

e-Commerce website performance and user-perceived web quality

*A bi-dimensional and
multi-methodological framework*

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ISBN:
ISBN-13:

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ACNOWLEGMENTS

Firstly, I would like to express my sincere gratitude to my advisor Prof. Gandolfo Dominici, not only for the continuous support during my PhD studies and related researches, but also for his role as “kybernetes” for my life. His guidance helped me in all the time in work- life balance, in research activities and in writing of this thesis. I could not have imagined having a better advisor and mentor for my PhD studies.

I would also like to thank my thesis advisor Prof. Arabella Mocciano Li Destri of the University of Palermo. Her door office was always open whenever I ran into a trouble spot or had a question about my research or writing. She consistently steered me in the right the direction whenever she thought I needed it.

Besides my advisors, I would like to thank my colleague Dr. Walter Vesper, Dr. Roberto Musotto, Dr. Ivan Nania, Dr. Vittorio D’Aleo, Dr. Giacomo Morabito and Dr. Salvatore Lo Bue, for their insightful comments and encouragement, but also for the hard question which incited me to widen my research from various perspectives.

Finally, I would like to thank my wife Alessandra Reina: I particularly appreciated her patience and motivation to conduct my studies. Without her precious support it would not be possible to complete this PhD course.

Part I

Theoretical Framework

CHAPTER ONE

INTRODUCTION

1.1 Premise

Nowadays, the widespread diffusion of personal computers, smartphones and tablets, combined with the ease of Internet access, has multiplied online purchase opportunities. Shopping online has become a widespread phenomenon all around the world, and the Internet has become a new megastore for the commercialization of products previously sold through traditional channels (Moretti et al., 2017).

Specifically in 2015, online world sales grew by more than 20% with respect to the previous year, reaching almost 1,600 billion dollars. The online market represents about 6% of the entire retail sector (EMarketer, 2016).

Yet all that glitters is not gold: 96% of website visits do not end with purchases (McDowell et al., 2016). Retailers thus need to manage a significant problem: the low value of the purchases-to-visitors ratio, commonly called the conversion rate (Farak et al., 2003).

Generally speaking, the conversion rate on e-commerce website is about 2%–4% (Holzwarth et al., 2006; Sohrabi et al., 2012).

Previous studies of conversion rate management argued that these low values are due to several reasons: sometimes online products have high prices (Wolfenbarger and Gilly, 2003; Grewal et al, 2004); buyers are price sensitive, because competitors websites are just a click away (Clarke, 2001; Frost et al., 2010); there is risk of a security breach of consumer personal information, credit cards, or other payment methods (Koufaris & Hampton-Sosa, 2004; Chen and Barnes, 2007); and trust (McKnight & Cervany, 2001; McKnight et al., 2002).

This is only a brief overview of the topics discussed in detail in Chapter 2, which consists of a review of the conversion rate management literature from the retailer point of view and of user-perceived web quality (UPWQ) from the customer point of view.

1.2 Research Proposal

Given this premise, online retailers make significant efforts to manage functionalities that can, on one hand, attract visitors and convert them to purchasers (Ayanso and Yoogalingam, 2009); on the other hand, web retailers must also cut costs, providing an accessible business model, considering that e-commerce is a strategy for rapid growth, especially for small and medium-sized enterprises (Grandon et al., 2011).

This thesis aims to provide an original contribution using a bilateral and multimethodological framework for the e-commerce phenomenon: it gathers the research activities performed during

the three years of a PhD program and represents a point of contact between qualitative and quantitative methods. Indeed, the novelty of the framework proposed here is that it is able to capture both commerce website performance from the sellers' point of view and the user-perceived web quality (UPWQ), using respectively quantitative and qualitative approaches.

The rationale is that, on one hand, online retailers are interested in maximizing their e-commerce conversion rate; on the other hand, website users expected a certain qualitative standard. If the determinants of the conversion rates converge with the factors that determine the quality perceived by users, a virtuous circle for both parties could arise. The aim of this research is to shed light on such a win-win strategy (Nowak, 2006), both for online retailers and for purchasers, by identifying features that increase the user-perceived web quality and boost the conversion rate.

In this way, the proposed framework is bilateral, as it considers both the perspective of the sellers and of the purchasers; it is also multi methodological: indeed, e-commerce phenomena will be analysed using both qualitative and quantitative methodologies so as to provide a better understanding of the conversion rate (from the sellers' point of view) and website quality (from the purchasers' point of view).

Mingers and Brocklesby (1997) have defined a methodology as a structured set of guidelines or activities to assist people in undertaking research or intervention. Generally, a methodology

will develop, either implicitly or explicitly, within a particular paradigm, and will embody the philosophical assumptions and principles of that paradigm. This thesis is concerned with linking two paradigms—the points of view of sellers and purchasers—to look towards the possibility of paradigm commensurability.

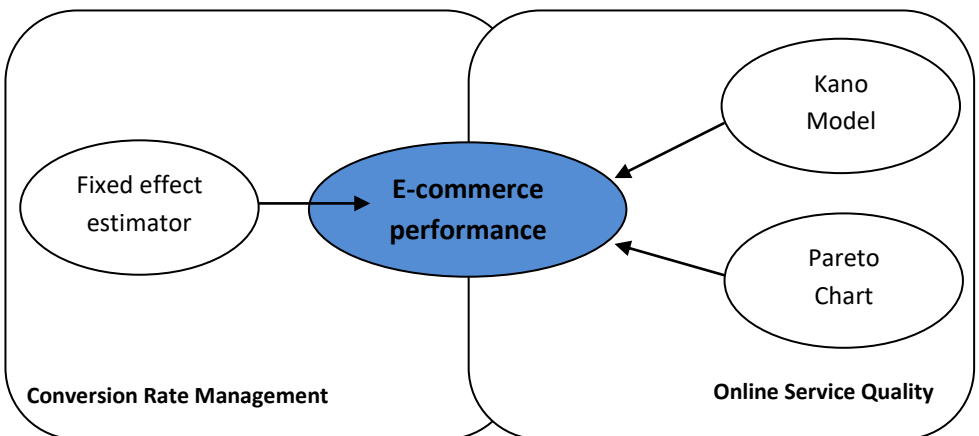
Specifically, after a review of the literature (Chapter 2), the research begins with an econometric study of the variables that determine the conversion rate; this is based on the literature, but involves original contributions, explained in detail in Chapter 3. It employs a fixed-effect estimator capable of capturing some a priori differences between websites.

In the second part, there is a shift to a qualitative approach using the Kano model (Chapter 4), which is a theory of product development and customer satisfaction created in the 1980s, and which classifies customer preferences into five categories. This chapter will consider in greater detail the factors that affect website quality in terms of perception by customers. This research thus revises the model of Barnes and Vidgen (2002) of perceived website quality (Chapter 5), considering Pareto Charts (Juran, 1951) used to analyse data on the frequency of problems or causes in a process. The aim of this section is to develop an e-commerce website-specific research design by adapting a model designed for generic websites to e-commerce sites (Chen and Dubinsky, 2003). With respect to the qualitative methodology (explained in detail in later sections), the use of the Pareto Chart and the Kano conceptual model is based on their commensurable paradigms: both

approaches state that a small number of “causes” can explain the majority of the “effect” (Wilson, 1972; Griffin and Houser, 1993).

In summarizing, our research question in the quantitative analysis is “Which factors affect e-commerce conversion rate?” (RQ1). In the second step, employing qualitative methodologies, the research question is “Which factors affect user-perceived e-commerce website quality?” (RQ2). The full set of methodologies (or conceptual models) adopted are summarized in the following picture, paying attention to their respective theoretical backgrounds: RQ1 relates to the above-mentioned studies on conversion rate management, and RQ2 to the online quality literature; both are analysed in Chapter 2. The bidimensionality is this given by considering the point of view of the sellers (conversion rate management) and of the buyers (online service quality). The multimethodological approach arises by combining qualitative and quantitative techniques.

Figure 1: Research Design



It is also important to comment briefly on the findings, because the originality of this thesis relies on the convergence between quantitative and qualitative techniques to identify some common factors that increase user-perceived quality and at the same time, boost conversion rate—such as discounts, free shipping, and ease of use of the website.

Building on these results, the final section also provides relevant practical implications for managers involved in online business, and may prove useful in better allocating resources to the most critical factors that affect e-commerce performance, including both the determinants of conversion rate management and the qualitative analysis of customers' feelings and perceptions.

In summary, this thesis aims to identify the common factors that on one hand enhance the experience of the user browsing an e-commerce website (perceived web quality), and on the other hand increase the ratio of sales to website visitors (conversion rate).

A win-win strategy arises when these factors are aligned for both retailers and purchasers. This situation has the potential to produce a virtuous circle that increases the perceived quality (which is valuable to customers) and boosts sales (valuable to retailers).

1.3 Structure of the Thesis

This thesis represents a gathering of research activities performed in the past three years, merging the quantitative methodology learned at the SEAAM Department of the University

of Messina, Italy, at the Bertinoro Summer in Panel Data (Bertinoro, 2014), and at the Structural Equation Modeling Summer School (UniCal, 2015), with the qualitative approach characterizing the SEAS Department at the University of Palermo, Italy, and in collaboration with Professor Gandolfo Dominici and with participation at the Content Analysis Summer School (UniPa, 2016) conducted by Klaus Krippendorff, founding father of the this methodology.

The present manuscript is divided into four parts which constitute a unitary design to provide a multilateral approach to e-commerce website performance.

Specifically, the first part (“Background”) is divided into two chapters: an introduction (Chapter 1), which aims to contextualize the phenomenon of online retailing through e-commerce websites, and a literature review (Chapter 2), which provides a theoretical framework for the previous studies in the field of conversion rate management and user-perceived web quality (UPWQ).

The second part, concerned with quantitative techniques, is devoted to an analysis of the conversion rate from the perspective of the seller, investigating what levers are useful for increasing conversion rates, and thus sales. This section deals with quantitative research activities for capturing the determinants of conversion rate, which will also be analysed from the qualitative point of view in the third section.

The third part deals with qualitative techniques and analyses the quality as perceived by the user of the e-commerce website.

This part is divided into two chapters, each treating one of the methods used: the Kano model in Chapter 5 and the Pareto Chart for UPWQ in Chapter 6.

The fourth and final part provides a brief summary of the main findings and concluding remarks, while also suggesting useful insights in terms of practical implications.

In line with the guidelines of the PhD board, each chapter is designed to be publishable alone.

1.4 Preliminary Definitions

Bidimensional: considering the points of view of both retailer and purchaser.

Conversion rate: the ratio of e-commerce sales to website visitors.

Multimethodological: linking two paradigms—the quantitative and qualitative.

User-perceived web quality (UPWQ): the quality perceived by users who navigates a website on the Internet.

Win–Win strategy: a piece of terminology from game theory referring to possible outcomes of a strategy in which all participants profit.

CHAPTER TWO

LITERATURE REVIEW

Keywords: conversion rate management, online service quality, user-perceived web quality.

2.1 State of the art

The present dissertation will follow a bi-dimensional perspective aiming to consider both the seller and the retailer point of view. The guideline will be an ideal feel rouge that will cross the entire manuscript, including this literature review.

This chapter is, indeed, divided around two broad concept: section 2.2 will discuss the quality perceived by e-commerce users / buyers; section 2.3 will deal with the issue of conversion rate management to understand, from the retailers' perspective, in order to understand which features help to boost sales.

The purpose of the thesis is to identify the common factors that concerning on the one hand the enhancement of the website user experience (online perceived quality), and on the hand, change in the conversion rate.

When these factors are aligned, a win-win strategy arises (Nowak and Sigmund, 1993; Nowak, 2006), giving rise to a virtuous circle that increases the perceived quality (customer point of view) and boot sales (retailers point of view).

2.2 Online Service Quality

The literature on service quality is abundant (Grönroos, 1984; Parasuraman et al. 1988; Cronin and Taylor 1992), but according to (Gounaris and Dimitriadis, 2003) “*very little work has-been done on the assessment of the quality of services delivered over the Web*” (p. 530), in other words the online service quality or electronic service quality (e-service quality).

Before dealing with online service quality, it is necessary a preliminary definition about online services. Starting from the conceptualization of the phenomenon, currently there is not a unanimously accepted definition of online services. A first proposal, still today widely accepted, is provided by Grönroos (1984), which stated online services are composed predominantly of two dimensions: a functional type, which refers to the effects of abuses, and a technical, related to development of the service.

This approach is supported by several authors which claim that the definition of on-line service should go beyond the mere conceptualization of electronic commerce (e-commerce) taking into account all the issues and interactions that occur during and after the delivery of electronic services: forum, blog etc (Rust and Lemon,

2001; Parasuraman et al., 2005; Yan and Jun, 2002; Bauer et al. 2006; Rowley, 2006).

Another definition, following Boyer et al. (2002), considered e-services those delivered on the internet using advanced telecommunications, information, and multimedia technologies.

Regardless of the definition, there are some common aspects to all online services that help you narrow (and thus define) this concept. There is a general agreement in the previous literature about the multidimensional nature of the construct of e-service quality (Olšina et al. 1999; Aladwani and Palvia, 2002; Kim and Lee, 2002; Kim and Stoel, 2004; Bauer et al., 2006; Barrutia and Gilsanz 2009).

It should also be noted that these studies are very heterogeneous and they are focused on products that are extremely diverse, ranging from the banking sector, academic institutions and clothing. Indeed, the relevant quality attributes may differ from product to product, or from sector to sector (Elliot and Fowell, 2000).

In this section, our aim is not only review the previous studies, but start to “lay the groundwork” in order to provide a framework context specific e-commerce website and the related perceived quality.

2.2.1 A brief history about e-service quality

The quality of service is the result of the comparison on two aspects: on the one hand between expected service and perceived

service; on the other hand, between technical and functional quality (Grönroos, 1984 and 1990).

Parasuraman et al. (1988) introduced the SERVQUAL model, based on the difference between perception and expectation of the consumer than five factors: (1) Reliability: it is the ability to deliver the promised service with reliability and accuracy. (2) Responsiveness: it is the willingness to help customers and provide prompt service. (3) Security (or assurance): it is the knowledge and courtesy of employees and their ability to convey trust and confidence. (4) Empathy: it is the ability to provide customers with personalized attention and consideration. (5) Appearance (or tangibles): it relies on physical facilities, equipment, personnel and communication materials. The perceived quality of service was measured as the difference, in amount and direction, between the scores of expectation and perception of service for each of the five factors.

Cronin and Taylor (1992) proposed a different approach to assess the quality of services based exclusively on the evaluation of services obtained, the so called SERVPERF. Basically the difference between SERVPERF and SERVQUAL is that the first model analyzes how well a service satisfies customer expectations, considering only their perceptions (SERVPERF or perceptions-only); the second model considers the gap between perceptions and expectations (SERVQUAL or perceptions vs. expectations).

The superiority of one of the two models on the other has long been debated: Cronin and Taylor (1994) responded to concerns raised by Parasuraman about the relative efficacy of their quality

measures. Other scholars (Jain and Gupta, 2004) argued SERVPERF provide a more convergent and discriminant explanation of service quality, but it has weak diagnostic power. Instead SERVQUAL has a higher diagnostic power to pinpoint areas for managerial interventions.

According to Gounaris et al., (2005) and González et al. (2007), the SERVQUAL model is still the most widely used for the evaluation of services thanks to its validity and robustness.

Parasuraman et al. (2005) updated the SERVQUAL model: the basic E-S-QUAL scale developed in the research is a 22-item scale of four dimensions: (1) efficiency, (2) fulfilment, i.e. the ability to meet the needs, (3) system reliability (or availability), and (4) privacy. The second scale, E-RecS-QUAL, is salient only to customers who had non-routine encounters with the sites and added 11 items in three dimensions: (5) responsiveness, (6) compensation, and (7) contact.

This is a cornerstone for research in this field, but other models have been proposed. According to Wolfinbarger and Gilly (2003) quality is expected to be a determinant of online retailer success as well, therefore they studied the dimensions of the e-tail customer experience, developing a reliable and valid scale based on four factors: website design, fulfilment, privacy/security and customer service.

Thus, in the following table is proposed an overview of the most important scales and dimensions for the service quality measurement.

Table 1: Previous Studies on Service Quality Measurement

Perceived Service model (Grönroos, 1984)				
1. Technical service quality	2. Functional service quality			
SERVQUAL (Parasuraman, Zeithaml and Berry 1988)				
1. Reliability	2. Assurance	3. Tangibles	4. Empathy	5. Responsiveness
SERVPERF (Cronin & Taylor, 1992)				
1. Tangibility	2. Reliability	3. Responsiveness	4. Assurance	5. Empathy
E-S-QUAL (Parasuraman, Zeitham and Malhotra, 2005)				
1. Efficiency	2. Fulfillment	3. Reliability	4. Privacy	
E-RECS-QUAL (Parasuraman, Zeitham and Malhotra, 2005)				
1. Efficiency	2. Fulfillment	3. Reliability	4. Privacy	5. Responsiveness
6. Compensation	7. Contact			
e-TailQ (Wolfenbarger & Gilly, 2003)				
1. Website design	2. Fulfillment	3 Security- privacy	4. Customer Service	

2.2.2 Some considerations about e-service quality

From the literature review, it is possible to draw two main insights. First of all, research on the quality of websites is very fragmented and offers different solutions: in evaluating the quality of Web sites much attention was paid to define the size or number of factors (Grönroos, 1984; Parasuraman et al., 1988, 2005; Barnes and Vidgen, 2001, 2002).

Zeithaml et al. (2001; 2002) stated size varies from product to product, as consumers refer to different factors when assessing the quality of online products or services of different types. Many scholars suggested criteria based on a few dimensions (at least 3 or 4 items), while others suggest a lot of items, i.e. Loiacono et al. (2000)

used 12 factors; Yang et al. (2003) suggested 14 factors; Yang and Fang (2004) considered 16 factors.

Generally speaking an excessive number of factors raise some computational problems and dispersion phenomenon (Bauer and Scharl, 2000). However, the debate about the perfect number of item still remain open, also considering that Francis (2007) argued that one size cannot fit at all.

The second consideration is that many authors propose indices or without application of theoretical models or empirical verification. We observed the existing literature attempted to offer good models for a general context: could be useful keep well in mind that there may be differences between specific activities and sectors, or different products.

Therefore our suggestion is a model context-specific, without closing the door to a possible generalization, under tested conditions.

2.2.3 More emphasis on the consumer: the user-perceived web quality (UPWQ)

Aladwani and Parwia (2002) recognized the need to shift the attention to quality perceived by users who navigates the website: the so-called user-perceived web quality (UPWQ). The authors found three dimensions of perceived quality: (1) technical adequacy, (2) web content e (3) web appearance. Each of them has the following sub-dimensions: (1) technical adequacy refers to security; ease of navigation; broadcast services; limited use of special plug-ins; search

facilities; anonymity; availability; valid links; reliability; browser sniffing; personalization or customization; speedy page loading; interactivity; ease of access; multi-language support; protected content; bookmark facility. (2) Web content relies on usefulness of content; completeness of content; clarity of content; uniqueness of content; broadness of content; originality of content; currency of content; conciseness of content; accuracy of content; finding contact info.; finding people without delay; finding site maintainer; finding links to relevant sites; finding firm's general info.; finding products/services details; finding customers' policies; finding customer support; finding FAQ list; finding free services; using limited registration forms; finding online help; diversity of content; finding free info. (3) Web appearance considers attractiveness; distinctive hot buttons; changing look; organization; proper use of fonts; proper use of colours; proper use of graphics; graphics-text balance; proper use of multimedia; style consistency; proper choice of page length; good labelling; text-only option; proper use of language/style; color consistency.

Seethmaraju (2004) supported these findings with a structural equation model, providing the same dimensions of UPWQ. In its study, only few items do not converged with Aladwani and Parwia model, they are: customisation, speed of page loading and interactivity, ease of navigation, attractive web site, and organised web site.

Yang et al. (2005) follow to this stream, but they rework the classification of UPWQ in (1) information quality and (2) service

quality which reconfigured UPWQ dimensions. With respect to (1) information quality the dimensions are: usefulness of content and adequacy of information. With respect to (2) service quality the dimensions are: usability, accessibility, privacy/security, and interaction.

Ahn et al. (2007) enriched this model adding also system quality: therefore they considered (1) system, (2) information and (3) service quality. More in detail: (1) System quality items are: design, navigation, response time, security, availability, functionality, and error-free transaction, multimedia. (2) Information quality: contents, completeness, detail, accuracy, timeliness, information reliability, format. (3) Service quality: responsiveness, credibility, assurance, empathy, follow-up service, competence. They also found that UPWQ had a significant impact on the perceived ease of use, playfulness, and usefulness, and consequently, they also discovered that it encouraged website use in the context of online retailing (Ahn et al., 2007).

2.2.4 Applying UPWQ to e-commerce

Many scholars studied online satisfaction (Bay et al., 2008; Muylle et al., 2014) or web quality (Zeithaml et al., 2002; Cox & Dale, 2002; Aladwani & Parwia, 2002; Seethmaraju, 2004; Ahn et al., 2007), but there is a need for more focused research about specific e-commerce quality even after 15 years after the call of Cox and Dale (2001) for

further research to identify suitable specific determinants for e-commerce.

Barnes and Vidgen (2002) proposed an integrative approach to the assessment of e-commerce quality. They suggested a classification in three main components: (1) usability, (2) information, (3) service interaction.

These components underline five sub-dimensions: (1a) usability/ease of use, (1b) design, (2) information quality, (3a) trust and (3b) empathy i.e., issue for transaction and security.

This model provided an application of the concept of web quality for an e-commerce; however it is still much tied to technical approach to website quality. Our proposal is also to consider commercial aspects (such as the free shipping option or the presence of discounts and promotions) to study how such factors are perceived by user.

Moreover, to keep pace with the times, it will also be considered the compatibility with smart phone and tablet in compliance with the new studies in the mobile commerce (m-commerce) field (Tarasewich et al., 2002; Park & Chen, 2007; Ngai & Gunasekaran, 2007; Palumbo & Dominici, 2015; Chang et al., 2015).

M-commerce offers potential opportunities for further research and applications (Barnes & Scornovacca, 2004; Di Fatta & Cupido, 2016): through smartphone and tablet, users are connected to the Internet more easily and quickly (Lin, 2012; Liang, 2015). In addition, the use by the users of the various devices can be monitored and interpreted through increasingly sophisticated systems for data

analysis, which open up new possibilities in terms of profiling of marketing campaigns through effective segmentation (Palumbo et al., 2014).

2.3 Conversion Rate Management

On the opposite point of view, we have to consider the purchasers situations: online retailers aim to boost their sells managing the conversion rate. Indeed, customer visiting a traditional or online store may or may not purchase something. In other words, it is not assured that each visit will end with a purchase. In truth, daily retailing process consists of many customers leaving stores without purchases (Söderlund et al., 2014).

In the previous literature is commonly accepted that many customers, searching for a particular kind of product, visit several store before buying (Newman and Staelin, 1972; Newman and Lockeman, 1975).

Newman argument is the basis of the recent studies on the conversion rate management (Ludwig et al., 2013) extending this concept to the online store. Specifically we will focus on the online conversion rate for e-commerce website, but, generally speaking, the conversion rate concept could be extended to each factor reaching a goal. For instance, from the social media management point of view, conversion refers to newsletter subscribers, or the number of Twitter followers, or Facebook likes etc etc. In the further sections, we are going to focus on the e-commerce conversion rate.

2.3.1 E-commerce conversion rate

The ratio between purchases and number of visitors is defined “e-commerce conversion rate” (Farag et al., 2003). Conversion rate management is one of the most frequently discussed topics in online retailing, receiving great attention from the literature (Overbuy and Lee, 2006; Ha and Stoel, 2009; Ayanso and Yoogalingam, 2009; Olbrich & Holsing, 2011; Ludwing et al., 2013), but its determinants are still not clear.

Because of the characteristics of the Internet, there is a very low conversion rate in e-commerce websites: it tends to sit between 2 and 4% (Holzwarth et al., 2006; Sohrabi et al., 2012). This is due to several reasons such as: competitors’ websites that are just one click away (Clarke, 2001; Frost et al., 2010); the low online search cost and effort often attract customers to visit an e-commerce website, without the real intention of making a purchase, but simply to collect information (Moe and Fader, 2004; Soopramanien and Robertson, 2007); there is also the risk of a security breach related to consumer personal information, credit cards or other payment methods (Koufaris & Hampton-Sosa, 2004; Chen and Barnes, 2007), implying trust problem (McKnight & Cervany, 2001; McKnight et al., 2002).

Assumed that the conversion rate is generally low for the above-mentioned reasons, this implies a high cost for the acquisition of each customer. For this reason conversion rate management could become

a source of competitive advantage for online retailers (Kotha et al., 2004).

Summarizing, the main arguments in conversion rate management literature is that the low conversion rate implies a high cost for the acquisition of each purchaser. How to increase it? Unfortunately there is not a magic formula, but our study aims to clarify some determinants of the conversion rate. Basically our idea is that an increase in the conversion rate leads to a decrease in the cost to acquire new (potential) buyers.

With this in mind, in the quantitative part of this thesis, setting conversion rate as dependent variable, we are going to study the impact of free shipping, free returns, discounts and webpage speed of load.

2.3.2 Logistics: free shipping and free returns

In order to satisfy e-commerce users' needs, a structural rethinking of the logistic function is often required to manage the delivery of the purchased goods (Simoni, 2011; Ordanini, 2011). Given this premise, online retailers have actually two strategic options (Lewis et al., 2006; Gehrke and Turban, 2009; Zhou et al., 2012; Turban et al., 2015). Option (1), online retailers pay the delivery cost full cost, giving free shipping service for the purchasers. Option (2), online retailers overturn such costs to the purchaser.

In truth, between these two extreme situations, there are actually a set of mixed strategies (Koukova et al., 2012), such as homage the

shipment when the user reach a certain value of its shopping cart (e.g. free shipping, if you spend more than 100 euro), or free shipping only for registered users (e.g. free shipping, if you give us personal information such as email to sign-up for newsletter, or a telephone number). Dominici and Di Fatta (2016), using Kano Model for quality, argued free shipping is an “attractive factor” for e-commerce website from the users point of view. Shifting from the retailers’ point of view, could be interesting thinking about how to manage the free shipping option.

This is only the first step of the delivery process. Indeed, once received the product or service purchased, the buyer might don’t like it (Petersen and Kumar, 2015). Therefore, the buyer can exercise (within the time allowed by the law) the right of withdrawal: second step, return policies. The user can then find themselves in a difficult situation due to, on the one hand, properly organize a shipment, on the other hand, to have to incur costs.

The logistic issues can be summarized in the following research hypotheses:

H1a: Free shipping affect e-commerce conversion rate.

H1b: Free return affect e-commerce conversion rate.

2.3.3 Discounts

The first studies about online discounts in fashion e-commerce websites are related to Udo and Marquis (2002), which found that online customer satisfaction is positively related to promotional sales

and discounted price. Other scholars, (Zhang et al., 2015) suggested also temporary discounts affects positively online user perception and (Di Fatta et al. 2016) highlighted which factor influence the user-perceived website quality of e-commerce (UPWQ) using a Pareto chart: the first is discount, the second is free shipping and the third is ease of use which cumulatively represents almost 70% of the UPWQ.

From the online retailers' point of view, this manuscript aim to study how pricing policy and discounts can be used in order to increase e-commerce conversion rate. Therefore,

H2: Discounts affect e-commerce conversion rate.

The presence of discounts and promotion is often combined with a particular period of year: in other words, we have also to consider the impact of seasonality on the purchases. In the fashion sector, as is well known to most people, there are two seasons: winter season, September to February; and summer season, March to August (Jackson, 2007). Usually, in the last two months of each season, retailers tend to discount their products, which cannot be sold in the following season, in order to avoid generating large stock and unsold merchandise (almost unsellable in the future).

2.3.4 Speed of load

In the early 2000s, a steam of the literature studied how technical features such as speed of load, the navigability of the site, programming language affect the online user experience (Kim and Lee, 2002; Kim and Stoel, 2004). Focusing on e-commerce websites,

Di Fatta et al. (2016) concluded that these technical aspects have a very low impact on customer perception: they are considered as a minimum functionality set which have to reach a standard level (must be requirements).

In practical terms, our research hypothesis is that increasing the speed of navigation of the website over a particular “critical value”, the conversion rate is not influenced. However, if the speed falls below this critical value, the purchaser is annoyed and therefore conversion rate is negatively affected.

H3: Webpage speed of load affects e-commerce conversion rate.

Part II

**Quantitative Techniques for
conversion rate management**

CHAPTER THREE

DETERMINANTS OF CONVERSION RATE IN E-COMMERCE

Keywords: e-commerce conversion rate, conversion rate management, fixed effect estimator

3.1 Abstract

This chapter aims to focus on the online apparel industry, especially on e-commerce websites, in order to analyze which factor affects the conversion rate using fixed effect estimator.

In this way we want to contribute, on the one hand advancing theory in conversion rate management; on the other hand, in terms of practical implications, providing concrete guidelines for retailers wishing to decrease their cost-per-conversion understanding online consumer behaviour browsing an e-commerce website.

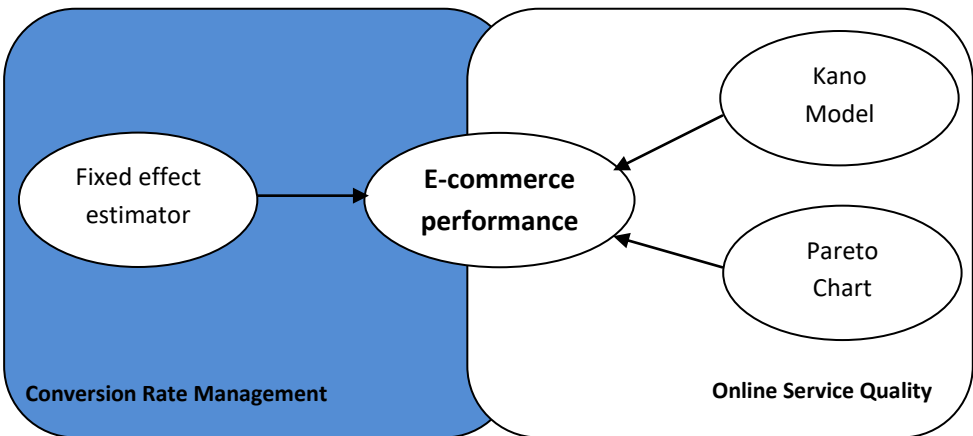
3.2 Introduction

The previous chapter already discusses that e-commerce website

conversion rate is about 2-4% (Holzwarth et al., 2006; Sohrabi et al., 2012). This is due to several reasons such as high priced products (Wolfenbarger and Gilly, 2003; Grewal et al, 2004), price sensitivity, because competitors websites are just one click away (Clarke, 2001; Frost et al., 2010), risk of a security breach related to consumer personal information, credit cards or other payment methods (Koufaris & Hampton-Sosa, 2004; Chen and Barnes, 2007) and trust (McKnight & Cervany, 2001; McKnight et al., 2002). Specifically, with respect to the fashion industry (and thus also to the apparel one), it is often lower than 2% (Di Fatta et al., 2016).

Recalling the research framework provided in chapter 1, now we are going to analyze the left side (in blue).

Figure 2: Research Design – Focus on Conversion Rate Management



The structure of the chapter is the following: next section 3.2 will

provide a literature review referring to the conversion rate management for small and medium enterprises (SMEs); section 3.3 will describe data and methodology; section 3.4 will present the results and section 3.5 will conclude with discussion, implications and further studies proposals.

3.3 Theoretical background and research hypotheses

Online retail sales reached more than \$1.3 trillion in 2014, which is over 5% of total global retail sales (EMarketer, 2014). On one hand, web retailers invest significant efforts in order to manage functionalities to improve the number of visitors and convert these visits into purchasers (Ayanso and Yoogalingam, 2009). On the other hand, web retailers face also the need for efficiency, especially in small and medium sized enterprises (Grandon et al., 2011).

3.3.1 Focus on SMEs

In the past, the major reason for small businesses to not engage in e-commerce was their perception that online sales were not strategically relevant (Bharadwaj and Soni, 2007). In the recent years there has been a sudden change of directions: digital marketing has received great attention by SMEs showing the emerging role of networks and information and communication technologies (Bocconcelli et al., 2016).

Despite the difficult to compete with the marketplaces (industry industry giants such as Amazon, EBay etc), a lot of small and medium-sized enterprises engaged in e-commerce following a four step procedure (Daniel et al., 2002). In the first stage of e-commerce adoption firms develop their first e-commerce service. In the second step, they start to use e-mail to communicate with customers. At the third level, firms have information-based websites and begin to develop on-line ordering facilities. The most advanced e-commerce adopters have on-line ordering in operation and are developing lean online payment capabilities.

By now, many SMEs are still in an embryonic state in the e-commerce adoption process: Kim et al., (2013) showed that while most of the “fifty best SMEs¹” correctly adopted Web 2.0 tools, the others need to increase their efforts to improve their performances, to connect with consumers and to remain competitive. The present study is intended as a guideline to understand what factors are most relevant to increase online sales. The present study is intended as a guideline to understand what factors are most relevant to increase conversion rate and thus online sales.

3.3.2 Determinants of conversion rate

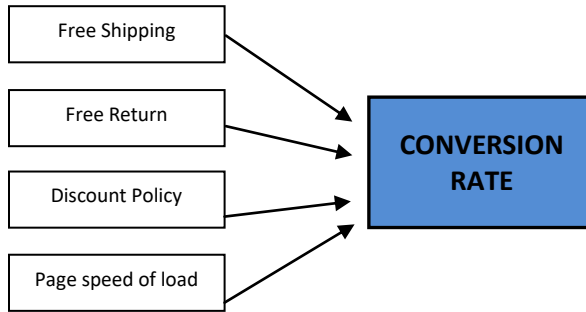
Recalling chapter 2, four hypotheses were developed about determinants of conversion rate: free shipping affects e-commerce conversion rate (H1a); free return affects e-commerce conversion

¹ Data were collected from the websites of the 50 ‘best SMEs’ to work for in America in 2009 and from the websites of a further 50 SMEs randomly chosen from www.manta.com (Kim t al., 2013).

rate (H1b); discount policy affect e-commerce conversion rate (H2); web page speed of load affects e-commerce conversion rate (H3).

The following picture shows graphically the proposed research framework outlining determinants of conversion rate.

Figure 3: Conversion Rate Determinants



3.4 Sample and Methodology

The analyzed sample is based on perfectly balanced panel data: 1184 daily observations from six different e-commerce websites in the fashion industry along a time period observation of six months (from 2016/01/01 to 2016/06/30). The following table shows average and standard deviation:

Table 1: Descriptive Statistics

Type of variable	Variable	Average	SD
Dependent variable	Conversion Rate (%)	6.84	1.03
Independent variables	Free shipping (0 no -1 yes)	0.59	0.49
	Free returns (0 no -1 yes)	0.05	0.22
	Discounts (%)	0.13	0.20
	Speed of load (0-100)	63.10	1.52

The selected methodology, fixed-effect estimator, is particularly adapted in order to analyze the impact of variables that vary over time within the same website. Furthermore, each website has its own individual characteristics that could or could not affect the predictor variables (Green, 2007).

Given that, in order to build our research model, the following assumptions have been posed:

Assumption 1. Some time-invariant specific characteristics within the single website may impact or bias the predictor or outcome variables and we need to control for this. Fixed-effect estimator removes those time-invariant characteristics so we can access the net effect of predictors on the outcome variable.

Assumption 2. The time-invariant characteristics of each website do not be correlated with other individual characteristics. Each website is different, therefore the website's error term and the constant should not be correlated with the others.

3.5 Results and discussion

In order to answer our research questions we implemented a fixed effect estimator using the conversion rate as dependent variable and a set of independent variables:

$$Conversion_{it} = \alpha_{it} + \beta_1 speed_{it} + \beta_2 freeshipping_{it} + \beta_3 freereturn_{it} + \beta_4 discount_{it} + \beta_5 month + \varepsilon_{it}$$

Conversion is the ratio between the number of visits and the number of transactions registered by the *it*h website at time *t*; *speed* is the speed of load of images of the *it*h website at time *t*; *freeshipping* is a dummy variable taking the value of 1 if the *it*h website offered *freeshipping* at time *t* and 0 otherwise; *freereturn* is a dummy variable taking the value of 1 if the *it*h website offered free return at time *t* and 0 otherwise; *discount* is the discount rate of the *it*h website at time *t*.

Furthermore, aiming to check for certain temporal effect and/or seasonality, the model also considered months (a dummy variable for each month) in order to capture consumer temporal preferences for their on-line shopping².

² A second version of the model also considered the variable *day* (a dummy variable for each day of the week) to test the presence of some preference (for instance in the week end). $Conversion_{it} = \alpha_{it} + \beta_1 speed_{it} + \beta_2 freeshipping_{it} + \beta_3 freereturn_{it} + \beta_4 discount_{it} + \beta_5 day + \beta_6 month + \varepsilon_{it}$

Not only *day* was not statistically significant, but the second model fit indices were even worse than the first model.

Table 2: Regression on Conversion Rate

VARIABLES	Coeff.
Months	0,017 (0,0397)
Speed of load	0.0262** (0,0125)
Free shipping	-0.379*** (0,0424)
Free returns	0,134 (0,0839)
Discounts	3.911*** (0,121)
Constant	4.594*** (0,786)

Standard error in parentheses
P value. *** $p < 0.01$, ** < 0.05 * $p < 0.1$

R-squared 0,647

MdAPE 7.34

In order to test the predictive accuracy of the proposed model, this manuscript also considers goodness of fit measures based on the R-square and the Median Absolute Percentage Error, or simply MdAPE (Armstrong, 2012). The previous table provided both the R-squared and the MdAPE, suggesting a fairly good explanatory power

of the models.

3.6 Conclusion

The hypotheses developed in the previous section rely on three different aspects of the e-commerce conversion rate: logistics (H1), pricing policy (H2) and webpage speed of load (H3).

Among these three, H2 showed the greatest relevance, indeed, the effect of discounts on e-commerce conversion rate is positive and statistically significant.

This finding does not mean that other variables do not influence at all the conversion rate, but the correct interpretation is that discount has a higher weight compared with other variables affecting conversion rate.

This reflection constitutes a step forward in the conversion rate management field by highlighting the key role of pricing policy in the e-commerce marketing strategy with direct impact on sales.

Recalling that the conversion rate is the relation between purchases and website visitors, increasing this ratio (keeping constant website visitor users, exogenous variable in our model) means increase sales.

This theoretical argument is likely to be interpreted in terms of practical implications for managers and professionals in the apparel industry. Indeed, there is also an important managerial implication for decision makers of an e-commerce website: they should point to an adequate discounts management in order to increase sales.

This research does not consider the impact of the pricing policy and discount on the profitability of the firm. This limitation could become an interesting research opportunity for further studies guessing the break even point between the increasing in sales (driven by discounts) and the decreasing in net profit.

Part III

Qualitative Techniques

for the online service quality

CHAPTER FOUR

KANO MODEL FOR E-COMMERCE WEBSITES QUALITY³

Keywords: *online service quality; Kano Model, web quality.*

4.1 Abstract

The aim of this chapter is to shed light on the key factors that determine the quality and attractiveness of e-commerce, in order to provide not only interesting theoretical reflections, but also useful practical implications for managers and practitioners in this sector.

The selected method is the Kano model, a qualitative and interpretative method, capable to identify the user / customer perceived quality.

The results of this work are summarized in the identification of the drivers determining e-commerce web quality in Italy, as perceived by web users, ranking these factors according to the categories identified by Kano.

³ This chapter is based on the research proposal presented at the XXIX Sinergie Annual Conference. 9-10 June 2016, University of Udine (Italy).

The main limitation is related to the sample size used that may seem limited. However, this limit could become an opportunity for further researches, in a comparative way with respect to other geographical areas or countries, in order to confirm the results obtained in the present work.

The immediate practical implication of this study is the identification of the driver for the quality of e-commerce, particularly in the brick and clicks model. These drivers can be useful guidelines for the implementation of an e-commerce.

The innovative contribution of this study is the specific analysis for e-commerce websites in Italy by using a qualitative method can provide measurable results e-commerce.

4.2 Introduction

In order to effectively implement an e-commerce strategy is useful understand the quality drivers as perceived by website users (Turban et. al, 2015). Many scholar deals with website quality requirements, (among others Huizingh, 2000; Loiacono *et al.*, 2002; Muylle *et al.*, 2004), however there is not clarity about e-commerce quality drivers.

Indeed, according to (Kuo, 2004) e-commerce website might satisfy users need differently from other websites such as social network, forum, web-community etc.

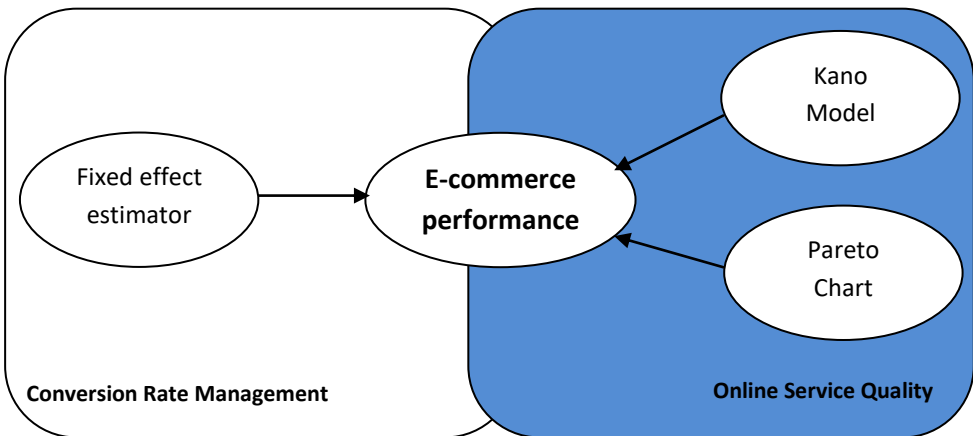
In order to fill this gap, we are going to use an extension of the Kano Model for quality in order to identify, collect and classify quality requirement specific for e-commerce website. In other words,

the research question inspiring this chapter can be summarized as follow: “Which are requirement affecting web quality from the users point of view?”

The novelty of this proposal is the focus on e-commerce phenomenon extending previous study about generic websites. The main contribution is opening a new research path e-commerce specific, but also, from the practical point of view, providing helpful implications for managers and practitioners.

Recalling research framework developed in chapter 1, now we are going to analyze the right side (in blue) in the following figure.

Figure 4: Research Design – Focus on Online Service Quality



More in detail, this chapter is structured as follows: next section 4.3 will provide the theoretical background about the Kano Model (1982); section 4.4 will describe the methodology behind the Kano

approach which is a conceptual model; section 4.5 will describe results and, finally, the last section 4.6 concludes with implications.

4.3 Theoretical Background

Chapter 2 already discussed about online service quality. In this section, referring to (Zeithaml et al., 2002) we want just remember that online service quality delivery through websites is an essential strategy to success. In order to deliver superior service quality, managers should firstly understand how customers perceive and evaluate their service.

The problem is that customers are not always able to specify exactly the desired (or desirable) attributes for a given product or service. Thus, we have to consider a methodological support to formalize and interpret customer signals. This section, considering the composite use of plural methods/methodologies converges the approaches to create improved outcomes (multi-methodological framework): this chapter deals with the Kano Model, next chapter Pareto Chart. The common trait is the previous literature on quality (see chapter 2), revised in the light of the Internet exploitation to capture this new phenomenon. Recalling the well known Pareto Rule, Griffin and Hauser (1993) found that only 20-30 customers interviews are sufficient to determine about 90-95% of all possible product service requirements.

The Kano model (1984) in his original formulation, aims to estimate the quality perceived by customers / users of a given product / service and the relative satisfaction / dissatisfaction resulting from the discrepancy between the expected and the perceived quality. The starting point for constructing the Kano questionnaire is the above mentioned identification of product requirements which have been determined in explorative investigations (Matzler and Hinterhuber, 1998).

For these reasons, the Kano model is a qualitative, interpretative and non-linear approach. Unlike quantitative methods applied to the evaluation of customer satisfaction in the search for a deterministic causation, the Kano Model, instead, seeks the understanding and extrapolation of similar and comparable situations (Kano, 1984; Johnson, 1997).

One of the main advantages of this model is the ability to overturn the conviction that there is a linear relationship between a certain feature in a product / service and the degree of customer satisfaction (Dominici et al., 2015b). In this regard Kano (1984; 2001) has shown that some factors generate more satisfaction than other ones. More in depth, Kano model identifies the perceived quality, classifying quality attributes in five dimensions:

- Must be factors (identified by the letter M): if they are not present, customer satisfaction is very low. However, their presence in abundance will not increase proportionally the level of perceived quality;

- one-dimensional factors (O): increased customer satisfaction for their presence is proportional to the ability to meet its needs;
- attractive factors (A): they have the greatest influence on customer satisfaction, but if they're missing, do not generate dissatisfaction;
- indifferent factors (I): customers are not very interested in these attributes;
- Reverse quality factors (R): customers do not wish these factors, indeed their presence leads to dissatisfaction.

If two or more requirements are ambiguous, we have to consider the so-called MOAI rule (CQM, 1993). This is a classification rule taking into account the greatest impact on perceived quality: practically, the preferential order of choice is $M > O > A > I$.

With this in mind, comparing the Kano Model to other methods such as principal component analysis or structural equations that are more rigid, it should be emphasized that this methodology appears more flexible: specifically, Witell and Lögfren (2007) have recognized the Kano model the advantage of knowing how to identify priorities in relation to certain attributes that influence user choices and provide an ordered classification of the product characteristics, as well as the ability to highlight the importance of the attributes and the different ways in which they influence consumer satisfaction.

Other scholars (Sauerwein et al., 1996; Chaudha et al., 2011) have instead investigated the capacity of Kano model in providing

directions that can be used in the project design phase or in the improving of an existing product increasing customer satisfaction

4.4 Methodology

Our research began with the identification of the key question (referring quality factor) for the questionnaire (Matzler and Hinterhuber, 1998).. Following previous studies (Shiba et al, 1993; Dominici et al., 2015b), we collected 20 quality factors using semi-structured indepth interviews and provided this list to a focus group.

The focus group has, in fact, the ability to put at ease the participants through the use of an industry idiomatic language and concepts typical of the discipline by encouraging the spread of articulated reflections and at the same time providing the researcher with the opportunity to observe the sense-making process in action (Wilkinson, 1998).

Our focus group consisted of 8 subjects, divided equally between men and women: 4 web marketing experts and 4 regular buyers of online shopping, (i.e. individuals who have performed more than 10 online purchases in the previous year).

The preliminary results of the analysis showed 8 key factors on which the focus group members had reached an agreement: the web page loading speed; website compatibility with smartphone and tablet (i.e. responsiveness); free shipping; free returns; image quality; presence of discounts on price; accuracy in the textual description of the products; information about the company that owns e-commerce.

Following the widespread literature (Aladwani and Prashant, 2002; Wang et al., 2007) and also taking into account the results of the focus group, the questionnaire has been developed. Therefore, around the above mentioned 8 components, we built 16 questions (two for each component). In this way we feel both the positive outlook is the negative one.

In other words, two questions were posed for each component: how much would you be satisfied if the “x” attribute were present? How much would you be dissatisfied if the “x” attribute was absent? The rationale is to take the two-dimensional aspect of quality: both in a positive sense, which is in relation to the benefit for the user associated with the presence of that factor, both in the negative that is, in relation to the malus that the absence of that factor determines in the customer.

Respondents were asked to indicate the degree of agreement or disagreement with respect to each question by selecting a score from one to five of the Likert scale: strongly disagree, disagree, neither disagree nor agree, agree, strongly agree (Dawes, 2008).

Previous studies shown some advantages in using a five-point scale: with respect to a seven or nine point scale, it has the ability to restrict outliers values providing balanced answers; focus the attention of the respondent on a limited spectrum, indeed too many response options can be confusing (Wyatt and Meyers, 1987; Dawes, 2008).

4.5 Results and discussion

The analysis of the survey results through the Kano model has allowed us to identify the major factors of attractiveness for e-commerce website quality (Aladwani and Prashant, 2002). These findings are also supported by the customer satisfaction index (CSI) and customer dissatisfaction index (CDI) (Berger, 1993; Tarasewich et al., 2002) which will be computed in the next sections.

4.5.1 Survey

The questionnaire was administered to a sample of 476 usual e-commerce shoppers (at least 2 purchases in the last year) in the bags and accessories industry. 438 questionnaires were correctly filled.

The following table show how the 8 components identified by the focus groups are classified using the Kano Model, recalling that O is equal to One dimensional requirement, M = Must Be, A = Attractive, I = Indifferent and R = Reverse quality.

Table 3: e-commerce Websites Quality Requirements

1) Speed of load			2) Responsiveness		
Attr.	Freq.	Perc.	Attr.	Freq.	Perc.
O	78	17,8%	O	76	17,4%
M	210	47,9%	M	104	23,7%
A	100	22,8%	A	188	42,9%
I	50	11,4%	I	69	15,8%
R	0	0,0%	R	1	0,2%

Tot.	438	1
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Tot.	438	1
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3) Free shipping		
Attr.	Freq.	Perc.
O	132	30,1%
M	95	21,7%
A	189	43,2%
I	22	5,0%
R	0	0,0%
Tot.	438	1

4) Free returns		
Attr.	Freq.	Perc.
O	67	15,3%
M	87	19,9%
A	102	23,3%
I	180	41,1%
R	2	0,5%
Tot.	438	1

5) Image quality		
Attr.	Freq.	Perc.
O	73	16,7%
M	154	35,2%
A	120	27,4%
I	89	20,3%
R	2	0,5%
Tot.	438	1

6) Discounts		
Attr.	Freq.	Perc.
O	190	43,4%
M	80	18,3%
A	132	30,1%
I	36	8,2%
R	0	0,0%
Tot.	438	1

7) Product descriptions		
Attr.	Freq.	Perc.
O	96	21,9%
M	106	24,2%
A	61	13,9%
I	174	39,7%
R	1	0,2%
Tot.	438	1

8) Information about web-holder		
Attr.	Freq.	Perc.
O	74	16,9%
M	107	24,4%
A	74	16,9%
I	182	41,6%
R	1	0,2%
Tot.	438	1

“Discounts” is one dimensional requirement according to more than 43% of the respondents. In other word customer satisfaction in

proportional to this factor: more discounts imply a higher level of satisfaction. This result is consistent with Udo and Marquis (2002) which highlighted in the web users a particular attention to discounted prices revealing sensibility to promotions.

We take a look at the logistics with regard to shipments of the purchased goods purchased. On the one hand, **“free shipping”** is considered an attractive factor (43% of the respondents), but on the other hand, the possibility of **“free return”** is considered indifferent (41% of the respondents).

What does it mean? For an e-commerce website strategy, it is much more important ensuring the free home delivery rather than offering free return services. These results are consistent with the previous literature (Zhou et al., 2012; Turban et al., 2015). In fact, in order to attract potential buyers, many e-commerce websites offer at its own cost free shipping to their customers as an additional service (and Meng Rong, 2015). These results are also supported by Bay et al., (2008) who studied the impact of the web quality on customer satisfaction, considering free shipping one of the crucial web quality requirements.

“Compatibility” with smartphone and tablets is an attractive requirement for 42% of users. This result is confirmed by previous research (Barnes and Scornovacca, 2004; Park and Chen, 2007) argued the huge spread of the Internet and of the telecommunications sector has created new possibilities for the development of what has been defined not simply electronic

commerce (e-commerce), but specifically m-commerce, namely mobile commerce (Balasubramanian et al., 2002; Chang, 2015).

Let's move to must be requirements. **“Webpage speed of load”** is a must be requirement for 48% of the respondents. In other words, users expected a certain level of speed (must be), but they don't care if the current values exceeds the threshold (Turban et al., 2015).

In the opinion of users, another key factor is the **“image quality”**, considered a must be requirement by 35% of the respondents. This is consistent with previous studies (Barnes and Vidgen, 2002), highlighted the visual aspect has a greater impact on customer experience rather than textual one. Indeed, **“product description”** is an indifferent requirement for quality (40% of the respondents). Fensel et al. (2001) argued product descriptions within an e-commerce should be as natural as possible and do not seem contrived.

Another indifferent factor is the information about **“e-commerce ownership”**: such knowledge on the ownership of the site does not appear to be of interest to web users. This is consistent with previous studies by Jutla et al., (1999) and by Liu and Arnett (2000).

4.5.2 CSI and CDI checkpoints

In order to confirm previous results, we are going to perform the so-called *Customer Satisfaction Index* (CSI). This is an indicator quantifying the ability of each quality requirements in satisfying customer needs (Berger et al., 1993).

$$CSI = \frac{(A + O)}{(A + O + M + I)}$$

CSI ranges from 0 to 1. If the value is closet o 1, the greater will be the impact on customer satisfaction. The following table provide our eight quality requirements ordered from the higher CSI value to the lower.

Table 4: CSI scores

Quality Requirements	CSI
Discounts and promotions (O)	0,74
Free shipping (A)	0,73
Smartphone & tablet compatibility (A)	0,60
Image quality (M)	0,44
Speed of Load (M)	0,41
Free returns (I)	0,39
Accuracy of product descriptions (I)	0,36
Information about web-holder (I)	0,34

The most important factor for customer satisfaction seems to be discounts and promotion, the second is free shipping and the third is compatibility with smartphone and tablet. It is important to note that they are one dimensional and attractive requirement. Their presence boosts customer satisfaction.

Image quality and speed of load are must be requirement, thus user expected their presence and are negatively affected if they are absent. Not coincidentally, the last three factors in the ranking of the

CSI values are indifferent factors: free returns, accuracy of the products description and owner information. However, adequate consideration must be careful in order to do not misinterpret these results: in fact, a low value of CSI does not mean these three attributes have no relevance for quality, but simply these indifferent requirements have a lower incidence in influencing customer experience (Yang and Fang, 2004).

This issue provide an insight to what will be more precisely outlined in the conclusions: a first clear and obvious practical implication is that managers should focus their attention and resource in the optimization of those factors having a greater impact on customer satisfaction of users (i.e. those requirements having the highest CSI values).

Moving on to the analysis of the dark side of quality we have also to consider the dissatisfaction. Customer Dissatisfaction Index (CDI) indicates the degree of dissatisfaction resulting from the non-fulfilment of a need, and therefore takes on a negative connotation in the incidence on customer experience (Berger et al., 1993; Rust and Oliver, 2000).

$$CDI = -\frac{(M + O)}{(A + O + M + I)}$$

This index ranges between -1 and 0. The closer to -1, the greater the negative impact on the level of user satisfaction, thus generating dissatisfaction. Conversely, if it approaches to zero, it implies a low incidence. The following table relates the values of CSI and CDI:

Table 5: CSI and CDI – A comparison

Quality Requirements	CDI	CSI
Speed of Load (M)	- 0,66	0,41
Discounts and promotions (O)	- 0,62	0,74
Image quality (M)	- 0,52	0,44
Free shipping (A)	- 0,52	0,73
Accuracy of product descriptions (I)	- 0,46	0,36
Information about web-holder (I)	- 0,41	0,34
Smartphone & tablet compatibility (A)	- 0,41	0,60
Free returns (I)	- 0,35	0,39

It is important to note the higher CDI values are speed of load (-0,66) and discount (-0,62), respectively must be and one dimensional requirements. Image quality (that is also a must be requirement) has the third values (-0,52).

As above mentioned, user expected the presence of a must be requirement, otherwise they are very dissatisfied. This is consistent with Brignall et al. (1991) founding that fulfilling of this minimum requirement is necessary, but overcome this value does not get “bonus points”.

More critical is the situation about discounts being one dimensional requirement: customer satisfaction is proportional to their presence and dissatisfaction to their absence. This is a double-edged sword for e-commerce managers which need to use discounts with caution.

4.6. Conclusion

This chapter focused on the quality perceived by e-commerce users in order to identify the quality requirement using the Kano Model. Reversing our findings from sellers' point of view, useful practical implications arise: quality factors are, in effect, drivers that managers need to know how to check to target their e-commerce strategy along the road to success (Koksal and Penez, 2015; Baye et al. 2016).

Compared with 8 factors initially considered, our research has allowed us to narrow it down to 5 quality requirements for e-commerce website. Consistently with Kano methodology they are one dimensional (discounts), attractive (free shipping and responsiveness) and must be requirements (image quality and speed of load).

One of the the main thereotical contribution is that this research has reduced the 8 possible factors to 5 significant quality requirements. Specifically, the most important factors in term of CSI are related to the commercial sphere: the presence of discounts and promotions (marketing and sales) and free delivery (logistics). However an e-commerce website cannot underestimate the technical side: webpage speed of load, smartphone and tablet compatibility (IT).

Anyway, as anticipated in the discussion, managers must not only focus on quality factor having the highest CDI level, but also

consider dissatisfaction. Usually dissatisfaction is underestimated (Srinivasan et al., 2002) thus we aim to stress the effect of some factors that may result in dissatisfaction when absent: the image quality is a must be requirement.

The exploitation of the image quality as a distinguishing factor may even be an element of differentiation from the competitors. The presence of an artistic director who can take care of not only the quality of images in the narrow sense, but also the communication content can be a concrete suggestion (Delmestri et al., 2005).

Generalizing, this research want to conclude this chapter emphasizing that, in order to implement a successful strategy for e-commerce, managers need to consider several aspects of quality investing marketing & sales, logistics, just to name a few.

Figure 5: Integrated Strategy for Quality (following Kano)



Therefore, it is crucial to point out that, having to allocate limited resources, managers should focus their attention on those factors that determine a greater impact on customer experience.

The Kano model already provides a preferential ordering of the quality requirements; however, in order to consolidate our analysis, the next chapter will use a Pareto Chart methodology emphasizing which are the most important factors for the user-perceived quality.

CHAPTER FIVE

PARETO CHART FOR THE USER-PERCEIVED WEB QUALITY⁴

Keywords: Pareto Chart, User-perceived Web Quality.

5.1 Abstract

E-commerce is a valuable opportunity to quickly reach users from all over the world through the internet also for small and medium enterprises (Poon et al., 1999; Gregory et al., 2014), indeed many traditional retail firms evolved into digital world (Hart et al., 2000; Di Fatta et al. 2016).

This chapter aims to shed light on these matters using Pareto Chart to provide a classification of the most relevant factor for the user-perceived web quality (UPWQ) in e-commerce website.

The results of this research are clear in identifying that 3 factors cover about 70% of the UPWQ: discount, free shipping and ease of use. These finding will provide not only a better understanding of the

⁴ This chapter is based on the research proposal presented at the WSEAS International Conference. 19-21 August 2016. Mallorca (Spain).

UPWQ from the theoretical point of view, but also useful guidelines for e-commerce managers.

5.2 Introduction

Online oriented firms need to know (and thus to manage) the concept of UPWQ in order to effectively implement an effective e-commerce strategy (Tencati and Poguts, 2015; Turban et. al, 2015).

Even though in the previous literature has been already studied the factors which determine the attractiveness of a generic website (e.g. Huizingh, 2000; Loiacono et al., 2002), further researches are required in order to understand specific aspects characterizing e-commerce sites. This implies that the concept of quality must be ad hoc re-defined.

The originality of this chapter relies on its focus on the e-commerce phenomenon, also translating our findings into concrete and practical implications for managers and practitioners. The most important consideration, consistent with Pareto rule, is that only three factors explaining 70% of the UPWQ.

The chapter is structured as follows: next section 5.2 will go through a literature review on the concept “quality” on the web focusing on the UPWQ. Section 5.3 will describe sample and methodology adopted; section 5.4 will present the result and discussion, showing the Pareto Chart about user-perceived web quality for e-commerce; the last section 5.5 will conclude providing also some practical implications, as well as theoretical contributions

and the limitation of this study, suggesting some proposals for further researches.

5.3 Theoretical Background

Through the Internet the interaction between firms and consumers becomes more direct, immediate and rapid. (Peterson, Balasubramanian and Bronnenberg, 1997; Otto and Chung, 2000; Kogut, 2004; Dominici et al, 2015a; Dominici, 2009a , 2009b, 2012; Di Fatta et al. 2016).

These radical changes in the relationship between supply and demand imply that firms are forced to intercept the needs of customers in the shortest possible time in order to create and maintain a long term relationship. Has already discussed that many scholars studied online satisfaction (Bay et al., 2008; Muyllé et al. 2014) or web quality (Zeithaml et al., 2002; Cox and Dale, 2002; Aladwani and Parwia, 2002; Seethmaraju, 2004; Ahn et al, 2007), but there is a need for more focused research about specific e-commerce quality.

5.3.1 User-perceived Web Quality (UPWQ)

This section will provide an overview of the main studies about web quality aiming to highlight the difference between traditional website and e-commerce.

The first studies about web quality focused on technical aspects

(Zeithaml et al., 2002) trying to identify customers feelings. These include information availability and content, ease of use or usability, privacy, security, graphic style and fulfilment.

The Cox and Dale model (2002) is based on similar concerns, focusing on the following features: ease of use, customer confidence, online resources and relationship services.

Aladwani and Parwia (2002) recognized the need to shift the attention to quality perceived by users who navigates the website starting a new research path: the user-perceived web quality (or simply UPWQ).

They, basically, found three dimensions: (1) technical adequacy, (2) web content e (3) web appearance. Each of them has the following sub-dimensions:

(1) Technical adequacy referrers to security; ease of navigation; broadcast services; limited use of special plug-ins; search facilities; anonymity; availability; valid links; reliability; browser sniffing; personalization or customization; speedy page loading; interactivity; ease of access; multi-language support; protected content; bookmark facility.

(2) Web content relies on usefulness of content; completeness of content; clarity of content; uniqueness of content; broadness of content; originality of content; currency of content; conciseness of content; accuracy of content; finding contact info.; finding people without delay; finding site maintainer; finding links to relevant sites; finding firm's general info.; finding products/services details; finding customers' policies; finding customer support; finding FAQ list;

finding free services; using limited registration forms; finding online help; diversity of content; finding free info.

(3) Web appearance considers attractiveness; distinctive hot buttons; changing look; organization; proper use of fonts; proper use of colours; proper use of graphics; graphics-text balance; proper use of multimedia; style consistency; proper choice of page length; good labelling; text-only option; proper use of language/style; color consistency.

This research framework is commonly accepted (Seethamraju, 2004; Yang et al. 2005). Ahn et al. (2007) enriched this approach also considering the general system quality. Therefore they suggested the following classification (1) system, (2) information and (3) service quality⁵.

Another interesting contribution (Barnes and Vidgen, 2002) proposed an integrative approach to this issue. Barnes and Vidgen identified three main components: (1) usability, (2) information, (3) service interaction. This model constitutes the theoretical background for this chapter. More in depth, the three components can be decomposed into five sub-dimensions which are:

- (1a) usability,
- (1b) design,
- (2) information quality,
- (3a) trust

⁵ More in detail: (1) System quality items are: design, navigation, response time, security, availability, functionality, error-free transaction, multimedia. (2) Information quality: contents, completeness, detail, accuracy, timeliness, information reliability, format. (3) Service quality: responsiveness, credibility, assurance, empathy, follow-up service, competence.

(3b) empathy i.e. issue for transaction and security.

5.3.2 Updated model for the User-perceived Web Quality

Di Fatta et al., (2016b) taking also into account commercial and promotional aspects such as the free shipping of the purchased goods, pricing policy (e.g. discounts or price promotions) and the compatibility with smart phone and tablet (also called responsivity) provided an extension of this model. The results highlighted eight key factors affecting UPWQ for e-commerce grouped into two macro-categories: technical and emotional features. With respect to technical features, this research considered the following features: (1) ease of use, (2) design, (3) responsiveness, (4) information quality; with respect to emotional features: (5) empathy, (6) trust, (7) free shipping, (8) discount.

Table 6: UPWQ features

Barnes and Vidgen (2002)	Di Fatta, Musotto and Vesperi (2016)
(1a) usability,	(1) ease of use,
(1b) design,	(2) design,
(2) information quality,	(3) responsiveness (new),
(3a) empathy	(4) information quality;
(3b) trust	(5) empathy,
	(6) trust,
	(7) free shipping (new),
	(8) discount (new).

5.4 Sample and Methodology

Building on the previous studies (Barnes and Vidgen, 2002; Di Fatta et al. 2016b), this chapter used a qualitative approach. Using Delphi methodology we remixed the features affecting UPWQ to reach a consensus among scholars and professional. Then we submitted to customers a multiple choice questionnaire.

Once data collected, we used a Pareto chart to analyze and summarize the results classifying them in a preferential order.

5.4.1. Delphi Method

Using a common idiomatic language and concepts typical of the discipline (in this case e-commerce), Delphi Method encourages the spread of articulated reflections. According to Linstone and Turoff (1975) it is a method able to structure a group communication such that the process allows a group of individuals as a whole in order to deal with a complex problem.

Furthermore, the Delphi method has proven a popular tool for identifying and prioritizing issues for managerial decision-making (Okoli and Pawlowski, 2004). This is consistent with the idea of this chapter: to provide useful practical implication for managers.

Because this we invited to participate two social media managers, two e-commerce chief marketing officers to participate. We also

invited four academic scholars dealing with e-commerce issues.

The results converged with previous studies (Barnes and Vidgen, 2002; Di Fatta et al. 2016b), but added two more factors: free returns and speed of load. The following table will show the new factors considered in the proposed research design.

Table 7: Proposed Research Design

Barnes and Vidgen (2002)	Di Fatta et al. (2016)	Proposed Research Design
(1a) usability, (1b) design, (2) infor. quality, (3a) trust (3b) empathy	(1) ease of use, (2) design, (3) responsiveness, (4) infor. quality; (5) empathy, (6) trust, (7) free shipping, (8) discount.	(1) ease of use, (2) design, (3) responsiveness, (4) infor. quality; (5) speed of load (new) (6) empathy, (7) trust, (8) free shipping, (9) free returns (new), (10) discount.

The proposed research design follows the distinction in two categories, technical and emotional features. With respect to technical features, we added (5) speed of load; with respect to emotional features, (9) free returns was added.

We want to test whether, adding other factors, users perceptions will change. Specifically “free return” is a promotional aspect often used by e-commerce, however, the opinion of the literature on this

subject is controversial: some scholars (Kim and Lee, 2002; Kim and Stoel, 2004) argued that it affects website users experience, but, focusing on e-commerce websites, the Kano Model, presented in the previous chapter, showed that speed of load is an indifferent requirement for customer satisfaction.

Using the proposed research design (composed by ten features), we built a questionnaire for measuring e-commerce UPWQ. For each feature, the interviewee had to express a preference ranging on a Likert scale from 1 meaning “not at all important” to 10 meaning “extremely important”.

Following Gardner (1998), we used a single measurement item for each feature. The reason is that in this kind of perceptual contexts, a single measurement item is able capture the first impression of the respondents in a dry way.

Following also Dawes (2008), we used a ten points Likert scale. Indeed, pair elements scale avoids the focus on the central element: in other words, in a despair scale, the respondent tend choose the median element. Furthermore, ten is considered a wide scale, allowing to highlight the differences between perceptions factors.

5.4.2 Sample selection

To select the sample, a preliminary barrier was posed to the candidate in order to identify the “online regular buyers” (Chen and Barnes, 2007). Thus, respondents were selected through an online form requiring a condition for the access to the main questionnaire:

at least three online orders or, alternatelively, at least 150€ spent in the past year.

In this way we selected a sample composed by 750 using a purposive sampling method. Then a structured self-administered questionnaire was used collect data.

The main questionnaire consisted of ten questions about (1) ease of use, (2) design, (3) responsibility, (4) information quality, (5) speed of load, (6) empathy, (7) trust, (8) free shipping, (9) free returns, (10) discount.

In the face of 750 selected candidates, 678 questionnaires were correctly filled and sent back. The high response rate (more than 90%) is due to the preliminary selection of the candidates and therefore it is aligned with threshold values (Baruch and Holton, 2008).

5.4.3 Pareto Chart

Pareto Chart is a qualitative methodology commonly used in business, marketing and management studies (Myers, 2013), tracing its root in quality control studies (Juran, 1951 and 1962; Ishikawa, 1985).

The quality literature pointed out the main characteristic of this methodology (Juran, 1974; Kano, 1995): basically, the Pareto Chart is an application of the well known Pareto rule argued the 80% of income was limited to 20% of the population. Applying this concept to quality, the background idea is that small percentage of the factors

usually contributes to the high percentage of the perceived quality.

Other authors (Kano, 1995; Witell and Lögfren, 2007), stressed on the relevance of Pareto Chart in analyzing individually quality attributes and the different ways in which they influence consumer satisfaction or quality perception. Summarizing, the main advantage of Pareto Chart is to identify critical factors or defect leading respectively to success or failure in a quality process.

In practice, Pareto Chart is a bars graph where each factor is represented by bars placed in decreasing order.

The most commonly used version of the Pareto chart puts the highest bars on the left and includes a line showing the scores produced by adding the heights in order from left to right (Wilkinson, 2006). This increasing line represents the cumulative distribution, i.e. the Lorenz curve (Gastwirth, 1971 and 1972).

In other words, the bars are ordered using frequencies in non increasing order and the line is added in order to show their cumulative sum (Kano, 1995; Wilkinson, 2006).

5.5 Results and Discussion

The results from the analysis of the responses are essentially attributable to two areas: the different impact on UPWQ by emotional and technical factors, identified as “finding A”; the concentration of the results in three main factors, “finding B”.

A relevant difference between technical and emotional factors has clearly emerged. The following table show UPWQ is determined for 61.8% by emotional factors against 38.2% by technical ones.

Table 8: Emotional and Technical factors

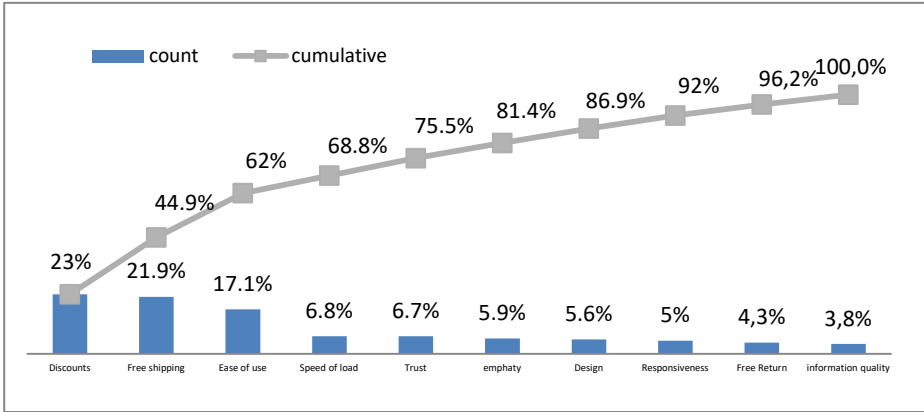
Technical Factors	Count	Emotional Factors	Count
(1) ease of use	17,1%	(6) empathy	5,9%
(2) design	5,6%	(7) trust	6,7%
(3) responsiveness	5,0%	(8) free shipping	21,9%
(4) information quality	3,8%	(9) free returns	4,3%
<u>(5) speed of load</u>	<u>6,8%</u>	<u>(10) discount</u>	<u>23,0%</u>
Total	38,2%	Total	61,8%

These results are consistent with previous studies providing argued online customers are not only web users with technical requirements, but most of all purchasers (Chen and Dubinsky, 2003; Ha and Stoel, 2009), thus emotional factors has a relevant role for e-commerce UPWQ.

Finding A: Emotional Factors are more relevant for e-commerce UPWQ rather than technical factors.

In order to better understand these results, the cumulative frequency in the Pareto Chart (picture above) outline that among ten factors, the first three (i.e. discounts, free shipping and ease of use) explain more than the majority of the e-commerce UPWQ.

Figure 6: Pareto Chart for the UPWQ



Finding B: Discount, free shipping and ease of use determine 62% of e-commerce UPWQ and the other factors give only a marginal contribution (all together 38%).

An insight for practical implication, which will be discussed later, is that e-commerce decision makers should focus in developing these factors more than the others to increase the UPWQ. Indeed, working on (for instance) speed of load or trust, will add less than 7% to the UPWQ. Instead, the first factor that is discount represents 23%.

It is also interesting to note that the first and the second factor, discount and free shipping, explain about half (44.9%) of the total e-commerce UPWQ.

These concerns are in line with the previous chapter: indeed, in the Kano Model, discount is a one dimensional factor recalling that customer satisfaction is proportional to the ability to e-commerce discounts and promotions. This is also consistent with previous

literature (Udo and Marquis, 2002; Zhang et al., 2015) found that online customer satisfaction is positively related to promotional sales and discounted price.

In the Pareto Chart, the second most important factor (21.9% of the e-commerce UPWQ) is free shipping that is an attractive factor in the Kano Model. This is also consistent with previous study (Gehrke and Turban, 2009; Zhou et al., 2012; Turban et al., 2015) argued free shipping boost online sales.

The third factor is ease of use (17.1% of the e-commerce UPWQ) that is a technical requirement. We have already noted those emotional features are more relevant than technical ones; however, although ease of use is a technical factor, it is the third most relevant factor.

How is it possible? An explanation is provided by Corbitt et al. (2003), founding a causal relation between ease of use and user experience. In other words, ease of use is not completely a technical requirement but, being positively related to e-commerce participation, in a certain way could be considered also an emotional factor.

This argument is widely accepted in the previous literature (Gefen and Straub, 2000; Gefen et al, 2003; Delone and Mclean, 2004). Among the others, the contribution by Ramaya and Ignatius (2005) is particularly interesting because it explores the relation between perceived ease of use and perceived enjoyment as the main drivers of intention to shop online showing they are positively related to intention to shop online.

The above mentioned factors explain 62% of the e-commerce UPWQ and the others have, individually, a low impact. However a clarification is required: it is definitively wrong to conclude that these attributes have no relevance at all. Managers should allocate their limited resources at first on the most relevant factors and, secondly, deal with the others (Yang and Fang, 2004).

Anyway, before concluding, could be useful spend a couple of words on the difference between free shipping and free return. It is considered a not very relevant factor by previous study (Bower and Maxham, 2012) and the Kano Model revealed it is indifferent factor for customer satisfaction. However, we added this factor on the Pareto Chart to show that while adding other factors, people's attention remains focused on discount, free shipping and free returns

5.6 Conclusions

This study refers to the user-perceived web quality literature in order to build an e-commerce specific research design. The theoretical contribution is going a step forward previous study defining e-commerce quality requirements.

On the practical side, this research has also classified the factors according to a Pareto Chart in a preferential order providing useful implications for managers and professionals. All the proposed factors have a certain impact on UPWQ, but the strength of the Pareto Chart is to provide a preferential order among them.

The first reflection is about the emotional features which are in general more relevant than technical ones: 61,8% of the e-commerce UPWQ.

Moreover, in detail, this chapter outlined the most critical factors are: discount, free shipping and ease of use which, cumulatively, determine the 62% of UPWQ for an e-commerce.

5.6.1 Implications

Merging the Kano model results with the Pareto Chart finding, this manuscript aims to provide practical guidelines that practitioners could use to manage their e-commerce performance. The first practical implication is to focus on emotional features: e-commerce sales are not a technical issue, but first of all a website should cause emotions.

The second practical implication is that managers should focus especially in developing pricing policy (i.e. discount) and free shipping facilities more than the other aspects. Given the need to allocate limited resources, this study can be a valuable support to guide this resource allocation for decision making process.

These reflections have to be taken into account for the implementation of the whole firm's web-strategy. Specifically, discount promotion is a choice that belongs to a commercial perspective (marketing & sales); free shipping option requires an adequate logistic with shipping and delivery system: some scholars (Gunasekaran et al., 2008; Wu and Wu, 2015) suggested supply chain

management as competitive strategy in our networked economy; ease of use is a technical factor the development of which requires adequate computer skills to maximize user navigation experience.

Figure 7: Integrated Strategy for Quality (following Pareto Chart Results)



5.6.2 Limitations and further researches

With respect to the limitations of this study, the questionnaire for data collection related to the Pareto Chart has an objective limitation in the choice of a limited number of factors.

Compared to previous studies (Barnes and Vidgen, 2002; Di Fatta et al., 2016), this research increased the number of factors up to ten. However, the results are consistent identifying same factors which have the greatest impact on UPWQ: the results converge on free

shipping, discount and ease of use. In other words, adding further factors would not seem to distort the validity of the results.

Another limit is given by the sample size that was restricted to usual shoppers. Therefore, it might be interesting to repeat this research methodology with People not used to buying online. In this sense, further researches could also analyze the two groups (usual vs. unusual online shoppers) to point out eventual communalities or differences in the perceived quality.

Last reflection is about the new mobile commerce also called m-commerce, given that there is an increasing trend in mobile shopping (Wang and Liao, 2007).

This research tried to capture this phenomenon inserting a factor: the website responsiveness and compatibility with devices such as smartphone and tablet. Further researches might specifically study the features affecting perceived quality for m-commerce and mobile shoppers.

Part IV
Final Remarks

CHAPTER SIX

CONCLUSION

The purpose of this thesis is to identify the common factors that concern two different, though related, attributes in the e-commerce phenomenon, so as to emphasize the possible connections between an e-commerce manager's interest in a website's conversion rate and the online service quality perceived by the users. These issues include the enhancement of website user experience (perceived quality) and changes in the ratio of sales to website visitors (the conversion rate). If these interests coincide, a win-win situation emerges for both sellers and purchasers.

Having reviewed the literature in previous chapters, Chapter 3 shed light on the determinants of the conversion rate by analysing a balanced data panel showing that discount policy positively affects conversion rate. The research also considered logistic issues (e.g., free shipping and discount) and functional requirements (webpage loading speed), which in fact turned out to be not very relevant.

Chapters 4 and 5 then tested the customers' point of view: intuitively, discount seems like a relevant factor for user-perceived web quality (UPWQ), but further considerations are necessary.

Using the Kano Model, it was found that discount is a "one-dimensional" requirement that has a proportional relation with satisfaction: the higher the discount percentage, the higher the customer satisfaction. However, e-commerce users consider free

shipping and smartphone and tablet compatibility as “attractive” requirements. Furthermore, there are also some “must-be” requirements; these are factors expected by users, such as fast webpage loading and sufficiently high image quality.

These findings are consistent with the results of Chapter 4 results which, by using a Pareto Chart, showed that three factors alone represent 62% of the e-commerce UPWQ, with discount policy accounting for 23%, free shipping for 21.9%, and ease of use for 17.1%.

The following table summarizes the key factors determining e-commerce conversion rate, online service quality, and user-perceived web quality.

Table 9: Convergence between the retailers’ and purchasers’ points of view

RETAILER	PURCHASER	
Conversion Rate	Online Service Quality	UPWQ
Discounts	Discounts (O)	23% Discounts
Free shipping	Free shipping (A)	21.9% Free shipping
Page loading speed	Responsiveness (A)	17.1% Ease of use
	Page loading speed (M)	
	Image quality (M)	

(O) = one dimensional requirement

(A) = attractive requirement

(M) = must-be requirement

6.1 Implications and contributions to existing knowledge

Table 9 shows some common traits between conversion rate and online quality literature: the main theoretical contribution is that it is possible to highlight a win–win strategy, advantageous for both retailers and purchasers.

This thesis has shown that discount policy is the most important factor for e-commerce, followed by logistic issues—especially free shipping. Furthermore, the third factor concerns functionality (speed of load, responsiveness, and ease of use): discount policy and free shipping have a clear commercial nature; however, e-commerce is still performed through a website platform and, as such, needs to have some key requirements regarding system (or functional) quality.

In order to provide not only theoretical contributions, but also useful managerial implications, the following picture shows the main business functions involved in e-commerce strategies and the key drivers affecting performance.

Figure 10: Integrated strategy for e-commerce quality



The main contribution of the present work is the conceptualization of a model for improving this win–win strategy. Given limited resources, managers should focus their effort on the most relevant factors affecting conversion rate, underlining that these are not purely technical issues, but rather involve the whole firm’s strategy and functions: marketing and sales, logistics, and information technology.

From a quantitative point of view, this research has found a statistically significant and positive relationship between discount policy and e-commerce conversion rate: Chief Marketing Officers (CMOs) should manage this factor in order to boost conversion rate performance and increase sales.

From the qualitative point of view, this study has shown the importance for the customer of free shipping: the Chief Logistics Officers (CLOs) should manage this factor.

Functional quality, and particularly loading speed, is a must-be requirement for online service quality, and also affects conversion rate: Chief Technology Officers (CTOs) should ensure adequate quality standards; in this case, loading speed scores greater than 50 can be considered acceptable. Having reached this threshold value, further investment in this direction does not really increase customer satisfaction. Thus, in this case, the CTO's goal is simply to reach the threshold values accepted by users.

6.2 Limitations and further study

This research is not immune from criticism. On one hand, this thesis focused from a general perspective on the e-commerce website phenomenon. However, in recent years, the development of purchases through mobile devices has attracted scholarly attention (Wang and Liao, 2007; Chang, 2015, Liang, 2015). This thesis has attempted to fix this omission by considering smartphone and tablet compatibility; however, according to a well-known mobile marketing principle (Barner and Scornovacca, 2004), mobile commerce requires a mobile app, which is preferable to a mobile-friendly website.

Further study could address our research design in order to study, *mutatis mutandis*, the factors determining the conversion rate and service quality for m-commerce users. Thus it could also be interesting to compare these results with e-commerce findings in order to identify commonalities and differences. Is an integrated

online strategy for both e-commerce websites and mobile apps possible?

A further limitation is the omission of a factor to characterize search engine optimization (SEO). Indeed, this research has considered functional quality from the customers' point of view, but search engines (such as Google, Yahoo! Search, etc.) also require some functional requirements. A website that is well-indexed in a search engine generates more page views and can therefore lead more visitors to it (Andzulis et al., 2012; Baye et al., 2016). In other words, it is worth asking whether SEO can be considered a determinant of conversion rate.

Further studies could deepen this relationship by also considering the importance of social media marketing (SMM) in general. Enlarging the horizon of the analysis, it could be interesting to not only consider search engines, but also social networks (Facebook, Twitter, etc.). Thus, another research question for future work arises: does SMM affect conversion rate or user-perceived quality?

6.3 Originality

The novelty of this contribution relies on its bidimensional and multimethodological framework: merging both the retailers' and purchasers' point of view with qualitative and quantitative techniques, this manuscript improves existing knowledge with its emphasis on win-win strategies.

In other words, this research has identified factors that both boost conversion rates and improve the user-perceived web quality. This strategy constitutes the input to needed to initiate a virtuous circle that can feed both e-commerce websites sales and customer satisfaction.

CHAPTER SEVEN

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CHAPTER EIGHT

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