attributes as key drivers of market growth attained by improvement of brand loyalty (e.g., Bucko et al. 2018; Chang 2011; Christodoulides & Michaelidou 2011; Fang et al. 2018; Fuentes-Blasco et al. 2010; Sethi et al. 2018; Yaraş et al. 2017). However, there is no agreement on which attributes most affect brand loyalty and lead to increased online sales or market growth in digital domains. Furthermore, the main focus of the existing studies has been on attitudinal loyalty. To recap, as discussed in Chapter 2, compared to the predictive accuracy of behavioural loyalty, attitudinal loyalty has several limitations in the forecast of consumer behaviour (Cheng, 2011; Foxall, 2016; Sharp et al., 1999). This is concerning, since it has long been argued that managers need to predict customers buying behaviour in the future to develop brand growth strategies (Bennett, 2004; Bennett & Ehrenberg, 2001; Kooyman & Wright, 2017). Moreover, existing studies on attitudinal loyalty typically examine one brand at a time (see, Almeida-Santana & Moreno-Gil 2018; Ramaswami & Arunachalam 2016). Yet, an overwhelming number of studies that explored the behavioural nature of loyalty confirmed that customers are in fact multi-brand loyal (Arifine et al., 2019; Dawes, 2014; Uncles et al., 2010). By concentrating on the analysis of the Double Jeopardy pattern, this study addresses these issues and provides clearer empirical guidelines on the implications of multi brand e-loyalty for brand growth strategies in e-domains. Specifically, Ehrenberg et al. (2004) argued that brand growth is not always achieved by acquiring customers who are more loyal; rather, the essential strategy is to grow the size of the customer base (see also Ehrenberg & Uncles, 2000). Accordingly, this study suggests possible methods and tactics that e-brands can adopt to attain market growth, such as increasing purchase penetration *or* enhancing e-loyalty.

In addition to the above, a limited number of studies have examined the Double Jeopardy pattern in countries other than USA, Australia, New Zealand and Europe. For example, Pleshko and Al-Wugayan (2009) studied the Double Jeopardy pattern for Kuwait banks. Uncles et al.

(2010) study examined the performance of FMCGs product categories in China. Given the staggering growth of e-commerce in areas of the world that have not been covered in past empirical studies, there is an opportunity for conducting differentiated replications of e-loyalty analyses in underinvestigated contexts such as the Middle East, where countries like Iran represent large untapped growing e-markets. As already anticipated in Section §3.4, the decision to concentrate on this context is justified by the outstanding levels of Internet penetration and e-commerce growth recently experienced by Iran. In line with this reasoning, this study researches the Double Jeopardy pattern using two sets of data from Iran: a set of cross-sectional online survey data and a set of longitudinal online panel data.

5.3 Background and research questions

5.3.1 Double Jeopardy

Over the past five decades, researchers have extensively examined consumer behaviour and brand growth strategies (Barwise & Ehrenberg, 1984; Ehrenberg et al., 1990, 2004; McDowell & Dick, 2005; Rogers et al., 2017; Sharp, 2010; Wright & Sharp, 2001; Wright & Riebe, 2010). Notably, existing research has concentrated on exploring the relationship between a brand's market share and its loyalty level to identify which of these two aspects of brand performance has the strongest bearing on market growth. The next paragraphs analyse and critically assess some of the most prominent studies, and clarify their relevance to the aims of this study.

As discussed in Section §3.7 and presented in §Table 10, McPhee (1963) was the first scholar to highlight and discuss the Double Jeopardy pattern. His research was conducted in the radio presenters and newspaper comic strips contexts. He claimed that lesser-known brands suffer twice, as they have fewer people knowing them and fewer people buying from them. On the basis of this seminal study, Barwise and Ehrenberg's (1984) study of television channel choice in the UK and the US also provided evidence of the Double Jeopardy effect. Specifically, they examined the pattern in terms of the reach of television channels (penetration) and the average hours per viewer (frequency). They found that smaller channels, compared to larger channels, had a smaller weekly audience. Other scholars found the exact same pattern in other media/audience markets (Barwise, 1986; Barwise & Ehrenberg, 1984; Donthu, 1994; Ehrenberg, 1972; Keng et al., 1998; McDowell & Dick, 2005; Webster & Wang, 1992).

With respect to consumer buying behaviour, research documenting the Double Jeopardy pattern is abundant. For example, it has been reported in a variety of product categories such

as instant coffee (Greenacre et al., 2015; Uncles & Ehrenberg, 1990), fresh fruits and vegetables (Anesbury, Greenacre, et al., 2018), furniture (Michael and Smith, 1999), packaged goods (Ehrenberg et al., 2004), store choice (Keng & Ehrenberg, 1984), cars (Colombo & Morrison, 1989), wine (Wilson & Winchester, 2019), beer (Dawes, 2008), and cigarettes (Dawes, 2014). The pattern is also documented in other contexts capturing individual behaviours such as sports (Baker et al., 2016; Dawes, 2009) and evaluations of politicians (Ehrenberg, 1991; Kooyman & Wright, 2017; Solgaard, Smith, & Schmidt, 1998). Notably, the contexts that past studies have examined are primarily offline. With a few exceptions, the pattern is not as widely documented in online contexts. Some research of online contexts include Donthu and Hershberger's (2001) study which found that smaller (less popular) music websites and search engines are less likely to be reviewed or reused than their larger counterparts. Tarkiainen et al. (2004) documented the Double Jeopardy pattern in the context of online magazines and found that magazine websites need to create and increase their online market share to achieve more loyalty. Rogers et al. (2017) employed Twitter data to investigate the Double Jeopardy pattern and reported that larger brands have more loyalty; however, larger brands also experience more negativity. More recently, Taneja (2020) examined the relationship between usage and popularity of US websites. Their results show a relationship between the usage of the website and the number of unique users of the website, which supports the existence of the Double Jeopardy pattern, albeit less evident in some categories, such as sports and news.

Notwithstanding these initial indications of the relevance of the Double Jeopardy pattern for the analysis of online domains, scientific replication is important in the examination and interpretation of consumer behaviour models to draw implications in terms of market dynamics (e.g., in terms of attaining market growth) (Ehrenberg et al., 1990). Incidentally, this knowledge void adds to the aforementioned issues inherent to research on e-loyalty, especially studies offering indication of which strategies to pursue to enhance market performance for e-brands. The absence of clear empirical guidelines is further exarcebated by the limited breadth of empirical evidence concerning the Double Jeopardy pattern in non-Western markets such as the Middle East – two aspects that the present study concentrates on, forming a ‘double’ differentiated replication (see also Sections §3.3 and §3.4), which addresses the following research question:

RQ 3: *Do e-brands (websites) with higher purchase penetration also experience higher levels of multi-brand e-loyalty than e-brands (websites) with purchase market penetration?*

5.3.2 Deviations from the underlying pattern

Typically, analyses of the Double Jeopardy pattern also involve detection of any exceptions or deviations, based on the premise that such deviations hold theoretically and managerially relevant information (Stocchi et al., 2015). In particular, the analysis of possible deviations from the Double Jeopardy pattern yields significant implications for brand growth and brand loyalty knowledge (Nenycz-Thiel et al., 2010), which this study extends to the context of the online market to address inherent issues in e-loyalty management.

As discussed in Section §3.7, there are four known deviations from the Double Jeopardy pattern, documented primarily in the analysis of consumer buying behaviour, three of which are relevant to the present study, as follows:

- **Niche brands** typically have lower market penetration (fewer customers) and higher than expected behavioural loyalty (Kahn et al., 1988; Stocchi et al., 2015).
- **Change-of-pace brands** show medium to high penetration and lower than expected behavioural loyalty (Kahn et al., 1988; Stocchi et al., 2015).
- **Excess behavioural loyalty** is usually observed for market leaders, which show higher penetration along with higher than expected behavioural loyalty (Ehrenberg et al., 1990).

To the best of the thesis authors' knowledge, the existence of deviations from the Double Jeopardy pattern in online markets has never been investigated. Accordingly, this study also addresses the following research question:

RQ 4: *Do deviations from the Double Jeopardy pattern (e.g., niche or change of pace e-brands) exist among e-brands (or websites), and if so, what are the potential reasons for these deviations?*

5.4 Methodology

5.4.1 Data description

To addrees the research questions outlined so far, this study uses data records of Iranian customers' online purchases, based on two sets – see the information in Section §4.4.1.

5.4.2 Key measures and empirical tests

As discussed in Section §3.10, a comprehensive buying behaviour model that embraces the Double Jeopardy pattern is the Dirichlet by Goodhardt et al. (1984). The Dirichlet model specifies the probability of the repeat-purchase for a brand over a period of time (Rungie & Goodhardt, 2004; Sharp, Wright, & Goodhardt, 2002); it also helps detecting any market deviations from expected patterns such as the Double Jeopardy, which form basic norms of customer behaviour (Ehrenberg et al., 2004). Therefore, it can accurately capture loyalty patterns and brand performance (Uncles et al., 1995; Wright et al., 1998).

From an analytical point of view, the use of the Dirichlet model involves calculating and comparing a set of brand performance measures, deploying simple empirical tests to find differences between observed and model-estimated values of such measures. These comparisons are necessary to discover the 'fit' of the model and thus the 'holding' of expected empirical trends such as the Double Jeopardy pattern, along with any possible deviation. To satisfy the process described, and following the same approach as past research (e.g., Anesbury, Nguyen, et al., 2018; Stocchi et al., 2015), this study uses the Dirichlet software by Kearns (2010) and concentrates on the following measures.

In past Double Jeopardy analyses of offline buying behaviour, the critical brand performance measures considered have been: i) *brand penetration* – i.e., the proportion of customers who bought the brand compared to the total market buyers (Ehrenberg, 1988; Goodhardt et al., 1984; Greenacre et al., 2015); ii) *average purchase frequency* – i.e., a behavioural loyalty measure capturing the average number of times a customer bought from a particular brand in the product category, and implying multi-brand loyalty (Greenacre et al., 2015); iii) *market share* – i.e., the proportion of a market allocated to each brand (Stocchi et al., 2015); and iv) *share of category requirements* – i.e., the proportion of category needs/purchases satisfied by

a specific brand (Habel & Rungie, 2005). These measures are first inferred from observed data, through the following formulas, adapted for e-brands or websites:

Equation 4 – E-brand Penetration

E-brand Penetration (%) = number of e-brand buyers / number of shoppers * 100

whereby buyers are the customers that have bought a brand at least once and shoppers are potential brand customers.

Equation 5 – Average Purchase Frequency

Average Purchase Frequency = e-brand purchases / number of e-brand buyers

Equation 6 – Market Share

Market Share (%) = e-brand purchases / purchases for all e-brands in the category * 100

Equation 7 – Share of Category Requirements (SCR%)

SCR (%) = (Average Purchase Frequency / Category Buying Rate) * 100

whereby Category Buying Rate is the number of purchases of the category made by brand buyers divided by the number of brand buyers.

The same measures also form the input to the Dirichlet software. The theory requires that the software returns are then compared against their observed counterparts through the analysis of measures of errors such as Mean Absolute Deviations (MADs) and Mean Absolute Percentage Errors (MAPEs) values, and by evaluating correlations between theoretical and observed values (Ehrenberg, 1994; Scriven & Bound, 2004; Wright et al., 2002). More details of each of these tests are listed here below:

Equation 8 – Mean Absolute Deviation

$MAD = (\sum|Oj - Tj|)/g$

MAD calculates the differences between the model theoretical values and the observed values in absolute terms (Dawes et al., 2009; Hammond, East, et al., 1996).

Equation 9 – Mean Absolute Percentage Error

$MAPE = (\sum|Oj - Tj|/Tj)/\mathrm{g}$

MAPE estimates the level of the deviations in percentage (see, Driesener et al., 2017).

Correlations

Correlations give an insight into the relationship between observed and theoretical values. A higher correlation (close to +1) between the two variables indicates a logically good fit (Ehrenberg, 1994).

This study uses a combination of MAD, MAPE and correlations to address the first research question, specifically, to ascertain whether the Double Jeopardy pattern 'held' in the context of interest. To address the second research question, that is, to detect and evaluate deviations from the Double Jeopardy pattern, this study includes additional comparisons of the observed and expected values and, in line with previous research, evaluates the absolute percentage error (APE) (Wright et al., 2002) – see Equation 10:

Equation 10 – Absolute Percentage Error

$APE = ABS[(Obs - Th)/Obs)]$

An APE of 15% and more shows a deviation from the pattern, indicating that e-brands show higher or fewer levels of loyalty than expected (Wright et al., 2002; Stocchi et al., 2015). Hence, the APE of 15% or more shows the e-brand is a niche brand, if it has few buyers but higher than expected brand loyalty, or a change-of-pace e-brand, if it shows lower than predicted brand loyalty but has many buyers.

5.5 Results

5.5.1 Detecting the Double Jeopardy pattern

The analysis of the survey data returned the following results (see Table 19). Overall, the Double Jeopardy pattern emerged for three of the five product categories examined. In particular, for market penetration, the average MAPE was 16% (ranging between 7% and 26%) and the average MAD was 1% (ranging between 1% and 2%). Similarly, for the purchase

frequency, the average MAPE was 16% (ranging between 7% and 28%) and the average MAD was 1% (ranging between 0.2 and 1.0). Similar results can be inferred from the values of the correlations. For instance, the correlations between market share and penetration and the correlations between market penetration and average purchase frequency (see Table 19) show that the Double Jeopardy pattern 'held' for most categories, except banks and groceries, which revealed a correlation of 0.18 and 0.15.

For example, Table 20 shows the market penetration, average purchase frequency, share of category requirements for book websites. The Double Jeopardy pattern implies that e-brand with the highest market share will have higher penetration and somewhat higher average purchase frequency, which means more people are buying the e-brand with somewhat more loyalty (Anesbury, Greenacre, et al., 2018). In this product category, the average market share was 11%, ranging between 43% for the largest brand in the market and 1% for the smallest share brand. Fidibo had the biggest market share of 43%, with the highest penetration of 54% and an average frequency of 3.0. In comparison, Gisoom, with the lowest market share of 1%, had the lowest penetration of 4% (the fewest customers) and lower loyalty with a purchase frequency of 1.7. Moreover, the average penetration was 15%, and the average purchase frequency was 3.9 times. The average observed share of category requirement was around 44%, and the theoretical value was 57%. According to Ehrenberg (1990), share of category requirement correlations of 0.7 to 0.8 for observed and theoretical values represent a reasonably good fit. According to Driesener et al. (2017), correlations of 0.6 and above for the average purchase frequency and correlations of 0.90 and above for the market penetration metrics represent a reasonably good fit. Therefore, although there are exceptions (see Section §5.5.2), the results indicate that the observed and theoretical metrics are close, suggesting evidence of a clear Double Jeopardy pattern in these digital product categories.

Table 19. Overview of results for survey data sets

	MADs		MAPEs		MADs	MAPEs	Correlations				
	Penetr.	APF	Penetr.	APF	SCR	SCR	Penetr.	APF	SCR	MP & MS	MP & APF
Banking	1%	1.0	7%	7%	41%	81%	0.99	0.31	0.27	0.99	0.18
Books	1%	0.4	20%	16%	13%	35%	1.00	0.74	0.82	1.00	0.75
Cosmetics	1%	0.4	26%	18%	22%	50%	1.00	0.93	0.72	1.00	0.88
Home electronics & digital devices	1%	0.5	19%	28%	5%	22%	1.00	0.78	0.97	1.00	0.79
Groceries	2%	0.2	8%	7%	8%	13%	0.96	0.29	0.50	0.96	0.15
Average	1%	0.5	16%	15%	18%	40%	0.99	0.61	0.82	0.99	0.55

Table 20. Double Jeopardy pattern – books category

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
Fidibo	43	54	54	3.0	3.0	62	73	1	0.0	1	
Taghche	14	18	21	3.0	2.5	53	58	15	0.5	18	Niche
Ketabrah	13	19	20	2.7	2.5	56	57	6	0.2	6	
30Book	3	5	5	2.4	2.4	30	53	1	0.0	1	
Iranketab	2	4	3	1.8	2.4	30	52	31	0.6	24	Change-of-pace
Shahreketab	2	4	3	1.6	2.4	37	52	47	0.8	32	Change-of-pace
Gisoom	1	2	1	1.7	2.3	40	52	38	0.6	28	Change-of-pace
Average	**11**	**15**	**15**	**2.3**	**2.5**	**44**	**57**		**0.4**	**16**	
Correlation		**1.00**		**0.74**		**0.82**					

In relation to panel data analysis (see Table 21), the Double Jeopardy pattern consistently 'held' across all four years, with the partial exception for the year 2016 where the correlation between the market penetration and average purchase frequency was low – see Table 22. However, some exceptions to the persistence of the Double Jeopardy pattern over time are in line with previous research on offline contexts (Anesbury, Greenacre, et al., 2018; Driesener et al., 2017; Sjostrom et al., 2014).

Table 21. Overview of results for panel data sets

	MADs		MAPEs		MADs	MAPEs	Correlations				
	Penetr.	APF	Penetr.	APF	SCR	SCR	Penetr.	APF	SCR	MP & MS	MP & APF
Telecommunications (Y1)	2%	0.8	19%	15%	26%	51%	1.00	0.80	0.97	1.00	0.78
Telecommunications (Y2)	1%	0.3	12%	8%	17%	31%	1.00	0.71	0.96	1.00	0.67
Telecommunications (Y3)	1%	0.3	6%	8%	24%	46%	1.00	0.68	0.98	1.00	0.63
Telecommunications (Y4)	2%	0.5	14%	14%	18%	36%	1.00	0.61	0.72	0.99	0.53
Average	**2%**	**0.48**	**13%**	**11%**	**21%**	**41%**	**1.00**	**0.70**	**0.91**	**1.00**	**0.65**

Table 22. Double Jeopardy pattern – telecommunications category – Panel Data – Year 4 (2016)

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
E-brand A	71	71	74	3.8	3.7	87	93	4	0.1	4	
E-brand B	25	35	30	2.8	3.3	65	83	18	0.5	15	Change-of-pace
E-brand D	2	2	2	3.6	3.2	61	78	13	0.4	13	
E-brand C	1	3	2	2.2	3.2	38	78	43	1.0	31	Change-of-pace
E-brand E	1	1	1	2.9	3.2	72	78	8	0.3	9	
Average	**20**	**22**	**22**	**3.1**	**3.3**	**64**	**82**		**0.5**	**14**	
Correlation		**1.00**		**0.61**		**0.72**					

In relation to the results of banks and groceries categories, where the Double Jeopardy pattern did not seem to 'hold', there might be different explanations. For instance, in the bank category, there were some similarities and differences between banks regarding available services, the complexity of the user environment, design, features, etc. Similarly, in the groceries category, two of the e-brands also have physical stores, which might affect online purchase frequency. Hence, further empirical *ad hoc* cross-examinations are needed to explore these categories. Nonetheless, considering the Dirichlet model estimates and relevant comparison between observed and theoretical measures, the results revealed a close correspondence for all key measures of interest. Specifically, the average correlations were of equal or greater than 0.9 and equal or greater than 0.6 for the market penetration and average purchase frequency metrics, respectively. Moreover, according to Anesbury et al. (2020), a lower MAD and MAPE along with a positive correlation represent a satisfactory model fit (see Table 19 and Table 21). The only partial exception is the share of category requirements, for which differences between observed and theoretical metrics were more substantial. However, according to Scriven and Bound (2004), the Dirichlet model might provide less robust evaluations for this measure.

5.5.2 Deviations

In line with Wright et al. (2002) and Stocchi et al. (2015), this study considers deviations higher or lower than 15% from Dirichlet forecasts for classifying e-brands as niche or change-of-pace, respectively (see Table 23). Survey data analysis revealed four deviations, as follows. In the books category, the e-brand Taghche showed higher than expected purchase frequency and performs as a niche brand. In comparison, Shahreketabonline, Iranketab, and Gisoom (APE of 47%, 31% and 38%, respectively) all showed lower than expected brand loyalty and thus are classed as change-of-pace e-brands.

In the telecommunications category (e.g., Year 4 – 2016), there were two deviations. Both e-brands B and C showed lower than expected brand loyalty, with the APE of 18% and 45%, thus performing as change-of-pace brands (see, again, Table 23).

Table 23. Summary of deviations from the Double Jeopardy pattern for both data sets

E-brands	Market Penetration (%)	Purchase Frequency		APEs (%)	
		O	T		
Survey Data					
Books					
Taghche	18	3.0	2.5	15	Niche
Iranketab	4	1.8	2.4	31	Change of pace
Shahreketabonline	4	1.6	2.4	47	Change of pace
Gisoom	2	1.7	2.3	38	Change of pace
Banking					
Tejarat	11	12.2	14.4	18	Change of pace
Cosmetics					
Khanoomi	6	1.8	2.5	39	Change of pace
Roja	5	1.8	2.4	33	Change of pace
Mootanro	5	1.7	2.4	41	Change of pace
Home electronic & digital devices					
Baneh	3	2.1	1.7	19	Niche
Alldigital	1	2.9	1.6	45	Niche
Panel Data					
Telecommunications (Year 1)					
E-brand B	15	4.3	5.0	16	Change of pace
E-brand C	8	3.0	4.9	63	Change of pace
Telecommunications (Year 3)					
E-brand B	16	2.8	3.4	20	Change of pace
Telecommunications (Year 4)					
E-brand B	35	2.8	3.3	18	Change of pace
E-brand C	3	2.2	3.2	45	Change of pace

Overall, the results in Table 23 show that, on average, across both data sets and six online product categories, only 12 e-brands deviated from the Double Jeopardy pattern. In detail, out of the 33 e-brands examined, about a third of the e-brands were change-of-pace, and three were niche e-brands. Moreover, in one product category for the survey data (groceries) and one year of panel data (year 2) no deviations were detected. These results are in line with past studies conducted in offline domains, albeit revealing a prevalence of change-of-pace brands rather than niche brands. For instance, Anesbury, Nguyen, et al. (2018) investigated the consumption of healthy and less healthy food brands across three years and five product categories. They found 33% of brands to be niche, and 25% to be change-of-pace.

Possible explanations for the results obtained are as follows. The existence of niche or change-of-pace brands is often linked to market competition strategies such as linking brands to specific usage situations vis-à-vis 'matching' offerings by other brands within the same product category (Kahn et al., 1988). For instance, according to Scriven et al. (2017), there might be some functional differences highlighted in the promotion of brands with niche characteristics. In the data examined in this study, taking the books product category as example, Taghche uses the ePUB format of the e-books, making their books much easier to read. It also provides the

flexibility of reading the books both on the website and mobile application. In comparison, Fidibo's e-books are only readable in the mobile application. Moreover, Kahn et al. (1988) stated that change-of-pace brands are often bought as a result of variety-seeking, and consumers often return to more popular brands when they fulfill their desire for change. Therefore, to attract buyers, change-of-pace brands typically need more price promotion (Kahn et al., 1988). This can be seen in the result of the panel data deviations. Specifically, according to the supplementary information available within the data sets, websites B and C consistently used Google Ads across all four time periods to attract more buyers. However, while these websites would be among the first results of the Google search engine, the buyers would return to their normal websites for purchase after trying different websites, explaining the lower than expected purchase frequencies of B and C websites.

5.6 Brief discussion

This study is among the first studies to theoretically and empirically evaluate the presence of Double Jeopardy in the online context in a non-Western country, examining popular product categories typically investigated in offline domains. Moreover, while over the last three decades, deviations from the Double Jeopardy pattern have been thoroughly evaluated in empirical marketing research, and the majority of the studies on Dirichlet theory acknowledge the existence of some deviations, no prior research has explored deviations from the Double Jeopardy pattern in the online market. Therefore, this study contributes to the theoretical, methodological and practical understanding of the Double Jeopardy pattern in digital domains.

In more detail, the results of this study shed light on an important question: in multi-brand e-loyalty scenarios, do websites with higher market penetration experience higher behavioural loyalty than smaller e-brands in the same product category? In brief, the answer is yes. The results show that the e-brands investigated across six different categories (except some e-brands in the bank category and groceries category) display levels of loyalty in a classic Double Jeopardy pattern, as determined by the size of their customer base rather than the level of (multi-brand) e-loyalty. At the same time, there are also some deviations from the Double Jeopardy pattern in some categories. These outcomes are particularly important, as they confirm that a brand growth originates from increasing the customer base, rather than from focusing on customer loyalty to the brand (see also Trinh et al., 2017).

The resulting theoretical and managerial implications of these outcomes, discussed in more detail in Chapter 7, can be summarised as follows.

5.6.1 Theoretical implications

This study established important conceptual links between the literature on e-loyalty and the wide array of knowledge of the Double Jeopardy pattern and its possible deviations. In the last three decades, e-commerce development has introduced a variety of different experiences for customers, with companies across various industries firmly motivated to attract and retain more customers than ever before. As e-commerce continues to undergo rapid changes and uncontrollable growth impacted by relatively low entry barriers, building and nurturing e-loyalty and online customer relationships are getting more difficult. Yet, scholarly research on e-loyalty is far from conclusive, featuring numerous issues such as the prevalent focus on attitudinal loyalty and excessive reliance on composite measures of single-brand e-loyalty that do not correspond real-life scenarios. Based on these premises, the original theoretical contribution that this study makes is twofold. First, while numerous academic research has been conducted to investigate the market growth through unique brands attributes (e.g., Bucko et al. 2018; Chang 2011; Christodoulides & Michaelidou 2011; Fang et al. 2018; Fuentes-Blasco et al. 2010; Sethi et al. 2018; Yaraş et al. 2017) and attitudinal loyalty (e.g., Almeida-Santana & Moreno-Gil 2018; Ramaswami & Arunachalam 2016), little research has examined the relationship between a website's market share and behavioural e-loyalty. The Double Jeopardy pattern states that brand growth results from growing size of a brand, rather than improving long term relationships with customers. In this regard, this study reveals how websites compete in terms of the number of customers who buy from the brand and how often they buy it. Hence, it illustrates the conceptual and practical implications of the notion of multi-brand e-loyalty – a new marketing concept that this thesis introduces.

A second contribution of this study concerns its 'double' differentiated replication nature. Specifically, to the best of the thesis author's knowledge, very few studies have empirically examined online behavioural loyalty (Rogers et al., 2017), especially in non-Western contexts such as Middle-Eastern countries. Hence, this study extends the body of empirical knowledge dedicated to the Double Jeopardy pattern, expanding what exists in the literature currently to the digital domain and a new geographical context (i.e., Iran, a growing Middle-Eastern digital market).

5.6.2 Managerial implications

This study yields some important managerial implications that can enable e-brands' managers to develop superior strategies, based on empirically-derived insights for strengthening market performance. Firstly, the study highlights the crucial role of an e-brand's market size. The existence of the Double Jeopardy pattern in the online context shows that managers should not only focus on strategies that aim to improve their relationship with a small number of customers who buy more often, which is unlikely to be successful. They should emphasise marketing strategies aimed at increasing market size via attracting more e-brand buyers. This clear empirically-derived strategy is novel to the digital domain and Middle-Eastern markets, yet perfectly aligns with non-digital Western domains. For instance, Riebe (2003) examined the dynamics of the customer base growth in different offline product categories (e.g., pharmaceuticals, FMCGs and banks) and found that growth was almost completely due to exceptionally high customer acquisition. This study echoes this conclusion and clearly suggests that, even in digital domains, managers need to focus more on customer acquisition strategies rather than long-term customer relationship strategies (see also Sharp, 2010).

Secondly, small share e-brand managers can appreciate that having a lower customer loyalty than more popular e-brands is not a concern (Baker et al., 2016; Zachary, Yolanda, & Svetlana, 2018); it is simply a reflection of an underlying classic Double Jeopardy trend, which can be overcome by concentrating, again, on the acquisition of more online buyers rather than investing resources in enhancing behavioural e-loyalty for existing customers. Furthermore, there is value for marketing practitioners in the detection and evaluation of deviations from the Double Jeopardy pattern. Specifically, detecting those deviations would help managers ascertain the impact on brand performance of bespoke strategies such as functionality, segmentation, distribution strategies, communications, price promotions and advertising (Fader & Schmittlein, 1993).

5.7 Study summary

This study confirmed the existence of the Double Jeopardy pattern in the online market with the empirical analysis of two large sets of data from Iran (panel data and survey data) and six online product categories. As outlined, the rationale for this study is based on problems inherent to e-loyalty literature (discussed in Chapter 2) and the absence of differentiated replications of

the Double Jeopardy in online domains and non-Western contexts (outlined in Chapter 3). The study also explicitly investigated potential deviations from the Double Jeopardy pattern across websites, which is currently missing in the few extant studies on this marketing empirical generalisation. Accordingly, meeting the thesis objectives, this study enhanced the knowledge of multi-brand e-loyalty in two powerful ways. First, it revealed the relationship between a website's market share, purchase frequency and behavioural e-loyalty. Second, the study introduced a classification of e-brands (e.g., niche or change-of-pace e-brands), which can help with the evaluation of the effects of common online marketing strategies.

Limitations and future research directions for this study are presented in Chapter 7.

6 CHAPTER SIX: STUDY 3 – PARETO LAW

Relevance to the thesis objectives	***Study 3*** *facilitates the achievement of the thesis objectives by i) investigating the concentration of 'heavy' and 'light' online buyers, as determined by their level of behavioural loyalty (frequency of purchases for a given e-brand); and, accordingly, ii) by discovering the share of contribution to sales of these different customer segments.* *As such, Study 3 demonstrates the level of detail of strategic market analyses that can be performed based on the notion of multi-brand e-loyalty.*

6.1 Study abstract

This study examines the distribution of purchase frequencies by Iranian online buyers of six product categories, using two sets of data (one set of online survey data and one set of online panel data). Specifically, it explores the concentration of online buyers based on the *frequency of e-brand buying*, a key measure of behavioural loyalty that distinguishes the impact on sales of *'heavy' (frequent) online buyers* and *'light' (infrequent) online buyers*. The analysis is based on an established marketing empirical generalisation, the *Pareto Law*. It is also based on the use of the *Negative Binomial Distribution* (NBD), a statistical model robustly capturing the frequency of buying for different customer segments. The results show that, in line with past research on offline buying behaviour, the share of contribution to sales for the e-brands (or websites) by the most loyal online buyers is approximately 40/70 – i.e., 'heavy' buyers contribute to between 40% and 70% of an e-brand sales. Hence, marketing strategies aimed at attracting more 'light' online buyers and growing an e-brand purchase penetration are more viable than tactics aimed at enhancing the purchase weight of online shoppers. Besides advancing the literature on e-loyalty and marketing research on the Pareto Law by extending it to online markets, the results of this study help managers choose appropriate marketing strategies that can assist market survival and growth in the digital field.

Keywords*: e-loyalty; NBD model; Pareto Law; online buying*

6.2 Study introduction and rationale

According to Binet and Field (2007), most marketers believe in the economic benefits of increasing brand loyalty rather than market penetration (the authors examined 880 different advertising campaigns and discovered that brand loyalty-boosting strategies are employed 60% more than penetration-boosting strategies). However, marketing research linked to stochastic models of buying behaviour (Ehrenberg et al., 2004; Goodhardt et al., 1984; Sharp et al., 2012) and key empirical generalisations such as the Duplication of Purchase (Anesbury, Greenacre, Wilson, & Huang, 2018; Ehrenberg, 1988; Lam, 2006; Romaniuk & Dawes, 2005; Sharp, 2010; Sharp & Sharp, 1997, see Chapter 4) and the Double Jeopardy (Anesbury, Greenacre, et al., 2018; Barwise & Ehrenberg, 1987; Dawes, 2008, 2014; Ehrenberg, Goodhardt, & Barwise, 1990; McDowell & Dick, 2005; Wright & Riebe, 2010, see Chapter 5) points to increasing purchase penetration as the most effective pathway to brand growth (Sharp, 2010). In particular, empirical evidence clearly indicates that improving brand performance by means of attracting more customers is more beneficial than striving to enhance brand loyalty (see also Romaniuk & Wight, 2014).

The marketing literature highlights two contrasting strategies to grow brand sales: increasing market penetration (getting more customers) *or* increasing behavioural brand loyalty (getting current customers to buy more items, or to purchase more frequently). Although not explicitly discussed in the literature on *e-loyalty* (i.e., a customer's positive attitude toward the website that results in repetitive visits and buying behaviour, see Srinivasan et al., 2002), the debate sorrounding the implications and effectiveness of these two strategies is very relevant to the fast-growing domain of online purchase behaviour. Accordingly, the present study explores these two contrasting strategies in the context of online buying for the Iranian market.

To evaluate the effectiveness of these contrasting strategies, it is necessary to appraise the composition of a brand's customer base, identifying different segments based on key indicators of behavioural loyalty such *purchase weight* – i.e., distinguishing between *'light'* and *'heavy' brand buyers* based on the frequency of brand purchasing (Anesbury, Talbot, Day, Bogomolov, & Bogomolova, 2020; Ehrenberg et al., 2004; Habel, Rungie, Lockshin, & Spawton, 2003; Morrison & Schmittlein, 1988; Rungie, Laurent, & Habel, 2002). One of the most common ways to identify these segments entails drawing upon the empirical benchmarks of the *Pareto Law*'s share (Romaniuk & Wight, 2014). The Pareto Law is a recurring purchasing behaviour pattern that has been investigated with the primary aim to better understand and estimate the

concentration of sales amongst customer segments (Anesbury, Jürkenbeck, Bogomolov, & Bogomolova, 2020; Habel, Driesener, Rungie, & Jarvis, 2003; Sharp et al., 2019). In brief, the Pareto Law states that 80% of the company's sales originates from the top 20% of its customers (Mantrala et al., 2009; Reibstein & Farris, 1995; Reynolds, 2002; Sanders, 1987). On this basis, for many years, there has been a strong focus on identifying frequent buyers and serving them as the company's most valuable customers (Clancy & Shulman, 1994; Koch, 2016). However, literature on marketing empirical generalisations has consistently highlighted that, in reality, the Pareto Law's share is not sharply 80/20; it is closer to a 60/20 or 70/20 ratio (Anesbury, Talbot, et al., 2020; Kim, Singh, & Winer, 2017; McCarthy & Winer, 2019; Rungie et al., 2002; Schmittlein, Cooper, & Morrison, 1993; Sharp, 2010). In accordance with these previous findings, the present study aims to appraise the Pareto Law's share in different online product categories and, more specifically, to empirically verify the contribution to an e-brand sales by its top 20% or 'heaviest' (most frequent buyers) online customers.

Evaluating the extent to which 'light' and 'heavy' buyer segments contribute to brand sales can assist managers setting strategies to effectively distribute the focus of their marketing activities (Chrysochou, Lockshin, Habenschuss, & Trinh, 2011). Yet, surprisingly, there are few studies that have empirically examined the Pareto Law in the offline context (e.g., Anesbury et al., 2018; Anesbury et al., 2020; Habel et al., 2003; McCarthy & Winer, 2019; Sharp, 2010; Sharp et al., 2019). Furthermore, empirical research investigating the Pareto Law in relation to online buying behaviour is very scarce. This is concerning since in recent years, with the rise of online retailing, many brands try to grow sales by executing the commonly used 'offline' marketing strategies without clearly understanding whether these strategies are efficient in the online domain (Lim & Lee, 2015). Moreover, the number of Internet users worldwide has reached almost five billion (Internet World Stats, 2020b) and more than two billion people are expected to buy products and services online in 2021, spending over 3.5 trillion USD (Statista, 2020b). In this vast, global online market, competing brands are only a few clicks away from each other (Srinivasan et al., 2002), which logically implies high levels of *brand switching* – i.e., the process when customers replace one product or brand with another within the same category because of dissatisfaction or to gain more advantages (Appiah, Ozuem, Howell, & Lancaster, 2019; Kumar & Chaarlas, 2011), with *multi-brand loyalty* – i.e., the repurchasing of more than one brand within the same category (Arifine et al., 2019; Dawes, 2008), becoming 'the norm'. Hence, a better understanding of the Pareto Law's benchmarks in the online domain is vital.

In addition to the above, it is worth considering that e-loyalty literature has approached the analysis of customer segments from the angle of online loyalty programs (Chaudhuri, Voorhees, & Beck, 2019; Ivanic, 2015; Lewis, 2004; Wang, Hao, Zhou, Wetzstein, & Wang, 2019; Zhang & Breugelmans, 2012). However, Chen et al. (2021) contend that more research is warranted, since extant studies mainly focus on 'heavy' online buyers (frequent online shoppers), neglecting to evaluate the economic impact of infrequent or 'light' online customers. Similar arguments and issues can be detected in the scholarly and industry-based research advocating for the existence of a *marketing funnel*, distinguishing online buyers along a path to conversion to sales on the basis of awareness, consideration, purchase intent and satisfaction (Colicev, Kumar, & O'Connor, 2019; de Haan, Wiesel, & Pauwels, 2016; Kaila, 2020) and, accordingly, outlining *attribution strategies* for the allocation of marketing resources (Danaher & van Heerde, 2018; Kakalejčík, Bucko, & Resende, 2021; Romero Leguina, Cuevas Rumín, & Cuevas Rumín, 2020). Consequently, empirical research discovering the distribution of heavy and light buyers of e-brands via Pareto Law analysis is highly relevant and, as this study demonstrates, yields significant theoretical and managerial value. Above all, as this study shows, a Pareto Law analysis offers much needed empirical guidelines to infer the viability of alternative marketing tactics based on attracting more 'light' online buyers vs. curating relationships with the 'heaviest' or most loyal online customers.

To further extend its contribution, besides concentrating on the online domain, this study explores a geographical context currently under-investigated in extant research on marketing empirical generalisations such as the Middle East. Hence, the present study is configured as a 'double' *differentiated replication* (Ehrenberg & Bound, 1993) of the Pareto Law analysis across different product categories and conditions, using two sets of data from Iran (a longitudinal panel and a multi-category set of survey data recording claimed or recalled purchase behaviour).

6.3 Background and research questions

6.3.1 The Pareto Law in marketing

In 1906, Italian economist Vilfredo Pareto found that 80% of the peas in his garden grew from 20% of the pea pods he planted. Out of curiosity, he examined whether the same 80/20 proportion also applied to economics and, accordingly, he investigated land ownerships in

Italy. He found that 20% of the population owned 80% of the land, confirming the robustness of what was then labelled as *Pareto Law*.

Since Pareto's (1906) study, the Pareto Law's 80/20 share has been generalised to relevant marketing contexts, including consumer buying behaviour and brand loyalty, albeit revealing shares other than the standard 80/20. For example, Twedt (1964) investigated the distribution of buyers for 18 FMCGs categories, revealing that, in each market, between 10% and 25% of sales originates from 'light' (infrequent) buyers, whereas 'heavy' (frequent) buyers contributed between 75% and 90% of the sales. Other researchers found the Pareto share to be closer to 60/20 (Jarvis, Rungie, & Lockshin, 2003; Rungie, Laurent, & Habel, 2002; Sharp, 2010; Sharp et al., 2019). For instance, Schmittlein, Cooper, and Morrison (1993) examined the distribution of light and heavy brand buyers, adding the non-buyers segments to the analysis and exploring Pareto Law shares using the Negative Binomial Distribution (NBD), a well-known mathematical model accurately depicting behavioural brand loyalty and the weight of brand purchases for different customer segments (Goodhardt et al., 1984). They also examined the Pareto Law's shares over time. The results revealed that the contribution to sales of heavy buyers is, on avereage, approximately 70%. They have also shown that the distribution of heavy and light buyers will change by increasing the time period of reference. The same results emerged in subsequent research based on different product categories. In more detail, as Table 11 (see Section §3.9) presents, scholars investigated 'new' product categories such as beer, wine and spirits (Cullen Habel, Rungie, et al., 2003), more FMCGs markets (Graham et al., 2017; Kim et al., 2017; Sharp & Romaniuk, 2016), clothing (Brynjolfsson, Hu, & Simester, 2011) and fresh fruits and vegetables (Anesbury et al., 2020). For instance, Jones' (2006) analysis of 12 FMCG categories found that the contribution of the heavy buyers (top 20%) was 55%. In 2007, Sharp and Romaniuk investigated the US market across 17 categories and observed a Pareto ratio of 59%. More recently, McCarthy and Winer (2019) examined the Pareto share over two years and found that to be 67%, which was higher than the previous studies that investigated only one year. Therefore, the existing literature confirms that heavy buyers contribute to sales, but the share is not 80%; hence, light buyers should not be ignored.

Relevant to the aims of this thesis (see Section §3.9) and of the present study, Sharp (2010) argued that marketers often employ the Pareto Law to establish strategies to improve market performance of brands. However, many marketers base their reasoning on the original 80/20 Pareto Law's share, ignoring the aforementioned empirical research demonstrating the

prevalence of a 60/20 ratio. That is, many managers concentrate on the 'heavy top' of a brand's customer base, focusing resources and marketing tactics on the heavy buyers of the brand. The excessive focus on highly loyal customers is not sensible, considering that ample empirical research has confirmed that the majority of a brand buyers are, in fact, light buyers (80% of the customer base purchases the brand just once over a given time period) as a result of *multi-brand buying* – i.e., the customers preference to buy from more than one brand within the same category (Ehrenberg, 2000; Ehrenberg & Goodhardt, 1970; Felix, 2014), yet contribute to near 40% of the brand sales (Anesbury, Talbot, et al., 2020; Jarvis et al., 2003; Jones, 2006; Rungie et al., 2002; Sharp, 2010; Sharp et al., 2019).

6.3.2 Distribution of online buying frequency

Regarding the online domain, only a limited number of studies have empirically explored the Pareto Law. Notably, previous studies have mainly focused on product category-level analyses based on the 'Long Tail' phenomenon (Brynjolfsson, Hu, & Smith, 2003; Brynjolfsson et al., 2011; Elberse & Oberholzer-Gee, 2007). For instance, Brynjolfsson et al. (2003) investigated the Long Tail phenomenon on the Internet and found that a high share of online sales came from the niche products that were not available in the offline channels. In another study Brynjolfsson et al. (2011) examined the role of price and its effect. They analysed the sales of a multi-channel retailer and investigated both online and offline channels with the same product availability and prices. They found that, compared to the offline market, sales distribution is less concentrated online. They also recognised that the increase in the share of the niche products in the online market is related to the customers using Internet search tools (e.g., search engine recommendations). Jung, Kim, and Chan-Olmsted (2014) investigated the levels of concentration in the usage of mobile apps across five different categories (communications, social media, news, entertainment and games). The results showed that in four out of the five categories examined the top 20% of apps accounted for a very high proportion of the total time spent using apps – e.g., 97.7% of total time spent in the communication category, followed closely by the social media category (94.8%), the news category (92.8%) and the entertainment category (81.5%).

More broadly, in the last three decades, e-loyalty research has focused on marketing strategies that target heavy buyers, such as loyalty programs (Chaudhuri, Voorhees, & Beck, 2019; Ivanic, 2015; Lewis, 2004; Wang, Hao, Zhou, Wetzstein, & Wang, 2019; Zhang & Breugelmans, 2012). However, the effectiveness of online loyalty programs is highly debatable

(Zhang & Breugelmans, 2012), due to divergent empirical findings. For example, some researchers found positive effects (e.g., Bolton, Kannan, & Bramlett, 2000; Kopalle et al., 2009; Lal & Bell, 2003; Leenheer, van Heerde, Bijmolt, & Smidts, 2007; Lewis, 2004; Taylor & Neslin, 2005), while others did not find any effects (e.g., Mägi, 2003; Sharp & Sharp, 1997). Moreover, some scholars contend that loyalty programs no longer offer a competitive advantage in domains where all brands offer similar promotions, such as online retailing (Dowling & Uncles, 1997; Singh, Jain, & Krishnan, 2008). As a result, additional research is required to explore the Pareto Law with respect to the distribution of online buying behaviour.

Researchers have also drawn upon the *marketing funnel* concept to understand and influence online buying behaviour. The marketing funnel model is based on four stages: *awareness*, *consideration*, *purchase intent*, and *satisfaction* (De Haan et al., 2016). It starts with potential online customers becoming aware of the brand's existence. Next, it moves to consideration, which entails the potential online customers becoming willing to buy the brand. Then, the next stage of the funnel signals a clearer purchase intent, which indicates that online customers have a mental commitment toward the brand underpinning a purchase decision. Finally, the funnel terminates with customer satisfaction, which captures post-purchase experiences. In line with this reasoning, it has been argued that customers more or less consciously 'reduce' the number of alternatives to choose from, as they advance from the top to the bottom of the funnel (Jang, Lee, Lee, & Hong, 2007). Marketing research and practice often propose *attribution models* to define efficient strategies across various types of marketing channels and the budgets to be allocated to those channels (e.g., search engine, social media, etc.) to influence online customers decisions (e.g., Li & Kannan 2014; Danaher & van Heerde, 2018; Romero Leguina et al., 2020). An attribution model is a tool that "is a set of rules defined to attribute the success of a conversion across the different marketing events, i.e., ads shown to the user prior to the conversion. These events are referred to as touchpoints, and the whole set of them is referred to as user path." (Romero Leguina et al., 2020, p. 1).

The combination of a growing 'hype' around the marketing funnel and 'paths' to online sales conversion, together with the increasing availability of complex attribution models, has led to contrasting beliefs about the most viable marketing tactics (Danaher & van Heerde, 2018). For example, some researchers argued that marketers need to put more effort at the start to create awareness to 'push' potential customers to the bottom of the funnel (William, 2019). Likewise, the industry is often overly concerned with 'closing the deal' and over-investing on the

'bottom' of the marketing funnel via intrusive *re-marketing* tactics, – i.e., a process of keeping the previous customers and retargeting them by displaying advertisements through different channels to encourage them to buy again (Arya, Sethi, & Paul, 2019; Gürbüz, Ayar, & Yeğğn, 2016). However, Bonchek and France (2014) asserted that since online customers can access information from anywhere, seven days a week, twenty-four hours a day, the interval between the first three marketing funnel stages (awareness to buy) is only a few seconds. Thus, customers can easily switch between different websites or e-brands and are not loyal to just one specific website or e-brand. As a result, they might enter the funnel at any stage or go back and forth between stages (Bonchek & France, 2014). Moreover, despite the broad recognition of the marketing funnel in marketing research and practice (Howard & Sheth, 1969; Young, Weiss, Stewart, 2006), there are concerns about its robustness for setting strategies aimed at influencing online buyer behaviour, especially in terms of accurately depicting the decision-making process (Jansen & Schuster, 2011).

To remedy the issues discussed so far, this study expands the analysis of purchase weight for different customer segments via evaluating the Pareto Law's shares to the appraisal of online buying behaviour in an underexplored geographical area (Iran, an example of a Middle-Eastern country). Accordingly, this study makes a twofold contribution to marketing literature: i) it introduces the collection of marketing empirical research on the Pareto Law to e-loyalty literature, addressing the aforementioned problems concerning loyalty programs and the marketing funnel; and ii) it expands literature on this important empirical generalisation.

The basic tenet of the Pareto Law suggests that slightly more than half a brand's sales come from the top 20% of the brand's customers, and the remaining sales come from the bottom 80% of the customers. However, despite the general belief that 80% of the company's sales originate from the top 20% of its customers (Mantrala et al., 2009; Reibstein & Farris, 1995; Reynolds, 2002; Sanders, 1987), the literature has found that in reality, the share is closer to 60/20 ratio, and varies over time and product categories (Anesbury, Talbot, et al., 2020; Kim et al., 2017; McCarthy & Winer, 2019; Rungie et al., 2002; Schmittlein et al., 1993; Sharp, 2010). Regardless, it is possible to predict the share of contribution to sales by different customer segments identified by their purchase weight by using statistical distributions such as the Negative Binomial Distribution (NBD) (see Schmittlein et al., 1993). In light of these past findings, this study addresses the following research questions:

RQ 5a: *What is the typical contribution to an e-brand sales of light vs. heavy online buyers?*

RQ 5b: *To what extent does the contribution to sales of light vs. heavy online buyers vary across different online markets?*

RQ 5c: *To what extent does the contribution to sales of light vs. heavy online buyers vary over time?*

RQ 6: *How accurately does the Negative Binomial Distribution (NBD) predict the frequency of e-brands purchases?*

6.4 Methodology

6.4.1 Data description

This study uses two data sets collected from Iranian online buyers: a set of online survey data, and a set of longitudinal online panel data. For more details about both sets of data, see Section §4.4.1.

6.4.2 Key measures and empirical tests

6.4.2.1 Analysis of concentration of sales for different online customer segments

In order to address RQ5a, in line with past research (e.g., Anesbury, Talbot, Day, Bogomolov, & Bogomolova, 2020; Kim et al., 2017), this study estimates the proportion of total sales originating from the top 20% customers of each e-brand or website (i.e., heavy buyers) and the bottom 80% of customers of each e-brand or website (i.e., light buyers), utilising the following formula for the Pareto Law's share, derived from the *observed* data:

Equation 11 – Pareto Law's share

Pareto Law's share = Total sales from the top 20% of e-buyers / Total sales from all e-buyers

The same formula will be used to compare multiple product categories and overtime changes, answering RQ5b and RQ5c.

Existing studies have also compared observed values of the Pareto Law's share against theoretical estimates derived by statistical distributions known to accurately mimic buying

behaviour (Anesbury, Talbot, et al., 2020; Driesener, Banelis, & Rungie, 2017; Goodhardt, Ehrenberg, & Chatfield, 1984; Uncles, Wang, & Kwok, 2010).

In the case of the Pareto Law, as mentioned previously, seminal studies used the Negative Binomial Distribution (NBD) to compare observed and theoretical purchase weights for different customer segments. The NBD is a mathematical model, which combines two underlying patterns in the frequency of occurrence of random events: the poisson process (capturing the as-if random nature of a given event) and the gamma distribution (capturing the frequency of a given event) (Morrison & Schmittlein, 1988). In buying behaviour, it accurately predicts repeat brand purchase and the underlying distribution of purchase frequencies (Morrison & Schmittlein, 1988). The accuracy of predictions can be attained via estimating the NBD model's key parameters, inputting observed figures of market penetration and average purchase frequency for a given brand using the means and zeroes method (Morrison & Schmittlein, 1988). The process then returns equivalent theoretical values for these metrics, which can be compared using standard measures of errors in a similar fashion to broader analytical methods used for the Dirichlet model (Anesbury, Nguyen, et al., 2018; Driesener et al., 2017; Sharp et al., 2012). In line with extant research, fitting the NBD model to a set of observed purchase frequencies implies assuming online purchasing to be a stable event, and future purchase patterns to be predictable (Anesbury, Talbot, et al., 2020; Goodhardt et al., 1984). Accordingly, it is necessary to benchmark observed and theoretical values by evaluating the 'goodness of fit' of the NBD. Ehrenberg (1988) stated that statistical distributions such as the NBD provide a 'good fit' to model observed buying behaviour if the observed values and the theoretical values are similar. In recent years, different types of statistics have been used in evaluating the fit of the NBD model, such as correlations, Mean Absolute Deviation values (MADs) or the Mean Absolute Percentage Error (MAPE) (Anesbury, Talbot, et al., 2020; Trinh & Lam, 2016). However, according to Anesbury, Talbot, et al. (2020), currently, there are no accepted benchmarks for NBD showing a good fit of the model in the same way as the accepted Driesener benchmarks for the Dirichlet (2017). Therefore, while this study acknowledges that Driesener et al. (2017) benchmarks apply to Dirichlet, it adopts a similar benchmark for NBD when comparing the observed and the theoretical values. To do so, this study embraces the work of Driesener et al. (2017), who proposed an eight suite of goodness-of-fit statistics and benchmarks to evaluate the Dirichlet estimates (see Table 24). However, there will only be four tests in this study, not eight, as this

study only compares the observed purchase frequency and theoretical values. Also, while there are no NBD benchmarks, lower is better for three of the four, and higher correlation is best.

Table 24. Dirichlet model fit benchmarks (Driesener et al., 2017)

	Method	Fit benchmark
Penetration	Correlation	≥0.9
	AVE (%)	≤5%
	RAAE	≤15%
	MAPE	≤20%
Purchase frequency	Correlation	≥0.6
	AVE (%)	≤10%
	RAAE	≤20%
	MAPE	≤20%

Accordingly, to address RQ6 and to identify if the model accurately shows the distribution of online purchasing, the study employs four methods including correlation, MAPE, RAAE and AVE (%) measures to examine the fit of the NBD model, using the following methods:

Correlations

Correlations is the first model's fit examination in this study (see Section §5.4.2).

Mean Absolute Percentage Error (MAPE)

The final method is the Mean Absolute Percentage Error (see Equation 9, Section §5.4.2).

Equation 12 – Relative average of the metrics (RAAE)

$RAAE = (\sum O_j - \sum T_j / \sum Oj/)$ x 100

Driesener et al. (2017) claimed that AAE has been utilised as the preferred measure in the literature for the model evaluation, as it tests the level of the deviations reported in absolute terms. However, the AAE does not account for the underlying metric scale and only reports the absolute value, which is problematic, as the scores of purchase frequency and penetration differ considerably between product categories (Wright et al., 2002). Therefore, Driesener et al. (2017) suggested the Relative AAE measure as a solution to this issue to provide an inter category standard and consider the scale of the underlying metric (see also Armstrong, 2001).

Equation 13 – Comparison of averages (AVE)

$$AVE\ (\%) = (\sum O_j\ -\ \sum T_j\ /\sum Oj) \text{ x } 100$$

The second method is comparing averages. Comparing the average of the observed and theoretical values provides an evaluation of any aggregate bias between those values (Driesener et al., 2017).

6.5 Results

6.5.1 Pareto Share

In relation to the analysis of the survey data, Table 25 outlines the observed percentage of sales derived from the top 20% of online buyers in the books category. The average Pareto Law's shares vary from 31% (Shahreketabonline) to 56% (30Book). Hence, it shows that 20% of the top buyers of a book category contribute on an average of 45% of its sales.

Table 25. The Pareto Law's shares of books category e-brands

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	Light Buyers
Fidibo	53	47
Taghche	55	45
Ketabrah	49	51
30Book	56	44
Iranketab	41	59
Shahreketabonline	31	69
Gisoom	33	67
Average	**45**	**55**

The same analysis was extended to all four product categories. Table 26 shows the average Pareto Law's ratio for heavy and light buyers across all categories, revealing results that are far from the conventional 80/20 rule. In more detail, by examining the top 20% of e-brands in each category, the results did not reach anywhere near 80% of the sales, but only near 50%, which is much the same as past studies on offline buying behaviour (Anschuetz, 2002; Habel, Rungie, Lockshin, & Spawton, 2003; Jones, 2006; Sharp, 2010). Significantly, the results confirm the importance of light buyers. Thus, it is not reasonable to ignore the 80% of the buyers who contribute to the remaining 50% sales.

Table 26. The Pareto Law's shares of survey data categories

E-categories	Pareto Law's Share (%)	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
Books	45	55
Banking	39	61
Cosmetics	47	53
Home electronic & digital devices	52	48
Groceries	50	50
Average	**46**	**54**

Since researchers have also discussed the influence that time would have on the Pareto Law's share (Anesbury, Greenacre, Wilson, & Huang, 2018; Rungie et al., 2002), this study explored the results of the telecommunications category (panel data), comparing the Pareto Law's shares over multiple time periods.

Table 27 displays the Pareto Law's shares for the telecommunication websites in 2016. It demonstrates that the top 20% of buyers (heavy buyers), on average accounted for 68% of the sales that year. The shares range from 60% (e-brand C) to 73% (e-brand D).

Table 27. The Pareto shares of telecommunications category e-brands – Panel data – Year 4 (2016)

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
E-brand A	72	28
E-brand B	66	34
E-brand C	60	40
E-brand D	73	27
E-brand E	69	31
Average	**68**	**32**

The same approach was adopted for the three additional years (see Table 28). The results across all four years returned an average contribution of 70% for the top 20% of buyers. This outcome confirms that, even taken into account over time variations, the contribution of the heavy buyers is not as high as 80%. Accordingly, the findings show that the traditional Pareto Law's share (80/20) does not hold for the online markets category and confirms the importance of light buyers. Furthermore, the results are very close to the results of Habel, Rungie, et al. (2003)

and Chrysochou et al. (2011) in the wine category (offline market), where the share of contribution to sales ranged between 75% and 69% in a year, respectively.

Table 28. The Pareto shares of telcommunications category

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
Telecommunications (Y1)	73	27
Telecommunications (Y2)	70	30
Telecommunications (Y3)	70	30
Telecommunications (Y4)	68	32
Average	**70**	**30**

6.5.2 Fit of the NBD model

Concerning the survey data, Table 29 shows the results of the purchasing behaviour of the books category utilising the NBD model with an average MAD of 0.01, while Table 30 adds more detail across all four goodness of fit tests used (correlation of 1.00, an AVE of 0%, RAAE of 3% and MAPE of 38%). Considering the results that both tables depict, three out of four tests indicated a good fit of the model. MAPE is the only method where the difference between observed and theoretical values was quite large. However, prior research claimed that using MAPE with low volume data might lead to a misleading conclusion (Davydenko & Fildes, 2016). For instance, suppose the actual frequency is 2, and the theoretical value is 1. In that case, the absolute per cent error value will be |2-1| / |2| = 50%, making it look like the theoretical error is relatively high, notwithstanding the theoretical value is not hugely different. Moreover, Driesener et al. (2017) stated that results indicate a good fit for statistical modelling of buying behaviour if more than half of the goodness-of-fit statistics fall within the documented benchmarks.

Table 29. The fit of the NBD model to the books category

Online purchase frequency	**Fidibo**		**Taaghche**		**Ketabrah**		**30Book**		**IranKetab**		**ShahreKetab**		**Gissom**	
	O	**T**	**O**	**T**	**O**	**T**	**O**	**T**	**O**	**T**	**O**	**T**	**O**	**T**
0	0.45	0.46	0.82	0.82	0.81	0.81	0.95	0.95	0.96	0.96	0.95	0.96	0.98	0.98
1	0.21	0.20	0.08	0.08	0.07	0.09	0.03	0.03	0.02	0.02	0.02	0.03	0.01	0.01
2	0.14	0.12	0.03	0.04	0.05	0.04	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00
3	0.07	0.07	0.03	0.02	0.03	0.02	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00
4	0.04	0.05	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+5	0.09	0.11	0.03	0.04	0.03	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
MAD	0.01		0.00		0.01		0.11		0.42		0.62		0.90	

Table 30. Books category fit metrics

Method	Purchase Frequency (%)		Fit Benchmark
	O	T	
Correlation	1.00	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	3	✓	≤20%
MAPE (%)	38	x	≤20%

The same approach was repeated for the analysis of all four online categories. Table 31 displays the fit of the NBD model for each. The results present an average correlation of 0.92 (ranging from 0.83 to 1.00), AVE of 0%, RAAE of 11% (ranging between 3% and 18%) and MAPE of 46 (ranging between 16 and 104). Once again, three out of four tests 'passed' the literature benchmarks, confirming that the NBD model correctly estimates the distribution of a brand's purchase frequency and Pareto Law's shares (see Table 32) .

Table 31. Fit metrics (all categories)

E-categories	Pareto Law's Share (%)			
	Correlation	**AVE (%)**	**RAAE (%)**	**MAPE (%)**
Books	1.00	0	3	38
Banking	1.00	0	6	43
Cosmetics	0.98	0	8	49
Home electronic & Digital devices	0.84	0	14	104
Groceries	1.00	0	4	16
Telecommunications (Y1)	0.83	0	16	40
Telecommunications (Y2)	0.83	0	17	42
Telecommunications (Y3)	0.83	0	18	43
Telecommunications (Y4)	0.94	0	13	42
Average	**0.92**	**0**	**11**	**46**

Similar results were found across all websites of the telecommunications category. Table 31 presents the fit of the NBD model for the four years (between 2013 and 2016). As can be noted, the NBD model accurately describes the frequency of brand buying across all e-brands. Table 32 indicates the fit of the model for the telecommunications websites in 2016. The outcome shows the average correlation of 0.94, AVE of 0%, RAAE of 13% and the MAPE of 42%, representing an exemplary application of the NBD model (see Table 33).

Table 32. Fit of the NBD model to the telecommunications category – Panel data – Year 4 (2016)

	E-brand A		**E-brand B**		**E-brand C**		**E-brand D**		**E-brand E**	
	O	**T**	**O**	**T**	**O**	**T**	**O**	**T**	**O**	**T**
0	0.29	0.29	0.65	0.65	0.97	0.97	0.98	0.98	0.99	0.99
1	0.42	0.19	0.23	0.15	0.02	0.02	0.01	0.01	0.01	0.00
2	0.10	0.14	0.05	0.07	0.00	0.01	0.00	0.00	0.00	0.00
3	0.05	0.10	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00
4	0.03	0.07	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00
+5	0.11	0.21	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00
MAD	0.08		0.03		0.00		0.00		0.00	

Table 33. Fit metrics of telecommunications category – Panel data – Year 4 (2016)

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	0.94	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	13	✓	≤20%
MAPE (%)	42	x	≤20%

6.6 Brief discussion

This study is among the first to examine in greater detail the Pareto Law and purchase frequency in the online domain, exploring whether the distribution of the heavy and light buyers of an e-brand is comparable to known offline trends. Traditionally, Pareto Law's share (80/20 rule) implies that the top 20% of buyers account for a considerable proportion of the brand's total sales. However, empirical research of the distribution of heavy and light buyers offline has highlighted the value of light buyers for the growth of a brand's market share (Anesbury, Greenacre, et al., 2018; Habel, Driesener, et al., 2003). Specifically, multiple empirical studies introduced the following regularity on the Pareto Law's share: slightly more than half a brand's sales come from the top 20% of the brand's customers, and the remaining sales come from the bottom 80% of the customers (60/20). This study examined these assumptions in six different consumer goods categories in the online context, confirming that they hold for all categories, different types of data (survey and panel) and over time. Hence, this study makes several theoretical and managerial contributions, as follows.

6.6.1 Theoretical implications

In e-loyalty research, there is a focus on evaluating the impact of online loyalty programs in terms of customer segments (Lewis, 2004; Wang et al., 2019; Zhang & Breugelmans, 2012). Such a focus mainly concentrates on heavy buyers, ignoring light buyers (Chen et al., 2021), and thereby ignoring the vast empirical evidence on the importance of less loyal customers that has emerged from research on empirical generalisations such as the Pareto Law. Moreover, a similar problem is evident in previous research on marketing funnel (Colicev et al., 2019; de Haan et al., 2016; Kaila, 2020) and attribution strategies (Danaher & van Heerde, 2018; Kakalejčík et al., 2021; Romero Leguina et al., 2020). In particular, marketing research and practice linked to the marketing funnel often place great emphasis on the importance of highly loyal online customers – an assumption that is again in strong contrast to the empirical evidence

highlighting the superiority of marketing strategies aimed at enhancing purchase penetration (acquiring more customers) instead of bolstering customer loyalty. In this regard, past studies lack robust benchmarks and guidelines for explaining and predicting purchasing frequencies – a fundamental step for efficient marketing strategies promoting brand growth. This study's appraisal of the Pareto Law's share online offers a remedy for these issues.

This study identified that in a short term period (less than six months - survey data), only about 46% of sales come from the more frequent buyers (top 20%), and in one year, 68% of sales are derived from the heavy buyers (panel data), which confirms the importance of light buyers. The results are closely similar to the previous studies on the Pareto Law's share in offline contexts (e.g., Anesbury, Jürkenbeck, et al., 2020; Brynjolfsson et al., 2011; Kim et al., 2017; Sharp, 2010). Moreover, by examining the fit of the NBD Dirichlet model to the observed data collected, this study contributes to the body of marketing knowledge about buying behaviour analysis through empirical generalisations, expanding the existing literature to a new domain (i.e., online buying behaviour examined at brand level) and geographical context (i.e., Iran, a growing Middle-Eastern digital market).

6.6.2 Managerial implications

Effectively marketing websites or e-brands is a significant area of managerial interest, because of the increasing prominence of online buying behaviour (Srinivasan et al., 2002). This study aims to give marketers and managers insights that help them increase their brands' sales, purchase frequencies and identify the distribution of an e-brand's heavy and light buyers. In this regard, the main practical guidelines that emerged from this study are as follows.

Firstly, there are many infrequent or light online buyers that contribute approximately 30% to 50% of sales for a given e-brand. Hence, e-brands and website managers should not ignore the light buyers and direct their resources towards the unsegmented mass market that contributes substantially to online sales. Intuitively, such a strategy would follow well established guidelines in offline domains that are clearly applicable also to the online context and challenges common assumptions inherent to the management of e-loyalty (via loyalty programs) and of the marketing funnel (via attribution marketing tactics, especially those geared toward the 'bottom' of the funnel and the retention of the most loyal segment of online customers).

Second, many existing studies claiming industry relevance, such as research describing online markets as 'Long Tail' markets have been mainly conducted at the product category level. Consequently, the managerial understanding of the implications of the distribution of heavy and light buyers in the online market is limited, particularly at the brand level. This study remedied these knowledge voids proposing the analysis of the Pareto Law's share as a simple technique for detailed brand and customer segment-level evaluation of e-brands' sales.

6.7 Study Summary

This chapter (Study 3) examined the Pareto Law's share and the fit of the NBD model in the online context across two data sets, including panel data and survey data covering six different product categories from books to telecommunications. First, the study investigated the distribution of heavy and light online buyers in the categories considered. Next, the study examined if the NBD model fits these online markets, and if they show the typical buying frequency and purchasing behaviour observed in offline contexts. This approach remedies issues inherent to e-loyalty research and practice, which often advocates a focus on existing, highly loyal customers or the 'bottom' of the marketing funnel. In contrast, this study demonstrates the contribution to an e-brand sales by different segments of online buyers distinguished by the frequency of online buying. Moreover, this study contributes to the literature on marketing empirical generalisations by replicating the analysis of the Pareto Law's share to the online domain and an under-examined geographical context (Iran, a large Middle Eastern market).

7 CHAPTER SEVEN: DISCUSSION, LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

7.1 Chapter overview

This chapter provides a detailed review of how this thesis has addressed the research objectives, which were, i) to incorporate behavioural loyalty to the study of e-loyalty; ii) to incorporate the concept of multi-brand loyalty to the study of e-loyalty; iii) to apply three key marketing empirical generalisations (Duplication of Purchase, Double Jeopardy and Pareto Law) to the study of multi-brand e-loyalty in a Middle-Eastern context (Iran) across three independent but complementary studies.

Accordingly, this chapter begins by discussing the link between the thesis' objectives and the three empirical studies. Following this, the chapter discusses and explains the thesis's overall theoretical and managerial contributions, highlighting the conceptual and managerial relevance of the new notion of *multi-brand e-loyalty* and summarising significant limitations in extant e-loyalty research. The chapter also outlines how the thesis demonstrates the applicability of the three well-known marketing empirical generalisations to the evaluation of customer loyalty and brand performance in the online domain. In this regard, the chapter recaps new important findings of the three empirical studies. Study 1, which is about the importance of understanding competition dynamics for e-brands, provides examples of duplication of online purchases and offers a 'case in point' for the existence of multi-brand e-loyalty. Study 2, which examines e-brand growth dynamics, confirms that the acquisition of more online buyers is a more effective strategy than enhancing behavioural e-loyalty. Study 3 demonstrates the type of customer segment-level analysis that can be performed – i.e., comparing light vs. heavy online buyers. Lastly, the chapter addresses a series of research limitations of the three empirical studies and reviews the areas where there is scope for future research developments arising from this thesis.

7.2 Attainment of Objective 1

Objective 1: To apply behavioural loyalty to the study of e-loyalty.

As discussed in detail in Chapter 2, there are some notable gaps in extant marketing research on e-loyalty. Firstly, the majority of existing studies have investigated e-loyalty using

attitudinal measures based on the customers' intention to purchase, not actual purchases (e.g., Azam, 2015; Kaabachi et al., 2019; Khan et al., 2019; López-Miguens & Vázquez, 2017; Parra-Lopez et al., 2018; Swaminathan et al., 2018). This approach creates a possible bias, given that customers' claimed intentions towards a brand might not be actualised in the future. Consequently, this thesis highlighted the importance of examining e-loyalty through the behavioural lens, as Section §2.4.1 discussed. Based on this assumption, Study 1, Study 2, and Study 3 employed a behavioural approach to examine customer loyalty towards e-brands in the online domain.

Secondly, a general agreement is yet to emerge on the factors affecting e-loyalty (Bandyopadhyay & Martell, 2007). In particular, e-loyalty, if examined through the attitudinal angle, differs significantly depending on various market conditions (e.g., Gounaris & Stathakopoulos, 2004; Peña-García et al., 2018), which limits the generalisability of findings (see Section §2.4.1). Accordingly, the thesis proposed to establish a conceptual and practical link between e-loyalty research and the strands of marketing literature dedicated to empirical research on behavioural loyalty, especially research on the multi-brand loyalty concept.

7.3 Attainment of Objective 2

Objective 2: To incorporate the concept of multi-brand loyalty to the study of e-loyalty.

In the examination of multi-brand e-loyalty, Chapter 2 found that there is another inherent issue in the existing e-loyalty literature in addition to those discussed in the previous section. In the offline domain, an overwhelming number of empirical studies found that buyers are loyal to different brands within the same category and purchase them alternatively (e.g., Ehrenberg & Goodhardt, 1970; Jacoby, 1971; Jacoby & Kyner, 1973; Olson & Jacoby, 1974). However, while research in the offline domain extensively discusses this aspect, the majority of e-loyalty studies are based on analysis of single-brand loyalty (e.g., Belanche Gracia et al. 2015; Fang et al. 2018; Kaya et al. 2019; Khan et al. 2019). Notably, to the best of the thesis author's knowledge, only one study considered multi-brand loyalty in the online domain in the last decade, and this was not generalisable to other cultures and conditions (see Calvosa, 2016). Thus, this thesis proposed essential changes to the way e-loyalty is seen in current research and practice on online customer behaviour. Accordingly, the three empirical studies of this thesis are based on the assumption that multi-brand e-loyalty is the norm. In more detail, Study 1

provided a 'case in point' to prove that multi-brand e-loyalty exists; Study 2 showed how to turn the concept into strategies for brand growth; and Study 3 demonstrated the usefulness of detailed customer segment-level analysis that can be performed based on the newly introduced notion of multi-brand e-loyalty. These outcomes were achieved by applying three key marketing empirical generalisations to the analysis of online purchase data, shaping this thesis as a 'double' differentiated replication, as summarised below.

7.4 Attainment of Objective 3

Objective 3: To apply three key marketing empirical generalisations (Duplication of Purchase, Double Jeopardy and Pareto Law) to the study of multi-brand e-loyalty in a Middle-Eastern context (Iran).

As discussed in Section §3.5, an empirical generalisation is "a pattern or regularity that repeats over different circumstances, and that can be described simply by mathematical, graphic or symbolic methods." (Bass, 1995, p. 57). There are several well-known empirical generalisations that have emerged from the study of repeat purchase patterns and proved to fit many products/services categories across different conditions (Anesbury, Jürkenbeck, et al., 2020; Bennett & Ehrenberg, 2001; Dawes, 2014; Lam, 2006; Tanusondjaja et al., 2016; Tarkiainen et al., 2014; Uncles et al., 2012). Empirical generalisations arise from a compound of both replication and extension through diverse research examining the same concept (Holden & Barwise, 1995). This thesis is an example of the replication type called *differentiated replication*, which applies the knowledge to circumstances to discover if the generalisation holds (see Sections §3.3 and §3.4). Differentiated replications often allow the identification of boundary conditions, which further enhance the explanatory power of empirical generalisations. However, as discussed in Section §3.5, existing studies (e.g., Dawes, 2008; Ehrenberg, 1995; Ehrenberg et al., 1990; Hammond, Ehrenbeig, et al., 1996; Sharp et al., 2012; Uncles et al., 2012; Winchester et al., 2015) have predominantly studied empirical generalisations in the offline domain. Hence, while there is an opportunity for further investigation with respect to examining marketing empirical generalisations in the online field (Rogers et al., 2017), such studies are rare. This thesis addresses this important knowledge void through the examination of three key marketing empirical generalisations (i.e., the Duplication of Purchase, the Double Jeopardy pattern and the Pareto Law) in the online context.

Another problem of existing research dedicated to marketing empirical generalisations is the geographical context of analysis. Specifically, while prior research efforts have returned worthy insights on brand loyalty and buying behaviour in Western contexts (e.g., Ehrenberg, 1988; McDowell & Dick, 2005; Rogers et al., 2017; Romaniuk & Dawes, 2005; Sharp, 2010; Sharp & Sharp, 1997), there is a need for studies exploring 'new' geographical locations. Tables 9, 10, and 11 show that the majority of the studies on empirical generalisations have been predominantly conducted in developed countries such as the US (Ehrenberg, 1995; Hammond, Ehrenberg, et al., 1996), Japan (Hammond, East, et al., 1996), UK (Ehrenberg et al. 1990; Hammond et al. 1996; Winchester et al. 2015), New Zealand (Winchester & Lees 2012), Ireland (Winchester & Lees 2016) and Australia (Sharp et al. 2002; Dawes 2008). While there is some research in emerging markets (Bennett & Graham 2010; Uncles et al. 2012), there is considerably less research investigating developing countries (Faulkner et al. 2014). Thus, Study 1, Study 2 and Study 3 were conceived as examinations of empirical generalisations in a Middle Eastern country, Iran, the fastest growing digital market in that region. The analysis of this 'new' geographical context contributes a more comprehensive understanding of the generalisability of empirical laws of marketing (Amir & Sharon, 1990; Sharp et al., 2017).

7.5 Theoretical contributions

7.5.1 Study 1: Multibrand e-loyalty and Duplication of Purchase

Study 1 of this thesis explored the relationship between the market size of Iranian websites/e-brands (number of buyers) and the proportion of customers shared (multi-brand e-loyalty) (Chapter 4). Accordingly, this thesis contributes to the literature on e-loyalty by confirming that market penetration acts as the primary driver of how e-brands compete and share customers with other rival e-brands in the same category. In fact, as mentioned only briefly, the first study of this thesis offers a 'case in point' for the theoretical and empirical relevance of the newly introduced notion of multi-brand e-loyalty, showing that the purchasing patterns of Middle Eastern online buyers are similar to those observed in the offline market and Western countries, and thus also adding to the marketing literature on the Duplication of Purchase. More details of the resulting theoretical implications are as follows.

First, this thesis developed the current understanding of e-loyalty by showing that, as in the offline domain, e-loyalty is shared between multiple brands within the same category and

consumers develop small e-repertoires of brands or websites (see Sections §4.2 and §4.5.1). These outcomes address issues in e-loyalty research, which is widely dominated by single-brand loyalty studies and complex attitudinal measurements that are hard to generalise.

Second, this study builds the Duplication of Purchase generalisability by applying it to the online domain and in a Middle Eastern country. This is a significant contribution because, to the best of the thesis author's knowledge, very limited research, if any, has explored the Duplication of Purchase in these two contexts. Notably, most of the existing studies in the offline markets have considered Western countries (see §3.4) and no extant study thus far has explored the Duplication of Purchase online. Therefore, the thesis responds to the calls for more replications of research on marketing empirical generalisations (Amir & Sharon, 1990; Sharp et al., 2017).

7.5.2 Study 2: Double Jeopardy and e-loyalty

The second study of this thesis illustrates the importance of expanding an e-brand's customer base to achieve online growth (Chapter 5). In particular, Study 2 revealed that e-brand growth cannot be attained by enhancing the level of behavioural loyalty of current online customers; instead, it is about getting more 'new' online customers, like non buyers or light buyers of the online product category. Exceptions from this striking pattern (e.g., niche e-brands or change-of-pace e-brands) are rare. The resulting theoretical contributions are as follows.

This thesis increased the understanding of the importance of expanding the brand's market share by attracting more online customers, who might purchase the e-brand infrequently, yet are vital to its success (Sharp, 2010). This is an important outcomes as it reveals a new strategic driver of e-brand growth, which is a view entirely new to research on e-loyalty. That is, while prior research associates market growth with specific brands attributes (e.g., Bucko et al., 2018; Chang, 2011; Christodoulides & Michaelidou, 2011; Fuentes-Blasco et al., 2010; Qureshi et al., 2009; Sethi et al., 2018; Yaraş et al., 2017) and attitudinal loyalty (e.g., Almeida-Santana & Moreno-Gil, 2018; Ramaswami & Arunachalam, 2016), this thesis showed that strategies that aim to increase the market size of an e-brand are, in fact, the path to profitable growth. Accordingly, adding to the findings of Study 1, this thesis also showed how the notion of multi-brand e-loyalty can be turned into feasible market strategies. Besides remedying, again, issues and limitations of e-loyalty research, this thesis contributes to the existing empirical buyer

behaviour and brand performance research, showing that well-established conventions from the offline domain such as the Double Jeopardy are also widely applicable to understanding online digital contexts.

7.5.3 Study 3 Pareto Law and e-loyalty

The third empirical study presentred in this thesis examined the contribution of frequent (heavy or highly loyal) and infrequent (light or poorly loyal) online buyers to an e-brand sales (Chapter 6). Accordingly, adding to the outcomes of Study 1 and Study 2, this thesis makes an additional contribution to marketing literature by demonstrating the type of detailed customer segment-level analysis that can be performed based on the notion of multi-brand e-loyalty. The resulting theoretical implications are as follows.

Traditionally, it has been assumed that many loyal customers purchase the brand more frequently, contribute significantly to sales, and tend to do so in the future (Mantrala et al., 2009; Reibstein & Farris, 1995; Reynolds, 2002; Sanders, 1987). Hence, it has been claimed that 80% of sales come from the top 20% of brand buyers. This thesis tested this ratio in Study 3 by investigating the distribution of light and heavy buyers in different online product categories, and found that the share is closer to 60/20. Moreover, a review of the literature on e-loyalty found an emphasis on loyalty strategies that heavily focus on the brand's heavy buyers. For example, as Chapter 6 (see Section §6.3.2) highlighted, online loyalty programs are one of the most used strategies to increase e-loyalty. Yet, there is no agreement on its efficiency in the marketing literature. Research that has investigated the concept of the marketing funnel is plagued by similar issues, such as the lack of agreement on what type of customer segments should be targeted – i.e., less engaged potential customers at the 'top' of the funnel or more engaged already loyal customers at the 'bottom' of the funnel (see Section §6.3.2). In contrast, this thesis offered a simple and unequivocal solution, clarifying that increasing e-brands customers and accordingly potential profits hinges on attracting more light online buyers than heavy online buyers. Moreover, to the best of the thesis author's knowledge, there is limited research, if any, that investigated the Pareto Law in the online domain and at the brand level. Therefore, this thesis further contributes to expanding the marketing literature on this important empirical generalisation by exploring the contribution to e-brands sales resulting from different segments of online consumers displaying different levels of multi-brand e-loyalty.

7.6 Managerial contributions

The primary objective of e-loyalty strategies is building, improving, and maintaining solid relationships with online customers. This objective requires managers and marketers to have a deep understanding of online consumer buying behaviour. To this end, the outcomes of the three empirical studies presented in this thesis yield numerous managerial implications, in the form of clear guidelines that can enable e-brand or website managers to embrace more effective strategies. In particular, this thesis offers several valuable insights into growing, strengthening and leveraging customer relationships to increase e-brand sales. The following sections summarise these insights by outlining the implications of each study.

7.6.1 Practical implications of the Duplication of Online Purchases

The study of the Duplication of Purchase (Chapter 4) highlighted the crucial role of market penetration in the website competition in the online domain. This supports significant outcomes from the existing literature, which argued smaller brands share many of their customers with larger brands (Ehrenberg, 1988; Romaniuk & Dawes, 2005; Sharp, 2010; Sharp & Sharp, 1997). Accordingly, the thesis suggests that website managers take a realistic view of website loyalty, and estimate and evaluate Duplication of Purchase across various product categories. The fundamental purpose of this new knowledge is to help managers benchmark website competition and efficiently examine the online buying behaviour of their customers. Moreover, based on the results discussed in Sections §4.5.1 and §4.5.2, managers are now provided with simple norms or benchmarks to follow for setting reasonable expectations of the performance of websites and e-brands. For example, managers of small websites (lower penetration) should realise that it is normal for their customers to also buy from larger websites (higher penetration); if they expect their customers to be solely loyal to them, they could be planning and implementing non-feasible marketing strategies. Moreover, this study identified some deviations in some categories. These deviations show lower or higher levels of sharing between websites than expected based on the duplication of purchase patterns. This level of detail is important, as recognising these deviations can help managers better understanding with which other websites they are facing heighten or lowered competition.

7.6.2 Practical implications of the online Double Jeopardy

As presented in Chapter 5 (Study 2), this thesis described the importance of growing an e-brand customer basis to improve and grow its market performance. Accordingly, brand managers and marketers should deploy marketing initiatives to attract more online customers instead of focusing on strategies that aim to encourage current customers to make more online transactions. This recommendation originated from a striking Double Jeopardy effect, which was detecting in this thesis with very few deviations. In particular, as discussed in Section §5.2, researchers have acknowledged that brands with a small market share typically have fewer customers compared to bigger brands (brands with a greater market share), and these customers are also somewhat less loyal – e.g., they purchase the brand less frequently (Anesbury, Greenacre, et al., 2018; Baker et al., 2016; Ehrenberg et al., 1990; Ehrenberg & Uncles, 2000; Sharp et al., 2012). This thesis confirmed that the same occurs in online domains. Hence, small share e-brand managers should expect lower customer loyalty levels than the large share e-brands. Moreover, this thesis confirmed the existence of niche e-brands and change of pace e-brands, bringing the analysis of well-established deviations of the Double Jeopardy pattern into the e-loyalty literature.

7.6.3 Practical implications of the Pareto Law's share online

Study 3 (Chapter 6) explored which online customer segments generate more e-brand sales, drawing upon the Pareto Law's share analysis. The results revealed that heavy online buyers (those making frequent online purchases for a given e-brand) contribute between 40% and 70% of the sales, thus confirming the importance of light online buyers (infrequent buyers). Besides demonstrating, for managers, the type of simple analysis that can be done to examine sales concentration for e-brands at the customer segment-level, through Study 3 this thesis made a significant practical contribution in its determination of the most feasible online marketing strategy. That is, similar to recommendations for brand growth in the offline domain, success and e-brand growth come down to attracting more light online buyers. Interestingly, this outcome is in sharp contrast with common industry beliefs, as documented in the study of Wansink and Park (2000), in which 80% of 132 brand managers stated that they believed targeting heavy buyers is more profitable. This thesis clearly indicates that website managers and marketers should not ignore light online buyers (see Section §6.5.1).

7.7 Thesis limitations and future research directions

Notwithstanding the number of theoretical and managerial contributions this thesis offered, as per any research, it is not free of limitations. Some of these limitations derive from the selection of data and empirical tests used in the three studies; other limitations emerge from the choice of marketing empirical generalisations considered and the scope of each. Both aspects are now discussed in detail, followed by proposed avenues for future research.

7.7.1 Limitations related to the nature of the data

All three empirical studies included in this thesis are based on the combination of two sets of data from Iran, controlling for the likely confounding effect of several factors, such as: i) data type (survey data and panel data were used, to cover for the likely differences emerging from examining claimed vs. revealed buying behaviour); ii) different product categories, including standard examples of repertoire markets (e.g., groceries, books, home electronics and digital devices, cosmetics and telecommunications, some of which have not previously been examined in research on marketing empirical generalisations dedicated to FMCGs) and subscription markets (e.g., banking); and iii) over time variation (the panel data set was longitudinal). Although the combination of these aspects offered a robust basis for the conclusions derived, the two datasets did have some limitations. First, survey respondents mostly belonged to younger demographics and no demographic details were provided about the panel data. Hence, additional replications of the same analyses presented in this thesis are warranted, especially examinations of possible differences emerging across dissimilar consumer segments from a demographic point of view. Second, future studies could use other product categories (e.g., clothing, food, pharmacy, streaming services, and airplane tickets) or present explicit comparisons of offline and online product categories (another gap in the two datasets used in this thesis) to further extend the scope of the findings. Indeed, considering the type of markets examined (subscription and repertoire), while bank categories are typically considered the subscriptions market, the results of this thesis are much closer to what would be expected in repertoire markets. These results could be further investigated in terms of the rationale of the online behaviour of the subscription category. Third, another potential limitation of this thesis is the exclusive use of websites as e-brands, despite the existence of other types of e-brands, such as apps (mobile applications) (see Stocchi, 2019; Stocchi, Guerini, & Michaelidou, 2017).

To overcome this limitation, future studies should investigate other types of e-brands in order to achieve more generalisable results in the online domain, embracing a multi-channel approach. Fourth, this thesis used the same data across the three studies to ensure consistency of interpretation of results and the robustness of the conclusions drawn vs. the aims of the thesis. In future research it would be worthwhile to use separate data for the three different studies. Finally, the thesis decided on online shoppers in Iran as the dataset, to present a differentiated replication. Hence, comparisons with past findings for other geographical contexts were run *ex post*. Future research could strive for explicit *a priori* comparisons of the same patterns by juxtaposing analyses of Western contexts, seeking to detect any potential boundary conditions arising from the contrast between a growing digital market (Middle East) vs. more mature digital markets (e.g., US and UK).

7.7.2 Limitations related to the empirical tests

While the thesis placed great weight on the fit of the Dirichlet model and its implications, it did not cover all the variations of the Dirichlet model estimations, such as Conditional Trend Analysis for multiple time-period and the Beta Binomial Distribution (BBD) (Driesener & Rungie, 2021; Jarvis, Rungie, & Lockshin, 2007; Leckenby & Kishi, 1984; Trinh et al., 2017). In future research, it would be valuable to examine other analytical components of the Dirichlet model to extract additional empirical results. For example, future studies could discuss the Pareto Law in further detail by using the BBD model instead of the NBD model. Additionally, the future Pareto Law studies could expand the analysis beyond light vs. heavy buyers by including examples of non-buyers and medium-buyers, especially when looking at longitudinal evaluations (i.e., appraising customer segment changes, such as moving from non-buyers to light buyers, light buyers to medium-buyers and medium-buyers to heavy buyers etc.) (Anschuetz, 2002; Trinh, Corsi, & Lockshin, 2019). Similarly, future studies could apply the Double Jeopardy line/regression to the analysis of the relationship between market size and loyalty (Habel & Rungie, 2005; Kooyman & Wright, 2017; Meyer-Waarden & Benavent, 2006).

7.7.3 Limitations related to the choice of empirical generalisations

This thesis chose three well-known empirical generalisations with respect to its objectives. They are best aligned with multi-brand e-loyalty, the focal concept of this thesis. Each empirical generalisation served a specific research aim: the Duplication of Purchase was a ‘case

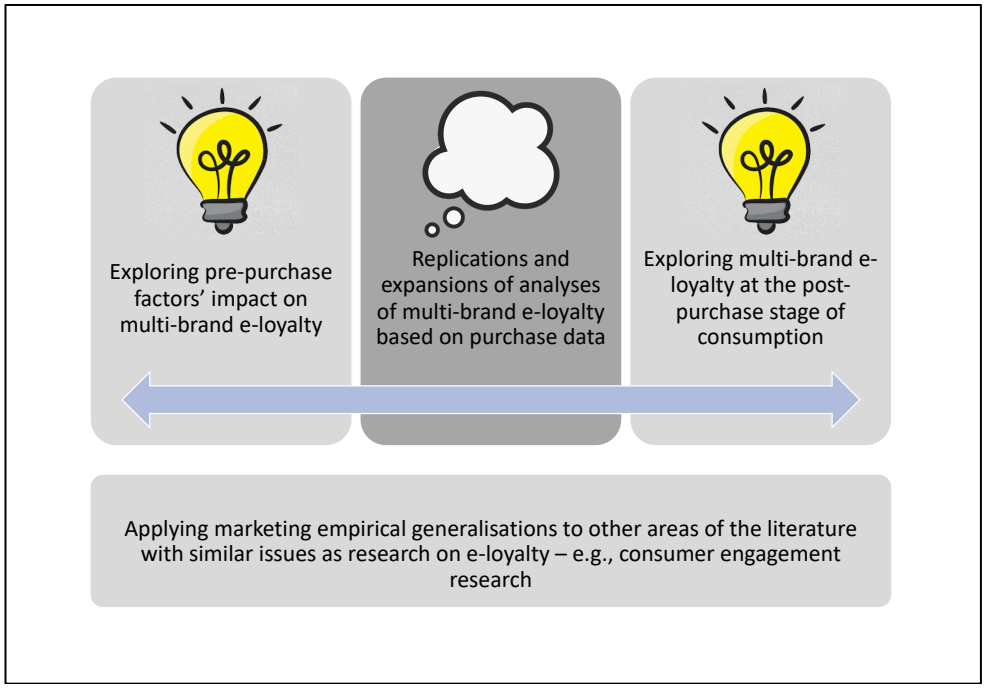
in point' for this concept, the Double Jeopardy showed implications of this concept from a market strategy point of view, and the Pareto Law demonstrated the type of insights that can be generated. However, there are other empirical generalisations, such as "user bases seldom vary" (Hammond, Ehrenberg, et al., 1996; Kennedy & Ehrenberg, 2000) and "law of prototypicality" (Collins, 2002), which could be examined to determine whether they also hold in the online domain.

7.7.4 Future research directions

Expanding from the discussion of contributions and limitations of this thesis, the resulting future research program can be articulated as follows. First and foremost, based on the research limitations discussed so far linked to the nature of the data and the tests used, further replications and expansions of the thesis studies (Duplication of Purchase, Double Jeopardy and Pareto Law) could be conducted using additional sets of data including examinations of different cultural contexts, time periods, older generations and product categories. Such additional replications could explore additional empirical tests, different empirical generalisations and offer more explicit evaluations of the key patterns of interest in presence of likely boundary conditions. Of particular interest, explicit comparisons of offline and online loyalty patterns are very much needed, should an opportunity arise for data recording brick-and-mortar and digital purchases by the same consumers. Second, it would be worth considering other aspects of online buying behaviour latently linked to e-loyalty, such as memory and decision-making. In this regard, there is ample opportunity for bringing into the research strand on e-loyalty the body of knowledge concerning the notion of mental availability (i.e., making a brand easy to think of in buying situations, see Sharp, 2010) and also brand equity (i.e., the intangible value of a brand resulting from a combination of awareness or familiarity and positive associations to the brand held in consumers' brain - see Keller, 2003). Third, this thesis concentrated on exploring e-loyalty in relation to purchases (claimed and observed). However, considering the dynamic nature of the buying process and the likely feedback mechanisms arising after a purchase has been made, another fruitful new area for future research involves the analysis of e-loyalty post-purchase. Finally, it would be valuable to examine other areas of marketing literature about the online domain that might have inherent problems that could be solved by involving empirical generalisations – for example, research on customer engagement. Similarly to e-loyalty research, marketing literature on consumer engagement is plagued by inconclusive results that are not generalisable, a plethora of

measurements and complex models that yield limited managerial value. Hence, another important future development of this thesis entails, using a similar rationale to this dissertation, bringing research on marketing empirical generalisations into the literature on consumer engagement.

Figure 7. Future research directions



APPENDIX A: RESULTS OF CHAPTER 4

Table 34. Duplication of Purchase for books category

E-brands	Pen (%)	Percentage of users who also used…						
		Fidibo	Ketabrah	Taaghche	30book	Shahreketa bonline	Iranketab	Gisoom
Fidibo	54		11	16	5	2	3	0
Ketabrah	19	31		13	3	0	6	3
Taaghche	18	48	14		5	6	2	2
30book	5	58	11	16		11	11	11
Shahreketabonline	4	25	0	25	13		0	6
Iranketab	4	40	27	7	13	0		0
Gisoom	2	14	29	14	29	14	0	
Average duplication		**36**	**15**	**15**	**11**	**5**	**3**	**4**
Expected duplication		**46**	**16**	**15**	**4**	**4**	**3**	**2**

Duplication Coefficient =0.84 , MAD =3.07 , MAPE =52% , Correlation =0.98

Table 35. Duplication of Purchase for cosmetics category

E-brands	Pen (%)	Percentage of users who also used…					
		Digikala	Okala	Khanoumi	Ruban	Rojashop	Mootanro
Digikala	81		7	3	2	1	4
Okala	9	59		0	5	0	5
Khanoumi	7	35	0		12	0	6
Ruban	6	29	7	14		0	7
Rojashop	6	14	0	0	0		7
Mootanroo	6	57	7	7	7	7	
Average duplication		**39**	**4**	**5**	**5**	**2**	**6**
Expected duplication		**43**	**5**	**4**	**3**	**3**	**3**

Duplication Coefficient =0.53 , MAD =2.01 , MAPE =43% , Correlation =0.99

Table 36. Duplication of Purchase for home electronic & digital devices category

E-brands	Pen (%)	Percentage of users who also used…			
		Digikala	Baneh	Alldigitall	Zanbil
Digikala	95		2	1	1
Baneh	3	67		10	0
Alldigitall	2	75	17		8
Zanbil	1	75	0	13	
Average duplication		**72**	**6**	**8**	**3**
Expected duplication		**84**	**3**	**2**	**1**

Duplication Coefficient =0.88 , MAD =5.91 , MAPE =183% , Correlation =1.00

Table 37. Duplication of Purchase for groceries category

E-brands	Pen (%)	Percentage of users who also used…			
		Snapp.market	Digikala	Snappfood	Okala
Snapp.market	47		18	19	11
Digikala	32	26		21	13
Snappfood	28	32	24		10
Okala	19	27	21	15	
Average duplication		**29**	**21**	**18**	**11**
Expected duplication		**30**	**20**	**18**	**12**

Duplication Coefficient =0.63 , MAD =0.87 , MAPE =5% , Correlation =0.99

Table 38. Duplication of Purchase for telecommunications category – Panel data – Year 1 (2013)

E-brands	Pen (%)	A	B	C	D
E-brand A	81		6	4	3
E-brand B	15	35		7	4
E-brand C	8	40	14		4
E-brand D	7	36	8	4	
Average duplication		**37**	**10**	**5**	**4**
Expected duplication		**40**	**7**	**4**	**3**

Duplication Coefficient =0.50 , MAD =1.73 , MAPE =18% , Correlation =1.00

Table 39. Duplication of Purchase for telecommunications category – Panel data – Year 2 (2014)

Brands	Pen (%)	A	B	C	D
E-brand A	83		6	4	1
E-brand B	13	35		9	2
E-brand C	9	35	13		2
E-brand D	4	30	7	4	
Average duplication		**33**	**9**	**6**	**2**
Expected duplication		**37**	**6**	**4**	**2**

Duplication Coefficient =0.45 , MAD =2.06 , MAPE =24% , Correlation =1.00

Table 40. Duplication of Purchase for telecommunications category – Panel data – Year 3 (2015)

Brands	Pen (%)	A	B	C	D
E-brand A	84		7	2	1
E-brand B	16	37		5	1
E-brand C	5	34	14		1
E-brand D	2	32	10	3	
Average duplication		**34**	**10**	**3**	**1**
Expected duplication		**38**	**7**	**2**	**1**

Duplication Coefficient =0.45 , MAD =1.98 , MAPE =23% , Correlation =0.99

Table 41. PSI scores for books category

E-brands	Pen (%)	Fidibo	Ketabrah	Taaghche	Iranketab	30book	Shahreketabonline	Gisoom
Fidibo	54		0.7	1.1	0.9	1.3	0.5	0.3
Ketabrah	19	0.7		0.9	1.7	0.7	0.0	1.8
Taaghche	18	1.1	0.9		0.4	1.0	1.7	0.9
Iranketab	4	0.9	1.7	0.4		3.1	0.0	0.0
30book	5	1.3	0.7	1.0	3.1		2.9	6.6
Shahreketabonline	4	0.5	0.0	1.7	0.0	2.9		3.9
Gisoom	2	0.3	1.8	0.9	0.0	6.6	3.9	
		Limited product variety				**Wide product variety**		

Table 42. PSI scores for cosmetics category

E-brands	Pen (%)	Rojashop	Mootanro	Digikala	Khanoumi	Ruban	Okala
Rojashop	6		2.4	0.3	0.0	0.0	0.0
Mootanroo	6	2.4		1.3	1.9	2.4	1.5
Digikala	81	0.3	1.3		0.8	0.7	1.4
khanoumi	7	0.0	1.9	0.8		3.9	0.0
Ruban	6	0.0	2.4	0.7	3.9		1.5
Okala	9	0.0	1.5	1.4	0.0	1.5	
		Premium			**Mid-range and budget**		

Table 43. PSI scores for home electronic & digital devices category

E-brands	Pen (%)	Digikala	Zanbil	Alldigital	Baneh
Digikala	95		0.9	0.9	0.8
Zanbil	1	0.9		7.9	0.0
Alldigitall	2	0.9	7.9		6.0
Baneh	3	0.8	0.0	6.0	
		High product variety		**Limited product variety**	

Table 44. PSI scores for groceries category

E-brands	Pen (%)	Snapp.market	Okala	Snappfood	Digikala
Snapp.market	47		0.92	1.10	0.89
Okala	19	0.92		0.83	1.05
Snappfood	28	1.10	0.83		1.21
Digikala	32	0.89	1.05	1.21	
		Has physical stores		**No physical stores**	

Table 45. PSI scores for telecommunications category – Panel data – Year 1 (2013)

E-brands	Pen (%)	Brand A	Brand D	Brand B	Brand C
E-brand A	81		0.9	0.9	1.0
E-brand D	7	0.9		1.1	1.1
E-brand B	15	0.9	1.1		1.9
E-brand C	8	1.0	1.1	1.9	
		Not using Google Ads		**Using Google Ads**	

Table 46. PSI scores for telecommunications category – Panel data – Year 2 (2014)

E-brands	Pen (%)	Brand A	Brand D	Brand B	Brand C
E-brand A	83		0.8	0.9	0.9
E-brand D	4	0.8		1.2	1.0
E-brand B	13	0.9	1.2		2.2
E-brand C	9	0.9	1.0	2.2	
		Not using Google Ads		**Using Google Ads**	

Table 47. PSI scores for telecommunications category – Panel data – Year 3 (2015)

E-brands	Pen (%)	Brand A	Brand D	Brand B	Brand C
E-brand A	85		0.8	1.0	0.9
E-brand D	2	0.8		1.3	1.1
E-brand B	16	1.0	1.3		2.0
E-brand C	5	0.9	1.1	2.0	
		Not using Google Ads		**Using Google Ads**	

Table 48. PSI scores for telecommunications category – Panel data – Year 4 (2016)

E-brands	Pen (%)	Brand A	Brand D	Brand E	Brand B	Brand C
E-brand A	71		0.9	0.6	1.0	1.3
E-brand D	2	0.9		0.8	1.2	1.2
E-brand E	1	0.6	0.8		0.7	1.4
E-brand B	35	1.0	1.2	0.7		1.7
E-brand C	3	1.3	1.2	1.4	1.7	
		Not using Google Ads		**Using Google Ads**		

APPENDIX B: RESULTS OF CHAPTER 5

Table 49. Double Jeopardy pattern – cosmetics category

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
Digikala	73	76	78	3.0	2.9	86	93	3	0.1	3	
Okala	6	8	7	2.2	2.5	42	75	14	0.3	12	
Ruban	4	5	5	2.3	2.5	38	75	9	0.2	8	
Khanoomi	4	6	4	1.8	2.5	46	74	39	0.7	28	Change of pace
Roja	3	5	4	1.8	2.4	76	74	33	0.6	25	Change of pace
Mootanro	3	5	3	1.7	2.4	50	74	41	0.7	29	Change of pace
Average	**16**	**18**	**17**	**2.1**	**2.5**	**56**	**78**		**0.4**	**18**	
Correlation		**1.00**		**0.93**		**0.72**					

Table 50. Double Jeopardy pattern – banking category

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
Mellat	18	28	27	15.1	15.5	51	100	3	0.4	2	
Melli	14	23	22	14.3	15.2	56	98	6	0.8	5	
Pasargad	12	16	19	17.3	15.0	61	96	13	2.3	16	
Saman	8	11	12	16.4	14.6	59	94	11	1.8	12	
Parsian	6	10	10	14.4	14.5	51	93	1	0.1	1	
Saderat	6	11	10	13.4	14.5	46	93	8	1.1	8	
Tejarat	6	11	9	12.2	14.4	47	93	18	2.2	15	Change of pace
Ayandeh	5	8	8	14.6	14.4	45	92	2	0.2	2	
Eghtesad novin	5	7	8	15.7	14.3	57	92	9	1.3	9	
Shahr	3	6	6	13.5	14.2	46	91	6	0.8	5	
Sepah	3	5	5	14.3	14.2	55	91	1	0.1	1	
Day	2	2	2	15.0	14.1	53	90	6	1.0	7	
Average	**7**	**11**	**12**	**14.7**	**14.6**	**52**	**94**		**1.0**	**7**	
Correlation		**0.99**		**0.31**		**0.27**					

Table 51. Double Jeopardy pattern – home electronic & digital devices category

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
Digikala	91	95	95	3.5	3.5	95	94	0	0.0	0	
Baneh	2	3	4	2.1	1.7	37	39	19	0.4	24	Niche brands
Alldigital	1	1	2	2.9	1.6	21	39	45	1.3	81	Niche brands
Zanbil	1	2	2	1.7	1.6	40	39	6	0.1	6	
Average	**24**	**25**	**26**	**2.6**	**2.1**	**48**	**53**		**0.5**	**28**	
Correlation		**1.00**		**0.78**		**0.97**					

Table 52. Double Jeopardy pattern – groceries category

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE
E-brands		O	T	O	T	O	T			
Snapp.Market	37	47	47	2.9	2.9	64	74	0	0.0	0
SnappFood	24	28	32	3.1	2.7	62	70	13	0.4	15
Digikala	20	32	28	2.4	2.7	59	69	13	0.3	11
Okala	14	19	20	2.7	2.6	63	67	4	0.1	4
Average	**24**	**32**	**32**	**2.8**	**2.7**	**62**	**70**		**0.2**	**7**
Correlation		**0.96**		**0.29**		**0.50**				

Table 53. Double Jeopardy pattern – telecommunications category – Panel data – Year 1 (2013)

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
E-brand A	79	81	82	5.7	5.6	91	96	2	0.1	2	
E-brand B	11	15	13	4.3	5.0	55	84	16	0.7	14	Change of pace
E-brand D	6	7	7	4.6	4.9	56	83	7	0.3	6	
E-brand C	4	8	5	3.0	4.9	42	83	63	1.9	39	Change of pace
Average	**25**	**28**	**27**	**4.4**	**5.1**	**61**	**86**		**0.8**	**15**	
Correlation		**1.00**		**0.80**		**0.97**					

Table 54. Double Jeopardy pattern – telecommunications category – Panel data – Year 2 (2014)

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE
E-brands		O	T	O	T	O	T			
E-brand A	80	83	82	4.1	4.1	91	94	0	0.0	0
E-brand B	9	13	13	3.0	3.4	52	76	13	0.4	12
E-brand D	7	9	7	3.1	3.4	51	76	9	0.3	8
E-brand C	3	4	5	3.8	3.4	61	75	12	0.4	13
Average	**25**	**27**	**27**	**3.5**	**3.6**	**64**	**80**		**0.3**	**8**
Correlation		**1.00**		**0.71**		**0.96**				

Table 55. Double Jeopardy pattern – telecommunications category – Panel data – Year 3 (2015)

	Market Share (%)	Penetration (%)		Purchase frequency (%)		SCR (%)		APEs	MAD	MAPE	
E-brands		O	T	O	T	O	T				
E-brand A	82	84	85	3.9	3.9	92	96	1	0.0	1	
E-brand B	11	16	13	2.8	3.4	49	82	20	0.6	17	Change of pace
E-brand D	4	5	5	3.1	3.3	48	80	7	0.2	7	
E-brand C	2	2	2	3.6	3.3	55	80	8	0.3	9	
Average	**25**	**27**	**26**	**3.4**	**3.5**	**61**	**84**		**0.3**	**8**	
Correlation		**1.00**		**0.71**		**0.96**					

APPENDIX C: RESULTS OF CHAPTER 6

Table 56. The Pareto Law's shares of cosmetics category e-brands

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	Light Buyers
Digikala	57	43
Okala	33	67
Ruban	53	47
Khanoomi	52	48
Roja	36	64
Mootanro	50	50
Average	**47**	**53**

Table 57. The Pareto Law's shares of banking category e-brands

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	Light Buyers
Mellat	37	63
Melli	39	61
Pasargad	32	68
Saman	35	65
Parsian	39	61
Saderat	43	57
Tejarat	46	54
Ayandeh	39	61
Eghtesad novin	35	65
Shahr	41	59
Sepah	49	51
Day	31	69
Average	**39**	**61**

Table 58. The Pareto Law's shares of home electronic & digital devices category e-brands

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	Light Buyers
Digikala	54	46
Baneh	52	48
Alldigital	57	43
Zanbil	45	55
Average	**52**	**48**

Table 59. The Pareto Law's shares of groceries category e-brands

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
Snapp.Market	54	46
SnappFood	48	52
Digikala	50	50
Okala	46	54
Average	**50**	**50**

Table 60. The Pareto shares of telecommunications category e-brands – Panel data – Year 1 (2013)

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
E-brand A	75	25
E-brand B	75	25
E-brand C	67	33
E-brand D	76	24
Average	**73**	**27**

Table 61. The Pareto shares of telecommunications category e-brands – Panel data – Year 2 (2014)

E-brands	Pareto Share (%)	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
E-brand A	71	29
E-brand B	68	32
E-brand C	69	31
E-brand D	73	27
Average	**70**	**30**

Table 62. The Pareto shares of telecommunications category e-brands – Panel data – Year 3 (2015)

E-brands	**Pareto Share (%)**	
	Heavy Buyers (Top 20% of buyers)	**Light Buyers**
E-brand A	71	29
E-brand B	66	34
E-brand C	70	30
E-brand D	73	27
Average	**70**	**30**

Table 63. The fit of the NBD model to the cosmetics category

Online purchase frequency	**Digikala**		**Okala**		**Ruban**		**Khanoumi**		**Roja**		**Mootanro**	
	O	**T**	**O**	**T**	**O**	**T**	**O**	**T**	**O**	**T**	**O**	**T**
0	0.24	0.24	0.91	0.92	0.94	0.95	0.93	0.94	0.94	0.95	0.94	0.95
1	0.40	0.23	0.03	0.04	0.03	0.03	0.05	0.04	0.03	0.03	0.04	0.03
2	0.14	0.18	0.03	0.02	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.01
3	0.05	0.12	0.02	0.01	0.00	0.01	0.00	0.01	0.02	0.00	0.01	0.00
4	0.04	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+5	0.13	0.14	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
MAD	0.06		0.01		0.00		0.00		0.01		0.00	

Table 64. Cosmetics category fit metrics

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	0.98	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	8	✓	≤20%
MAPE (%)	49	x	≤20%

Table 65. The fit of the NBD model to the banking category

Online purchase frequency	Mellat		Melli		Pasargad		Saman		Parsian		Saderat		Tejarat		Ayandeh		Eghtesad Novin		Shahr		Sepah		Day	
	O	T	O	T	O	T	O	T	O	T	O	T	O	T	O	T	O	T	O	T	O	T	O	T
0	0.72	0.72	0.77	0.77	0.84	0.84	0.89	0.89	0.90	0.90	0.89	0.89	0.89	0.89	0.92	0.92	0.93	0.93	0.94	0.94	0.95	0.95	0.98	0.98
1	0.01	0.06	0.01	0.05	0.01	0.03	0.00	0.03	0.00	0.02	0.01	0.02	0.01	0.03	0.00	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.01
2	0.02	0.03	0.01	0.03	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00
3	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+5	0.21	0.15	0.18	0.12	0.14	0.08	0.09	0.06	0.08	0.05	0.08	0.05	0.07	0.05	0.06	0.04	0.05	0.03	0.05	0.03	0.04	0.02	0.02	0.01
MAD	0.02		0.02		0.02		0.01		0.01		0.01		0.01		0.01		0.01		0.01		0.01		0.00	

Table 66. Banking category fit metrics

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	1.00	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	6	✓	≤20%
MAPE (%)	43	x	≤20%

Table 67. The fit of the NBD model to the home electronic & digital devices category

Online purchase frequency	**Digikala**		**Baneh**		**AllDigital**		**Zanbil**	
	O	**T**	**O**	**T**	**O**	**T**	**O**	**T**
0	0.05	0.05	0.97	0.94	0.99	0.97	0.98	0.97
1	0.32	0.13	0.02	0.06	0.00	0.03	0.01	0.03
2	0.21	0.19	0.01	0.00	0.00	0.00	0.00	0.00
3	0.13	0.20	0.00	0.00	0.00	0.00	0.00	0.00
4	0.07	0.16	0.00	0.00	0.00	0.00	0.00	0.00
+5	0.22	0.26	0.00	0.00	0.00	0.00	0.00	0.00
MAD	0.07		0.01		0.01		0.00	

Table 68. Home electronic & digital devices category fit metrics

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	0.84	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	14	✓	≤20%
MAPE (%)	104	x	≤20%

Table 69. The fit of the NBD model to the groceries category

Online purchase frequency	DigiKala		SnappMarket		SnappFood		Okala	
	O	T	O	T	O	T	O	T
0	0.68	0.68	0.53	0.53	0.72	0.72	0.81	0.81
1	0.15	0.15	0.21	0.19	0.10	0.11	0.07	0.09
2	0.09	0.07	0.10	0.10	0.05	0.06	0.05	0.04
3	0.04	0.04	0.07	0.06	0.05	0.03	0.02	0.02
4	0.01	0.02	0.03	0.04	0.02	0.02	0.02	0.01
+5	0.03	0.04	0.07	0.08	0.06	0.06	0.03	0.03
MAD	0.01		0.01		0.01		0.01	

Table 70. Groceries category fit metrics

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	1.00	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	4	✓	≤20%
MAPE (%)	16	x	≤20%

Table 71. Fit of the NBD model to the telecommunications category – Panel data – Year 1 (2013)

	E-brand A		E-brand B		E-brand C		E-brand D	
	O	T	O	T	O	T	O	T
0	0.19	0.19	0.85	0.85	0.92	0.92	0.93	0.93
1	0.40	0.15	0.09	0.05	0.05	0.04	0.04	0.02
2	0.12	0.12	0.02	0.03	0.01	0.02	0.01	0.01
3	0.06	0.10	0.01	0.02	0.00	0.01	0.00	0.01
4	0.04	0.08	0.01	0.01	0.00	0.01	0.00	0.01
+5	0.20	0.37	0.03	0.04	0.01	0.02	0.01	0.02
MAD	0.08		0.01		0.01		0.01	

Table 72. Fit metrics of telecommunications category – Panel data – Year 1 (2013)

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	0.83	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	16	✓	≤20%
MAPE (%)	40	x	≤20%

Table 73. Fit of the NBD model to the telecommunications category – Panel data – Year 2 (2014)

	E-brand A		**E-brand B**		**E-brand C**		**E-brand D**	
	O	**T**	**O**	**T**	**O**	**T**	**O**	**T**
0	0.17	0.17	0.87	0.87	0.91	0.91	0.96	0.96
1	0.45	0.18	0.09	0.06	0.06	0.04	0.02	0.02
2	0.13	0.15	0.02	0.03	0.01	0.02	0.00	0.01
3	0.06	0.12	0.01	0.01	0.01	0.01	0.00	0.00
4	0.04	0.10	0.00	0.01	0.00	0.01	0.00	0.00
+5	0.15	0.28	0.02	0.02	0.01	0.02	0.01	0.01
MAD	0.09		0.01		0.01		0.00	

Table 74. Fit metrics of telecommunications category – Panel data – Year 2 (2014)

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	0.83	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	17	✓	≤20%
MAPE (%)	42	x	≤20%

Table 75. Fit of the NBD model to the telecommunications category – Panel data – Year 3 (2015)

	Brand A		**Brand B**		**Brand C**		**Brand D**	
	O	**T**	**O**	**T**	**O**	**T**	**O**	**T**
0	0.16	0.16	0.84	0.84	0.95	0.95	0.98	0.98
1	0.48	0.18	0.11	0.07	0.04	0.02	0.01	0.01
2	0.13	0.16	0.02	0.03	0.01	0.01	0.00	0.00
3	0.06	0.13	0.01	0.02	0.00	0.01	0.00	0.00
4	0.04	0.10	0.01	0.01	0.00	0.00	0.00	0.00
+5	0.14	0.27	0.02	0.03	0.01	0.01	0.00	0.00
MAD	0.10		0.01		0.00		0.00	

Table 76. Fit metrics of telecommunications category – Panel data – Year 3 (2015)

Method	Purchase Frequency(%)		Fit Benchmark
	O	T	
Correlation	0.83	✓	≥0.6
AVE (%)	0	✓	≤10%
RAAE (%)	18	✓	≤20%
MAPE (%)	43	x	≤20%

APPENDIX D: ETHICS APPROVAL EMAIL

Quest Ethics Notification - Application Process Finalised - Application Approved

quest.noreply@vu.edu.au <quest.noreply@vu.edu.au>
Fri 10/19/2018 11:38 AM

To: Maxwell.Winchester@vu.edu.au <Maxwell.Winchester@vu.edu.au>
Cc: Tara Naami <tara.naami@live.vu.edu.au>; Michael.Mcgrath@vu.edu.au <Michael.Mcgrath@vu.edu.au>

Dear DR MAXWELL WINCHESTER,

Your ethics application has been formally reviewed and finalised.

» Application ID: HRE18-163
» Chief Investigator: DR MAXWELL WINCHESTER
» Other Investigators: MS Tara Naami, PROF MICHAEL MCGRATH
» Application Title: Empirical regularities in buyer behaviour, brand loyalty and market segmentation: The case of the online market
» Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 19/10/2018.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: http://research.vu.edu.au/hrec.php.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a minor amendment. It should also be noted that it is the Chief Investigators' responsibility to ensure the research project is conducted in line with the recommendations outlined in the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007).'

On behalf of the Committee, I wish you all the best for the conduct of the project.

Secretary, Human Research Ethics Committee
Phone: 9919 4781 or 9919 4461
Email: researchethics@vu.edu.au

This is an automated email from an unattended email address. Do not reply to this address.

APPENDIX E: INFORMATION TO PARTICIPANTS

VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled Empirical regularities in buyer behaviour, brand loyalty and market segmentation: The case of the online market. I would also like to remind you that it is totally up to you whether you want to participate in my study. Therefore, filling in the survey is voluntary and, if you consent to participate, your responses will be kept confidential. Please note that the return of the questionnaire constitutes your consent.

This project is being conducted by a student researcher Tara Naami as part of a PhD study at Victoria University under the supervision of Dr. Maxwell Winchester from college of Business.

Project explanation

The increasing attraction of online shopping has created various opportunities to evaluate the online buyer's behaviour and brand's performance. Many marketers argued that consumer behaviours are unpredictable and can't be patterned as a law in traditional markets. But decades of empirical generalisations research determined that buying behaviours are predictable. Therefore, from the marketing perspective, knowing and understanding the existence of these patterns is valuable. This research will be among the first studies to investigate the empirical generalisation laws in the online market and aims to bridge this knowledge gap. Furthermore, this research will also extend the knowledge into the Middle Eastern market.

What will I be asked to do?

You are invited to complete this survey which should only take about 10– 20 minutes or so.

There are two sections in the survey; first it will ask some general questions about you. It will then ask you about your online purchase behaviour and your purchasing intentions.

What will I gain from participating?

Your participation in this research will be of benefit to the online buying market by helping the research team to learn more about an online market in Iran. Therefore, your participation will help to gather information about online buying which will ultimately benefit online buyers in their online purchase experience.

How will the information I give be used?

The survey will be completely anonymous with no personally identifying information being collected (such as name or contact details). The data collected will be securely stored in such a way that only the research team will have access to it. None of the data collected will be used for commercial purposes and only will be used for an academic purpose including thesis, conferences, and journals.

What are the potential risks of participating in this project?

We believe there are no known risks associated with this research study; To the best of our ability your answers in this study will remain confidential. We will minimize any risks by running the survey completely anonymous with no personally identifying information being collected.

How will this project be conducted?

Statistical analysis will be used to analyse the data and find the regularities. Moreover, descriptive statistical analysis will show the analysed data regarding standard deviation, frequency distribution, mean, maximum and minimum.

Who is conducting the study?

Victoria University

Dr. Maxwell Winchester +61 3 9919 4618

Tara Naami +61 420 809 479

Any queries about your participation in this project may be directed to the Chief Investigator listed above.
If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

APPENDIX F: QUESTIONNAIRE

Questionnaire

Start of Block: Consent

Q Hello,

You are invited to participate in a research study into people's online purchase behaviour which should only take about 10 minutes. Filling in the survey is voluntary and, if you consent to participate, your responses will be kept confidential.

Please note that I am only interested in your thoughts and views in relation to shopping online and there are no right or wrong answers.

Please find attached a copy of the Participant information sheet.

Thank you

- I consent to participate in this research
- I do not consent to participate in this research

End of Block: Consent

Start of Block: Online purchase

Q Did you do an online purchase in the last 6 months?

- Yes
- No

Q How often do you purchase online?

- Every week
- Several times per months
- Once per month
- Several times per year
- Once per year

End of Block: Online purchase

Start of Block: General questions

Q What is your gender?

- ○ Male
- ○ Female
- ○ Prefer not to say

Q How old are you?

- ○ Under 18
- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 55-64
- ○ Over 65
- ○ Prefer not to say

Q Are you the primary shopper in your household?

- ○ Yes
- ○ No
- ○ Prefer not to say

Q How many people, including yourself as one, do live in your household?

- 1
- 2
- 3
- 4
- 5 or more
- Prefer not to say

Q What is your monthly income?

- Under 1 Million Toman
- 1 - 3 Million Toman
- 4 - 6 Million Toman
- Over 7 Million Toman
- Prefer not to say

Q How many dependent children under the age of 18 currently living in your household?

- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more
- ○ Prefer not to say

Q Which state do you live in?

_____

End of Block: General questions

Start of Block: Book

Q Indicate how often, if ever, you have used the following websites to purchase a book or an audio book?

	Every week	Every 2 weeks	Every month	Every 3 months	Every 6 months	Every year	Less than once a year	Never
Ketabrah.ir	○	○	○	○	○	○	○	○
Fidibo.com	○	○	○	○	○	○	○	○
Gisoom.com	○	○	○	○	○	○	○	○
30book.com	○	○	○	○	○	○	○	○
Shahreketabonline.com	○	○	○	○	○	○	○	○
Iranketab.ir	○	○	○	○	○	○	○	○
Adinehbook.com	○	○	○	○	○	○	○	○
Bahook.com	○	○	○	○	○	○	○	○
Arvin-bookstore.com	○	○	○	○	○	○	○	○
Taaghche.ir	○	○	○	○	○	○	○	○
If not above, please write the name, otherwise choose never	○	○	○	○	○	○	○	○

Page Break

Q Which of the below websites did you buy a book or audio book from in the last 3 months?

- [ ] Ketabrah.ir
- [ ] Fidibo.com
- [ ] Gisoom.com
- [ ] 30book.com
- [ ] Shahreketabonline.com
- [ ] If not above, please write the name _____
- [ ] Iranketab.ir
- [ ] Adinehbook.com
- [ ] Bahook.com
- [ ] Arvin-bookstore.com
- [ ] Taaghche.ir
- [ ] I did not buy a book or audio book online in the last 3 months

Q Thinking about the last 3 months, how many times have you bought book or audio book from the below website/websites?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Ketabrah.ir	
Fidibo.com	
Gisoom.com	
30book.com	
Shahreketabonline.com	
If not above, please write the name	
Iranketab.ir	
Adinehbook.com	
Bahook.com	
Arvin-bookstore.com	
Taaghche.ir	
I did not buy a book or audio book online in the last 3 months	

Page Break

End of Block: Book

Start of Block: Food Category

Q Indicate how often, if ever, you have used the following websites to order food?

	Every week	Every 2 weeks	Every month	Every 3 months	Every 6 months	Every year	Less than once a year	Never
Zoodfood.com	○	○	○	○	○	○	○	○
Snapp-food.com	○	○	○	○	○	○	○	○
Snappfood.ir	○	○	○	○	○	○	○	○
Reyhoon.com	○	○	○	○	○	○	○	○
Delino.com	○	○	○	○	○	○	○	○
Chilivery.com	○	○	○	○	○	○	○	○
Mamifood.org	○	○	○	○	○	○	○	○
Changal.com	○	○	○	○	○	○	○	○
Mamanpaz.ir	○	○	○	○	○	○	○	○
If not above, please write the name, otherwise choose never	○	○	○	○	○	○	○	○

Page Break

Q Which of the below websites did you order food from in the last 3 weeks?

- [ ] Zoodfood.com
- [ ] Snapp-food.com
- [ ] Snappfood.ir
- [ ] Reyhoon.com
- [ ] Delino.com
- [ ] If not above, please write the name _____
- [ ] Chilivery.com
- [ ] Mamifood.org
- [ ] Changal.com
- [ ] Mamanpaz.ir
- [ ] I did not order food online in the last 3 weeks

Q Thinking about the last 3 weeks, how many times have you ordered food from the below website/websites?
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Zoodfood.com	
Snapp-food.com	
Snappfood.ir	
Reyhoon.com	
Delino.com	
If not above, please write the name	
Chilivery.com	
Mamifood.org	
Changal.com	
Mamanpaz.ir	
I did not order food online in the last 3 weeks	

Page Break

End of Block: Food Category

Start of Block: Home and digital devices

Q Indicate how often, if ever, you have used the following websites to buy digital or home electronic devices?

	Every week	Every 2 weeks	Every month	Every 3 months	Every 6 months	Every year	Less than once a year	Never
Chare.ir	○	○	○	○	○	○	○	○
Baneh.com	○	○	○	○	○	○	○	○
Digikala.com	○	○	○	○	○	○	○	○
Zanbil.ir	○	○	○	○	○	○	○	○
Onlinekala.ir	○	○	○	○	○	○	○	○
Modiseh.com	○	○	○	○	○	○	○	○
Ghesticlub.com	○	○	○	○	○	○	○	○
Alldigital.ir	○	○	○	○	○	○	○	○
If not above, please write the name, otherwise choose never	○	○	○	○	○	○	○	○

Page Break

Q Which of the below websites did you buy digital or home electronic devices from in the last 6 months?

- [ ] Chare.ir
- [ ] Baneh.com
- [ ] Digikala.com
- [ ] Zanbil.ir
- [ ] Onlinekala.ir
- [ ] If not above, please write the name _____
- [ ] Modiseh.com
- [ ] Ghesticlub.com
- [ ] Alldigital.ir
- [ ] I did not buy digital or home electronic devices online in the last 6 months

Q Thinking about the last 6 months, how many times have you bought digital or home electronic devices from the below website/websites?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Chare.ir	
Baneh.com	
Digikala.com	
Zanbil.ir	
Onlinekala.ir	
If not above, please write the name	
Modiseh.com	
Ghesticlub.com	
Alldigital.ir	
I did not buy digital or home electronic devices online in the last 6 months	

Page Break

End of Block: Home and digital devices

Start of Block: Bank Category

Q Indicate how often, if ever, you have used the following banks online?

	Every week	Every 2 weeks	Every month	Every 3 months	Every 6 months	Every year	Less than once a year	Never
Mellat	○	○	○	○	○	○	○	○
Saderat	○	○	○	○	○	○	○	○
Parsian	○	○	○	○	○	○	○	○
Pasargad	○	○	○	○	○	○	○	○
Saman	○	○	○	○	○	○	○	○
Ayandeh	○	○	○	○	○	○	○	○
Eghtesad Novin	○	○	○	○	○	○	○	○
Tejarat	○	○	○	○	○	○	○	○
Day	○	○	○	○	○	○	○	○
Melli	○	○	○	○	○	○	○	○
Shahr	○	○	○	○	○	○	○	○
If not above, please write the name, otherwise choose never	○	○	○	○	○	○	○	○

Page Break

Q Which of the below banks did you access online in the 4 weeks?

- [ ] Mellat
- [ ] Saderat
- [ ] Parsian
- [ ] Pasargad
- [ ] Saman
- [ ] Ayandeh
- [ ] If not above, please write the name _____
- [ ] Eghtesad Novin
- [ ] Tejarat
- [ ] Day
- [ ] Melli
- [ ] Shahr
- [ ] I did not use online banking in the last 4 weeks

Q Thinking about the last 4 weeks, how many times have you accessed each of the following banks online?
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

Mellat	
Saderat	
Parsian	
Pasargad	
Saman	
Ayandeh	
If not above, please write the name	
Eghtesad Novin	
Tejarat	
Day	
Melli	
Shahr	
I did not use online banking in the last 4 weeks	

Page Break

End of Block: Bank Category

Start of Block: Cosmetics

Q Indicate how often, if ever, you have used the following websites to buy cosmetics?

	Every week	Every 2 weeks	Every month	Every 3 months	Every 6 months	Every year	Less than once a year	Never
Digikala.com	○	○	○	○	○	○	○	○
Modiseh.com	○	○	○	○	○	○	○	○
Mootanroo.com	○	○	○	○	○	○	○	○
khanoumi.com	○	○	○	○	○	○	○	○
Rojashop.com	○	○	○	○	○	○	○	○
Zanoone.ir	○	○	○	○	○	○	○	○
Ruban.com	○	○	○	○	○	○	○	○
Missland.com	○	○	○	○	○	○	○	○
Tabiatshop.com	○	○	○	○	○	○	○	○
Okala.com	○	○	○	○	○	○	○	○
If not above, please write the name, otherwise choose never	○	○	○	○	○	○	○	○

Page Break

Q Which of the below websites did you buy cosmetics from in the last 4 weeks?

- ☐ Digikala.com
- ☐ Modiseh.com
- ☐ Mootanroo.com
- ☐ khanoumi.com
- ☐ Rojashop.com
- ☐ If not above, please write the name _____
- ☐ Zanoone.ir
- ☐ Ruban.com
- ☐ Missland.com
- ☐ Tabiatshop.com
- ☐ Okala.com
- ☐ I did not buy cosmetics online in the last 4 weeks

Q Thinking about the last 4 weeks, how many times have you bought cosmetics from the below website/websites?
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Digikala.com	
Modiseh.com	
Mootanroo.com	
khanoumi.com	
Rojashop.com	
If not above, please write the name	
Zanoone.ir	
Ruban.com	
Missland.com	
Tabiatshop.com	
Okala.com	
I did not buy cosmetics online in the last 4 weeks	

Page Break

End of Block: Cosmetics

Start of Block: Supermarket

Q Indicate how often, if ever, you have used the following supermarket websites?

	Every week	Every 2 weeks	Every month	Every 3 months	Every 6 months	Every year	Less than a year	Never
Digikala.com	○	○	○	○	○	○	○	○
Snappfood.ir	○	○	○	○	○	○	○	○
Modiseh.com	○	○	○	○	○	○	○	○
Snapp.market	○	○	○	○	○	○	○	○
Shahrvand.ir	○	○	○	○	○	○	○	○
Radykala.com	○	○	○	○	○	○	○	○
Tezolmarket.com	○	○	○	○	○	○	○	○
Final.ir	○	○	○	○	○	○	○	○
Hyperbaz.com	○	○	○	○	○	○	○	○
Okala.com	○	○	○	○	○	○	○	○
If not above, please write the name, otherwise choose never	○	○	○	○	○	○	○	○

Page Break

Q Which of the following supermarkets have you ordered from online in the last 3 weeks?

- [ ] Digikala.com
- [ ] Snappfood.ir
- [ ] Modiseh.com
- [ ] Snapp.market
- [ ] Shahrvand.ir
- [ ] If not above, please write the name _____
- [ ] Radykala.com
- [ ] Tezolmarket.com
- [ ] Final.ir
- [ ] Hyperbaz.com
- [ ] Okala.com
- [ ] I did not buy from the supermarket websites in the last 3 weeks

Q Thinking about the last 3 weeks, how many times have you bought from the below supermarket websites?
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Digikala.com	
Snappfood.ir	
Modiseh.com	
Snapp.market	
Shahrvand.ir	
If not above, please write the name	
Radykala.com	
Tezolmarket.com	
Final.ir	
Hyperbaz.com	
Okala.com	
I did not buy from the supermarket websites in the last 3 weeks	

Page Break

End of Block: Supermarket

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