CUSTOMERS' LOYALTY MODEL IN THE DESIGN OF E-COMMERCE RECOMMENDER SYSTEMS

RABAB ALI ABUMALLOH

A thesis submitted in partial fulfilment of the
requirements for the award of the degree of
Doctor of Philosophy

School of Computing
Faculty of Engineering
Universiti Teknologi Malaysia

November 2021

DEDICATION

To my beloved husband

To my mother

To Nour

To Ali

Thanks for being there for me

ACKNOWLEDGEMENT

First and foremost, I would like to thank Allah for answering my prayers, I couldn't finish this work without the strength Allah gave me.

I gratefully acknowledge my supervisor, Associate Prof. Dr. Othman Ibrahim. He was always available with his invaluable advice, encouraging words, creative vision, and supporting gaudiness. I especially appreciate his patient, deep knowledge, and listening ear.

I am thankful to my husband for his support, encouraging and loving over the years that guided the completion of this thesis.

I would like to thank members of my family, my loving mother, my brothers and sisters for their long support.

ABSTRACT

Recommender systems have been adopted in most modern online platforms to guide users in finding more suitable items that match their interests. Previous studies showed that recommender systems impact the buying behavior of e-commerce customers. However, service providers are more concerned about the continuing behavior of their customers, specifically customers' loyalty, which is an important factor to increase service providers' share of wallet. Therefore, this study aimed to investigate the customers' loyalty factors in online shopping towards e-commerce recommender systems. To address the research objectives, a new research model was proposed based on the Cognition-Affect-Behavior model. To validate the research model, a quantitative methodology was utilized to gather the relevant data. Using a survey method, a total of 310 responses were gathered to examine the impacts of the identified factors on customers' loyalty towards Amazon's recommender system. Data was analysed using Partial Least Square Structural Equation Modelling. The results of the analysis indicated that Usability (β=0.467, t=5.139, p<0.001), Service Interaction (β=0.304, t=4.42, p<0.001), Website Quality (β=0.625, t=15.304, p<0.001), Accuracy (β=0.397, t=6.144, p<0.001), Novelty (β=0.289, t=4.406, p<0.001), Diversity (β=0.142, t=2.503, p<0.001), Recommendation Quality (β=0.423, t=7.719, p<0.001), Explanation (β=0.629, t=15.408, p<0.001), Transparency (β=0.279, t=5.859, p<0.001), Satisfaction (β=0.152, t=3.045, p<0.001) and Trust (β=0.706, t=14.14, p<0.001) have significant impacts on customers' loyalty towards the recommender systems in online shopping. Information quality, however, did not affect the quality of the website that hosted the recommender system. The findings demonstrated that accuracy-oriented measures were insufficient in understanding customer behavior, and other quality factors, such as diversity, novelty, and transparency could improve customers' loyalty towards recommender systems. The outcomes of the study indicated the significant impact of the website quality on customers' loyalty. The developed model would be practical in helping the service providers in understanding the impacts of the identified factors in the proposed customers' loyalty model. The outcomes of the study could also be used in the design of recommender systems and the deployed algorithm.

ABSTRAK

Sistem cadangan telah digunakan dikebanyakan pelantar dalam talian moden untuk membimbing pengguna mencari item yang lebih sesuai dengan minat mereka. Kajian terdahulu menunjukkan bahawa sistem cadangan mempengaruhi tingkah laku pembelian pelanggan e-dagang. Walau bagaimanapun, penyedia perkhidmatan lebih prihatin terhadap tingkah laku berterusan pelanggan mereka, khususnya kesetiaan pelanggan, yang merupakan faktor penting untuk meningkatkan dompet penyedia perkhidmatan. Oleh itu, kajian ini bertujuan untuk mengkaji faktor kesetiaan pelanggan semasa membeli-belah dalam talian terhadap sistem cadangan e-dagang. Untuk mencapai objektif kajian, model penyelidikan baharu dicadangkan berdasarkan model Kognitif- Kesan-Tingkah Laku. Untuk mengesahkan model kajian, metodologi kuantitatif digunakan untuk pengumpulan data. Dengan menggunakan kaedah tinjauan, sebanyak 310 maklum balas dikumpulkan bagi meneliti kesan faktor-faktor kesetiaan pelanggan yang dikenal pasti terhadap sistem cadangan Amazon. Data dianalisis dengan menggunakan Pemodelan Persamaan Struktur Kuasa dua Terkecil Separa (PLS-SEM). Hasil analisis menunjukkan bahawa Kebolehgunaan ($\beta = 0.467$, $t = 5.139$, $p < 0.001$), Interaksi Perkhidmatan ($\beta = 0.304$, $t = 4.42$, $p < 0.001$), Kualiti Laman Web ($\beta = 0.625$, $t = 15.304$, $p < 0.001$), Ketepatan ($\beta = 0.397$, $t = 6.144$, $p < 0.001$), Kebaharuan ($\beta = 0.289$, $t = 4.406$, $p < 0.001$), Kepelbagaian ($\beta = 0.142$, $t = 2.503$, $p < 0.001$), Cadangan Kualiti ($\beta = 0.423$, $t = 7.719$, $p < 0.001$), Penjelasan ($\beta = 0.629$, $t = 15.408$, $p < 0.001$), Ketelusan ($\beta = 0.279$, $t = 5.859$, $p < 0.001$), Kepuasan ($\beta = 0.152$, $t = 3.045$, $p < 0.001$) dan Kepercayaan ($\beta = 0.706$, $t = 14.14$, $p < 0.001$) mempunyai kesan kesetiaan pelanggan yang signifikan terhadap sistem cadangan dalam membeli-belah dalam talian. Walau bagaimanapun, Kualiti Maklumat tidak mempengaruhi kualiti laman web yang menjadi hos sistem cadangan. Hasil kajian menunjukkan bahawa pengukuran berorientasi ketepatan tidak mencukupi dalam memahami tingkah laku pelanggan, dan faktor kualiti lain seperti kepelbagaian, kebaharuan, dan ketelusan dapat meningkatkan kesetiaan pelanggan terhadap sistem cadangan. Hasil kajian menunjukkan kesan ketara kualiti laman web terhadap kesetiaan pelanggan. Model yang dibangunkan dapat memberikan implikasi praktikal untuk membantu penyedia perkhidmatan dalam memahami kesan faktor yang dikenal pasti dalam model kesetiaan pelanggan yang dicadangkan. Hasil kajian juga boleh digunakan dalam mereka bentuk sistem cadangan dan algoritma yang digunakan.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AVE	-	Average Variance Extracted
B2B	-	Business to Business
B2G	-	Business to Government
C2C	-	Customer to Customer
CA	-	Cronbach's Alpha
C-A-B	-	Cognition-Affect-Behavior
CF	-	Collaborative Filtering
CR	-	Composite Reliability
CS	-	Computer Science
DTPB	-	Decomposed Theory of Planned Behavior
IDT	-	Innovation Diffusion Theory
IDT	-	Innovation Diffusion Theory
IS	-	Information System
IT	-	Information Technology
MM	-	Motivational Model
MPCU	-	Model of Personal Computer Utilization
PLS	-	Partial Least Squares
R2	-	Coefficient of Determination
RA	-	Recommender System
SCT	-	Social Cognitive Theory
SEM	-	Structural Equation Modelling
TAM	-	Technology Acceptance Model
TPB	-	Theory of Planned Behaviour

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 Introduction

The emergence of Web 2.0 and online facilities has brought different classes of products from e-markets to consumers from around the world into the business community, whereby people can monitor products, review value, and take advantage of several online discounts and deals (Lin and Lu, 2010). Recently, the growth of electronic financial gains has obtained more traditional retailers' profits, as consumers are trying to find new stores beyond their local areas (Gessner and Snodgrass, 2015). Consequentially, new business protocols have been presented in international business (Ahn et al., 2004). The emergence of electronic portals enabled the enhancement of previous trading schemes (Schafer et al., 2001). Online trading portals allow individuals to make payments via wireless networks or through online settings, thus reducing the need to go to traditional stores physically. The huge development of online stores has raised the interest in theoretically and practically investigating successful online market constructs to improve these systems' financial gains.

However, consumers' disappointment by the large amount of information that they have to inspect to complete a purchase is linked directly to the progress of online marketing. Many competitive online portals strive to earn new users, which might cause an information overload challenge. An information overload issue appears when an individual confronts an excessive volume of data that surpasses his/her restricted capacity to handle the information. This will result in further intellectual difficulties for the consumer to make decisions on products that were reviewed. As it is, the consumer needs to allocate a considerable amount of time to examine items and their values before the purchase decision is taken.

As a significant element of advanced online stores, recommender systems work as an intelligent tool to aid users in their decision-making process, by presenting appropriate product suggestions tailored to their preferences (Yang et al., 2015). Several types of research have outlined that incorporating recommender systems into online stores can influence the quality of decisions and improve consumers' certainty about their selections, with lower degrees of search difficulty and reduced search time (Aljukhadar et al., 2010; Herlocker et al., 2004; Pu et al., 2011; Zhao et al., 2014). Recommender systems act effectively to direct consumers to browse more products in catalogs that meet their needs, based on their actual actions or their desires, which are stored in their profiles. Recommender systems present advantages to both service suppliers and consumers (Pu et al., 2011). For individuals, a recommender system can enhance the search performance and aid to locate favorable items, whereas service suppliers get benefits from rising the individuals' level of satisfaction, willingness to repeat the purchase, and commitment (Nilashi et al., 2016; Pu et al., 2011; Yoon et al., 2013). It is vital to identify the factors that can promote customers' acceptance of recommender systems and assess their impacts on the produced suggestions by the recommender systems.

Previous research findings have outlined how to enhance the recommender systems' efficiency through utilizing the design of algorithms and mechanisms to present the suggestions and improve the level of accuracy of the suggested items (da Silva et al., 2016; Zhang et al., 2016b). Although accuracy measures can improve individuals' sense of the quality features of the suggested products, the algorithm's precision level can only relatively reflect the user experience and appropriateness of the item when using recommender systems (Knijnenburg et al., 2012). There is a demand to revise all variables impacting individuals' intention to adopt recommender systems through subjective indicators (Nilashi et al., 2016). It is found that various theoretical grounds, concerning physiological and sociological variables, can influence the acceptance of a certain innovation (Venkatesh et al., 2012; Wu, 2012). A significant relationship has been indicated between individuals' attitudes and actions concerning the purchase process to gain advantages from electronic services in online stores (Bakar and Bidin, 2014; Sin et al., 2012; Tarhini et al., 2015). Consumer intention is an important measure that can indicate true future actions and

measure actual behavior. The purchase intention identifies a customer's true plan to buy a certain product or ask for a specific service (Eshaghi et al., 2016). It presents a measure of the individual's adoption of electronic portals (Mansouri et al., 2012). In this respect, the awareness of true consumer action can be established by reviewing the variables that can enhance the individual's intention (Eid, 2011). In fact, business managers are more concerned about individuals' long-lasting actions (such as purchase behavior and repurchase behavior). These behaviors can be represented by many purchases and more gains for online trading sites. Some empirical investigations have highlighted the impact of utilizing recommender systems on users' actual intentions (Jannach et al., 2017; Nilashi et al., 2016). Still, service suppliers are more interested in the deep-rooted improvement of the user experience with online portals, which can be indicated by the user's sense of trust and satisfaction (Pu et al., 2012).

The shift between various online portals to browse more items and alternatives can negatively influence customers' satisfaction, as this procedure is time-consuming (Bélanger and Carter, 2008; Chiu et al., 2009; Erciş et al., 2012; Safa and Solms, 2016; Srinivasan et al., 2002). One essential problem of interest for service providers is exploring the development of commitment sense towards an e-store by individuals (Cyr, 2008; Elkhani et al., 2014; Lin and Wang, 2006; Trinh et al., 2017; Tseng and Lee, 2018). Repurchase intentions, electronic loyalty, and continuous intentions can be represented by individuals' intentions to repeat the purchase process from the same e-supplier, without switching to other e-suppliers (Chen et al., 2015; Cyr, 2008). Hence, it is vital to investigate the dimensions that can enhance a user's willingness to form a persistent tie with the online store through recommender systems. Thus, it is significant to indicate consumers' loyalty towards recommender systems. Loyalty has particularly been inspected and broadly explored by concentrating on objective measures of actions, through the analysis of statistical data that inspects user actions (Reinartz and Kumar, 2000). Previous studies have discussed the demand to focus on the attitude scale of consumer loyalty, which can be assessed using user-based metrics in the context of electronic commerce. The attitude aspect of loyalty entails examining what goes in the individual's opinions about the services (Manzuma-Ndaaba et al., 2016).

Given the above, identifying the variables that can trigger users' satisfaction, trust, and loyalty towards a recommender system would present a vital theoretical contribution in this scenario. Hence, this empirical research presents three main goals. The first goal is to improve the current research on recommender systems, by exploring and measuring the important quality factors that can improve customers' loyalty towards recommender systems through concentrating on a user-based perspective. The second goal is to determine the relationships between the factors that have a significant influence on the customers' loyalty in e-commerce recommender systems. The third goal is to develop a new loyally model that incorporates various variables that have an impact on the consumers' loyalty in e-commerce recommender systems and to assess the hypothesized model, which can aid in uncovering how several variables can lead to customer loyalty. This, in turn, can help businesses in enhancing the customers' trust and satisfaction in recommendations and accordingly loyalty in e-commerce recommender systems (Yoon et al., 2013). This will also present important insights into the design of recommender systems

This chapter provides an overview of the research to be conducted to gain an understanding of the purpose, aim, and significance of this study. The rest of the chapter is organized into eight sections which describe the problem background in Section 1.2, problem statement in Section 1.3, research questions in Section 1.4, research objectives in Section1.5, the significance of the study in Section 1.6, and scope of the study in Section 1.7. This will be followed by a description of the structure of the rest of this study in Section 1.8, and finally, a summary of this chapter is outlined in Section 1.9.

1.2 Background of the Problem

In the last decade, the amount of available online information has been significantly increased, causing the overload of information problem. This problem is one of the major challenges in information retrieval systems as well as information filtering systems (Nilashi et al., 2016). It causes users to have difficulty in finding the

information they require at the right time. Users of online market websites seek to reduce the time and the effort of the shopping process, while service providers aim to deliver the appropriate amount of information about the products on their portals with the minimum cognitive effort from the user's side (Aljukhadar and Senecal, 2016). Recommender systems serve as a solution to the information overload problem by managing, optimizing, and filtering the products (Aljukhadar et al., 2010). This can be done by generating a set of personalized suggestions of items to users (O'Donovan and Smyth, 2005; Wang et al., 2015). The use of the recommender system in e-commerce helps to increase online retailers' sales and improve users' satisfaction (Ricci et al., 2011b).

Building recommender systems requires large effort from experts in various fields which include: human-computer interaction, information technology, data mining, and artificial intelligence. The quality of recommendations provided by the system can be assessed in two ways: system-centric evaluation or user-centric evaluation (Cremonesi et al., 2013). In system-centric evaluation, researchers care about the development and enhancement of the accuracy of prediction algorithms, which are used to generate a recommendation list of products, to improve the recommender system's effectiveness, and to provide users with a more satisfying experience (Knijnenburg et al., 2012). In user-centric evaluation, the quality of the recommender system is measured using the data that are collected from users interacting with the system. However, the quality of the recommendations which is measured using system-centric methods might provide inconsistent results with the outcomes of user-centric measures of recommendation's quality (Cremonesi et al., 2013; Knijnenburg et al., 2012). Although the accuracy of the generated algorithms gained the interest of researchers (McNee et al., 2006; Ziegler et al., 2005), few researchers have focused on several aspects of users' experience (e.g., novelty, diversity) with the recommendation agent that go beyond the accuracy of generated recommendations (McNeeet al., 2006; Ozok et al., 2010; Pu et al., 2012). Recently researchers realized that the goal of the recommender system extends beyond generating accurate predictions (Pu et al., 2011). The real-world purpose of the recommender system must focus on providing personalized suggestions that can help to discover relevant content or item. This has caused two important changes in

recommender system research. The first change that was initiated by McNee et al. (2006), when the authors pointed out that being accurate itself is not enough and that we should study recommender systems focusing on a user-centric perspective to generate more than an accurate list of recommendations, but also more helpful and pleasurable recommendations to use. There is a need to broaden the scope of the recommender systems research beyond the accuracy of the algorithm to involve main aspects of users' experience (Knijnenburg et al., 2012) with the concentration on users' subjective measures of the quality of recommender systems (Pu et al., 2011). Second, there is a need to concentrate on the factors that can improve the user's experience with recommender systems such as accuracy, diversity, novelty, and transparency (Ebrahimi et al., 2019). These factors have to be examined comprehensively to understand the impact of these factors on improving the user's overall experience with the hosting agent. These factors should be considered in the design, implementation, and evaluation stages of the development of recommender systems.

Users' experience with the recommender systems entails several aspects starting from the hosting system, the recommendation algorithm, the recommendation process, users' perceptions of the recommendation quality, and the decision-making process. Rather than focusing solely on the actual user behavior, user-centered evaluation is a very important aspect for the long-term system goals such as customer retention, which can be evaluated effectively using subjective evaluation measures through quantitative approaches (Knijnenburg et al., 2012). On the other hand, although the use of recommender systems by users is greatly influenced by the level of user satisfaction (Yeo et al., 2002), trust (O'Donovan and Smyth, 2005), and loyalty (Yoon et al., 2013), still did not get enough attention in previous literature (Knijnenburg et al., 2012; Yoon et al., 2013; Ebrahimi et al., 2019).

The accessibility of various competitive online stores has led researchers to concentrate on electronic loyalty as an indicator of online performance. Electronic loyalty has been explored broadly in previous studies, presenting many descriptions of "loyalty" which have focused on attitudinal or behavioral aspects. Still, the

objective indicator of loyalty (e.g., the purchase measure) is not an adequate measure to represent the true feeling of loyalty (Anderson and Srinivasan, 2003; Srinivasan et al., 2002). Currently, scholars argued that there is a lack of research that concentrates on both behavioral and attitudinal scales of consumers' loyalty (Valvi and Fragkos, 2012). In fact, loyalty in previous researches has been explored focusing on several scales of attitude (Anderson and Srinivasan, 2003; Anderson and Swaminathan, 2011; Lin and Wang, 2006; Nadeem et al., 2015; Safa and Ismail, 2013), intention (Chang, 2015; Cyr, 2008; Elkhani et al., 2014; Luarn and Lin, 2003; Safa and Solms, 2016), and behavior (Chiu et al., 2009; Eid, 2011).

A significant relationship between users' feelings of trust and users' long-lasting loyalty has been confirmed in the previous literature (Cyr, 2008). The individual who trusts the recommender system has a greater likelihood to purchase the products from online websites (Al-Taie and Kadry, 2014). The individual needs to sense that the recommender systems will generate a useful list of recommendations that can aid him to reach a better decision and to get better items tailored to his preferences. Several factors can participate in trust-formation towards recommender systems. In the user-based assessment of recommender systems, diverse researchers have examined trust perspectives in online shopping (Nilashi et al., 2016; O'Donovan and Smyth, 2005; Pu et al., 2011; Ebrahimi et al., 2019). From the previous literature, it is noticeable that many previous studies have focused on understanding the individual components of trust-establishment in recommender systems. Users need to trust the level of accuracy of the suggestions presented by the system (McNee et al., 2003). Trust is an important variable that aids the consumer to resolve the perceived risk of online shopping and influences consumer behavior (Asiamah et al., 2016). The trust aspect is expected to have a significant direct impact on the use of certain innovations (Lenzini et al., 2010). The concept of trust has been widely applied in researches related to the acceptance of e-commerce systems (Nilashi et al., 2016). Trust is considered as a foundation to build and maintain a long-term relationship (Asiamah et al., 2016). It was shown that it has a direct positive relationship with loyalty to a website (Eid, 2011). In this research, the main aim is to explore users' trust in the recommender systems as a mediating variable that will advance the consumer's commitment towards the recommender

system. Hence, it is important to explore the quality factors that can increase users' trust towards the recommender systems.

The quality features of the generated suggestions are an essential prerequisite for the positive experience of the individual with the recommender systems. The recommender systems quality indicates the potential of the system to present suggestions that fulfill the user's interest. The previous literature shows that there is a direct impact of the quality of the provided recommendations on users' purchase behavior (Chen and Pu, 2010; Nilashi et al., 2016; Yoon et al., 2013). The recommender systems' quality is often regarded as a key construct of the establishment of the trust of these systems (Nilashi et al., 2016). The quality of the recommender systems relies on various variables, which were explored in the literature such as transparency (Herlocker et al., 2000; Scheel et al., 2014), diversity (Jones, 2010; Paudel et al., 2016; Said et al., 2013), serendipity (Adamopoulos and Tuzhilin, 2014; Afridi, 2018a), novelty (Cremonesi et al., 2012a; Díez et al., 2019), and accuracy (Adomavicius and Zhang, 2012; Kavu et al., 2017). These variables can influence an individual's trust and continuous intention to the adoption of recommendations (Nilashi et al., 2016; Ebrahimi et al., 2019).

In the field of recommender systems, it is very important to increase the recommender system quality by improving the recommendation accuracy and presenting high-quality recommendations to users (Herlocker et al., 2004). This will help in long-lasting trust formation towards recommendation agents due to support provided to the users for better decision-making (Nilashi et al., 2016). On the contrary, if the recommender system fails to provide the user with suited recommendations this can lead him to distrust the system, which will affect the website performance in general (Chau et al., 2013; Nilashi et al., 2016). Although it is important to provide accurate recommendations to users, relying on the recommendation accuracy alone is not enough (McNee et al., 2006). If the recommender agent provides the user with the movie list that he already watched in the past, the novelty of the recommended items will be limited, and the user will not be able to discover new items. On the other hand, diversity has been recognized as a

quality factor in the recommender system (Nilashi et al., 2016). Recommendation diversity can be measured by the level of similarity between recommended items. Several studies in previous literature have linked recommendation diversity with a better perception of recommendations' quality (Ziegler et al., 2005; Nilashi et al., 2016; Ebrahimi et al., 2019).

When talking about evaluating the recommender system from the consumer's perspective, the transparency of the suggestions is a vital factor for the consumer to accept the recommender systems technology in online shopping (Swearingen and Sinha, 2002). In addition to the recommendation's quality, transparency has a direct and positive impact on trust-building towards the recommender systems (Jannach et al., 2017; Nilashi et al., 2016; Sinha and Swearingen, 2002; Tintarev, 2009). Transparency is related to the recommender systems' potential to convey to the individual by displaying explanations about why such recommendations are presented to him. Explanations give great value to the recommender systems and enhance the transparency of the recommender systems by elaborating on how the recommendations are presented to consumers (Al-Taie, 2013). Several studies have mainly focused on the role of the explanation as a mechanism for trust-building in a recommender systems context and for increasing user's acceptance of recommender systems (Pu and Chen, 2007; Ebrahimi et al., 2019; Nilashi et al., 2016). The user dislikes blind recommendations and looks for justifications regarding the recommended items (Swearingen and Sinha, 2002). Explanations also help users to make their buying decisions more quickly.

The user's satisfaction is often viewed as a key promoter of the achievement of electronic stores in general, and as a major enabler to improve loyalty in particular (Cyr, 2008; Setó-Pamies, 2012). User satisfaction is an essential variable that is used to measure the excellence of the information system's implementation (Tarigan, 2008). Consumers' satisfaction expresses the feelings of the consumer during his shopping experience (Hasanov and Khalid, 2015). The consumer's satisfaction can be defined as the individual's assessment of the item or service concerning his needs and expectations (Oliver, 1980). The consumer tends to use the system more frequently if the web quality attributes are improved (Hasanov and Khalid, 2015).

Previous researches in recommender systems have proven that user's sense of satisfaction is a crucial variable (Ge et al., 2010). It is admitted in the literature that a user's feeling of satisfaction is critical to relation continuity (Dagger and O'Brien, 2010). Many previous studies have been done to understand the prerequisites and implications of an individual's satisfaction in online environments (Bai et al., 2008; Ebrahimi et al., 2019). Previous researches pointed out that there is a direct relation between web quality and user satisfaction (Bai et al., 2008). In e-business, the online store is regularly the single approach in which the organization interacts with its clients (Chang and Chen, 2008), and the site features like the quality of the information, the quality of the interaction, or the usability are important elements. The hypotheses in this study are made based on online site features that are used to assess the website quality. These features have a direct and significant influence on user' satisfaction (Bai et al., 2008). Since recommender systems are typically a component of the online shopping sites, it can be concluded that such quality features may also influence to what level individuals are satisfied with the embedded recommenders.

Hence, by identifying the determinants of satisfaction, trust, and loyalty formation through the supporting studies, this study may present an essential contribution to the theoretical and practical aspects of e-commerce recommender systems. So that, the major goal of this research falls in two primary folds: (1) To provide new information that fills the gaps of previous studies on user-based assessment of electronic recommender systems and (2) to present and validate a hypothesized model that will help to understand how several constructs that are related to customers' loyalty can help managers to enhance customers' experiences with e-commerce recommender systems and designers to develop high-quality recommender systems.

1.3 Statement of the Problem

Online markets have shown great popularity along with the rapid growth of the internet. Unfortunately, the rapid development in the financial profits of online

stores has been impacted by the overload of data that an individual must process in his/her online shopping. On the other hand, various online stores compete to gain and attract users by providing them with discounts and offers, therefore, the user browses more than one online store and compares prices, offers, and discounts to reach the ideal product with the best price. The huge amount of information exhausts the user and somehow forbids him from reaching the ideal choice in an acceptable time. The information overload issue appears when an individual meets a huge amount of information that goes beyond his limited ability to analyze information. Accordingly, the information overload issue calls for a more cognitive effort by the individual to perform a purchase action. The individual needs to devote a lot of time to screening and assessing the items in terms of their features, prices, and values before completing the purchase action. Recommender systems are essential tools in modern electronic stores, which work to support individuals in the decision-making process by providing appropriate suggestions of products (Yang et al., 2015). Several kinds of research have reported that the inclusion of the recommender systems in online stores will enhance the quality of the decision and confidence about the choice with a low degree of search difficulty (Aljukhadar et al., 2010). Additionally, recommender systems can direct users to check more items in the catalog that can meet their preferences based on their actions, item features, or preferences. This can aid service providers to present a diverse list of their products to the users. Recommender systems present advantages to both online stores and individuals (Pu et al., 2011). For individuals, recommender systems can enhance the effectiveness of the search process and aid the individual in finding useful products in an automated fashion (de Nooij, 2008). For online stores, it can increase individuals' satisfaction, purchase intention, and commitment (Nilashi et al., 2016; Chen and Pu, 2010; Yoon et al., 2013), which will lead to more profits. It is very important to investigate the factors that can encourage individuals to accept the items suggested by a recommender system (Knijnenburg et al., 2012; Nilashi et al., 2016; Ebrahimi et al., 2019). Previous researches have widely shown how to improve recommender systems in terms of recommender systems' algorithm and operating mechanism (Gogna and Majumdar, 2017a; Wu et al., 2018; Yera and Martínez, 2016). Whilst algorithm accuracy indicators can improve users' perception of the recommendations' quality features, these indicators cannot fully reflect the user's perceptions of the recommendations' quality (Knijnenburg et al., 2012). Still, it is important to inspect

the quality constructs that affect people's willingness to accept the recommender systems using subjective indicators Thaichon and Quach (2015). Previous researches have investigated the effect of using the recommender system on users' temporary behavior (Jannach et al., 2017; Nilashi et al., 2016). However, business managers are more interested in the long-lasting success of their online business which can be represented by satisfaction, trust, and loyalty.

The main motivation of this research is to investigate the measures of the success of the recommender systems from the consumer's point of view and to explore the variables that can promote the overall consumer's loyalty towards these systems. Few studies have investigated the factors that can influence consumers' loyalty by adopting a user-centric evaluation of recommender systems (Yoon et al., 2013; Tarnowska et al., 2020; Ebrahimi et al., 2019). Additionally, previous studies have adopted the objective behavioral dimensions to measure the user's loyalty in recommender systems. Recently, researchers have highlighted the importance of the attitudinal measures of loyalty (Valvi and Fragkos, 2012), which can be examined quantitatively through user-based metrics in the context of recommender systems research to measure the user subjective perception of commitment towards the system.

1.4 Research Question

This study focuses on the following research questions:

How to improve consumers' loyalty towards e-commerce recommendation systems? This research question leads to the following sub-questions:

i. What are the factors that have a significant influence on customers' loyalty towards e-commerce recommender systems?
ii. What is the relationship between the factors that have a significant influence on customers' loyalty towards e-commerce recommender systems?

iii. What is the proposed model for improving customers' loyalty in e-commerce recommender systems?

1.5 Objectives of the Study

The following research objectives are defined based on the problem statement and research questions:

i. To identify the factors that have a significant influence on customers' loyalty formation towards e-commerce recommender systems.
ii. To determine the relationship between the factors that have a significant influence on the customers' loyalty in e-commerce recommender systems.
iii. To develop a model for improving customers' loyalty in e-commerce recommender systems.

1.6 Significance of the Study

The significance of this study can be viewed from three main perspectives; the researchers, service providers, and consumers' perspectives. The significance of this study for researchers can be viewed by its contribution to the existing knowledge by examining the factors that have significant effects on consumer's loyalty towards e-commerce recommender systems. The proposed research represents an original contribution to understanding the loyalty behavior in the recommender system context, especially concerning e-commerce systems. This research fundamentally investigates the major issues of loyalty formation of online shopping towards an e-commerce recommender system using subjective measures of users' experience. A new research model is introduced and developed based on the adopted theories and the quality factors for loyalty formation. Following that, the impact of the quality factors on users' experience and repurchase behavior is inspected. Computer science

research aims basically to design and build tools that can help effectively to solve problems (Dodig-Crnkovic, 2002). Hence, based on the outcomes of this research, important insights to researchers and designers about the design of the recommender system can be presented.

This research is also conducted to provide more insights for service providers to formulate appropriate business strategies. The finding of this study enables service providers to stimulate the usage of e-commerce recommender systems services and to increase business transactions through the promotion of customer convenience, satisfaction, and trust, which will consequentially affect their commitment and repurchase behavior. With the increasing competition between e-commerce websites and the development of recommender systems as an intelligent and decision-making tool, e-commerce vendors need to understand the positive and negative aspects of such existing tools in their portals and the influence of these tools on sales growth (Yoon et al., 2013). According to Oliver (1999), organizations are more concerned with gaining loyal customers. Service providers have recognized loyalty as a key success to the deep-rooted business profitability (Mittal and Lassar, 1998). Thus, recommender system characteristics must be studied and understood carefully to gain the acceptance of long-term profitable users (Yoon et al., 2013). Outcomes from this study may be useful for e-commerce companies in formulating appropriate marketing strategies, as well as developing appropriate applications that will attract more online consumers.

The significance of this study from the consumers' perspective can be viewed in four aspects. First, the model provided by this study will provide the users with a satisfactory and usable experience when receiving recommendations. Second, the outcomes offer users complementary and trustworthy recommendations that can improve their buying decision's quality (Yoon et al., 2013). This can be achieved by providing quality recommendations with the appropriate level of justifications. The recommender system shares similar attributes with knowledge-based systems in terms of the necessity to justify its processing to individuals to obtain their trust. Third, saving the effort and time of the consumer and overcoming the information overload problem by recommender systems are important in online shopping (Ozok

et al., 2010). The agency relationship between the consumer and the system implies that the recommender systems perform the process of screening and evaluating different and various selections without users' intervention. Fourth, the recommender systems can help consumers in their decision-making process, as they work as an intelligent tool that aims to assist users in their decision-making process (Xiao and Benbasat, 2007). The significance of the study is presented in Figure 1.1.

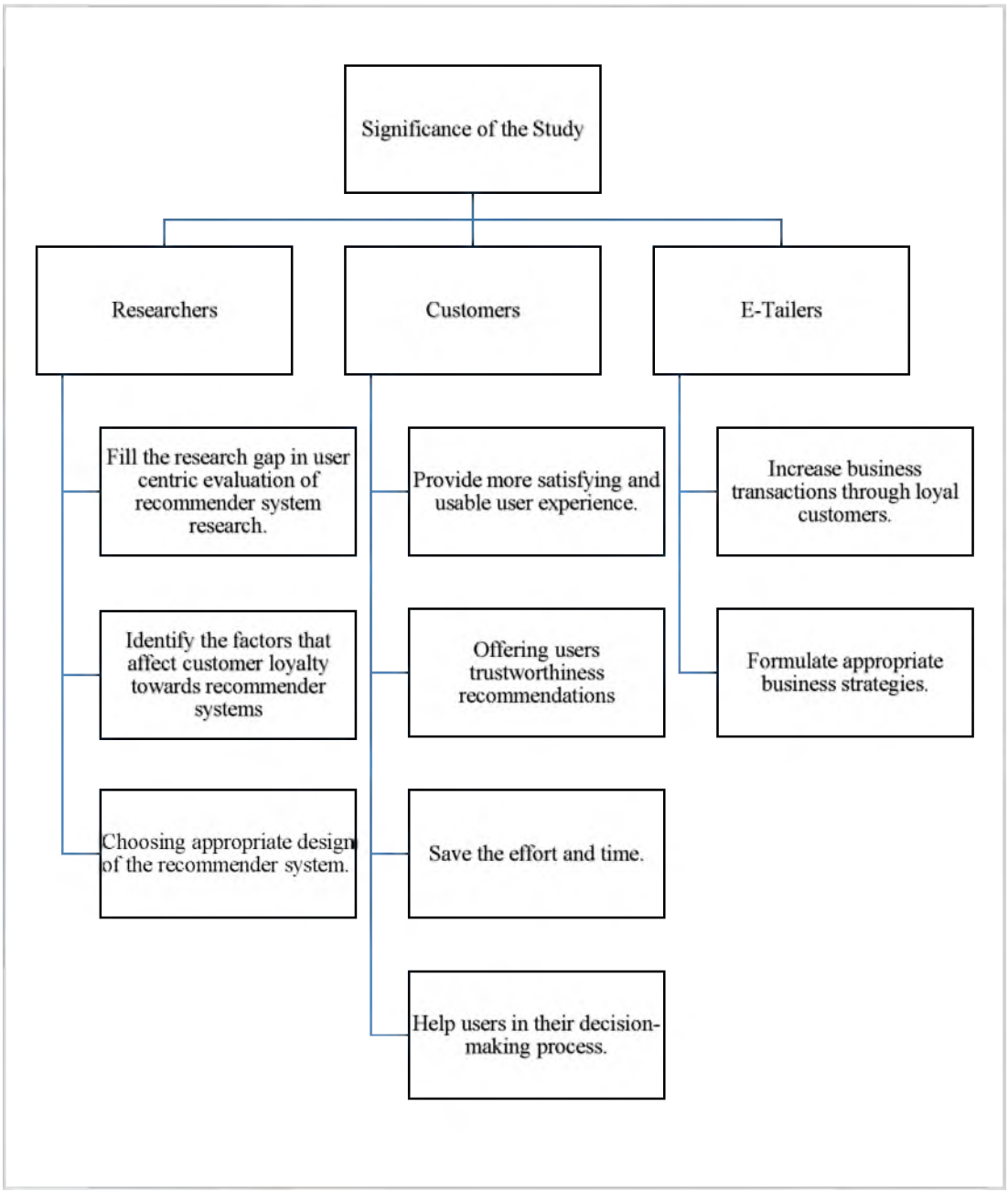

Figure 1.1: Significance of the Study

1.7 Scope of the Study

The scope covered by this study is as follows:

(i). This study focuses on improving consumers' loyalty in e-commerce recommender systems. Therefore, the main focus of this study is to finds the factors which impact the consumers' loyalty. In addition, this study focuses on the development of a new loyalty formation model in the context of e-commerce recommender systems.

(ii). This study uses a survey-based questionnaire for data collection, targeting the customers of e-commerce recommender systems. Imam Abdulrahman Bin Faisal University is chosen to distribute the questionnaire among the students. Imam Abdulrahman Bin Faisal University is one of the oldest universities in the Eastern Province of Saudi Arabia. This university offers a variety of courses for females and males and has 24 colleges that are located at different campuses in Dammam city.

(iii). In addition, the quantitative method is applied to achieve the main goal of this research. For the quantitative approach, SmartPLS 3.0 is utilized to analyze the findings of the study.

(iv). Based on the investigated factors that can promote customers' loyalty towards the recommender system, several insights to choose the appropriate design of the recommender system will be elaborated for researchers, designers, and decision-makers.

1.8 Organization of the Thesis

This thesis is structured and organized into six chapters. The chapters are related and complementary to each other. A brief outline of the chapters of the thesis is as follows:

Chapter 1 presents an introduction to the subject and the context of the study. The background of the study is emphasized with a brief review of previous studies in

the field. The research problem is elaborated in detail in the problem statement section, focusing on loyalty formation in e-commerce recommender systems and user's centric evaluation of recommendation agents. Research questions are presented followed by research objectives respectively in Section 1.4 and Section 1.5. The significance of the study for researchers, consumers, and service providers is highlighted in detail in Section 1.6. The overall organization of this thesis is presented in this chapter, followed by a summary of the chapter.

Chapter 2 presents an introduction to e-commerce focusing on the current situation of online markets in the global economy. An introduction about recommender systems in e-commerce portals is clarified in detail along with their importance in e-commerce. This chapter also provides the relevant literature, giving an overview of how the recommender system researches have been evolved from accuracy-oriented studies to user-oriented literature in the e-commerce context. Recent researches about the user acceptance of recommender systems are presented in this chapter. User loyalty studies in online markets generally and in e-commerce recommender system context specifically are discussed and investigated focusing on the antecedents of the long-lasting relationship between the consumer and the agent. The review also includes the critical analysis of relevant theories in the IS domain and particularly in consumer loyalty. Furthermore, the potential factors of loyalty formation in the e-commerce recommender system, which are formulated from the selected theories of this study, are identified. Finally, this chapter is concluded with a summary of the findings.

Chapter 3 describes the research methodology of this research. The steps for the methodology are presented and discussed. The chapter then looks at the research design that has been chosen specifically for this research. A discussion is provided about the research paradigms, their history, development over time, and finally, the adopted research paradigm of the study. The research approach followed in the study is discussed. The chapter also highlights and discusses the steps of the survey development. The method for data analysis is explained. The content validity procedure is presented followed by the revision of the survey instrument. The discussion of the research sample is presented with elaboration.

Chapter 4 explains the theoretical background adopted to conduct this study by reviewing related topics on the adoption theories and models in the information system literature. A discussion about the description of the previous models, their history, their adoption, and their most recent applications in the context of the e-commerce field are explored and clearly explained. The chapter also elaborates on the suitability of the application of these theories and models to the study of recommender systems. The differences between these models and their applications are then discussed. The newly proposed constructs are discussed broadly and the research hypotheses are elaborated. The chapter then investigates the constructs of the proposed loyalty model that is applicable for recommender systems in the context of e-commerce websites. Finally, the pilot study procedure and results are elaborated for conducting the main study.

Chapter 5 provides the analysis results of the collected data and a description of findings from the analysis process. First, demographic data analysis is presented with a brief discussion. To be able to understand loyalty formation factors in the recommender system context, multiple validity and reliability tests using Partial Least Analysis (PLS) are performed. Besides, the hypotheses tests are performed using t-tests. The resulted structural model from the analysis is found to be a suitable extension of the existing loyalty research in the e-commerce context, which can be used in the study of recommender systems. A discussion of research outcomes is elaborated broadly.

Finally, Chapter 6 provides the conclusion of the study by presenting a discussion of the research objectives. Answers to research questions are provided in detail. The contribution of the research findings is highlighted in this chapter based on the theoretical perspective. Then the practical and managerial contributions arising from the findings in this study are discussed. The limitations of the current research and the suggestions for future research work are discussed. Finally, a summary of the study is presented.

1.9 Chapter Summary

This chapter began with an introduction to the research topic to present a preface to readers about the study. This was followed by a description of the background of the problem indicating the gap in previous literature with a focus on loyalty formation factors in the context of the e-commerce recommender system based on the supporting literature. The problem statement was formulated in detail focusing on user's centric aspects and the research gap in previous literature. The review of the previous literature on recommender systems' acceptance and customers' loyalty was led to the presentation of research questions followed by the clarification of research objectives. The significance of the study for researchers, customers, and e-talers was presented in detail. Following that, the scope of the study was elaborated. Finally, the organization of the thesis was presented to guide the reader to understand the structure of the research.

REFERENCES

A, R., J, A., and Tauro, C. J. M. (2014). A novel, generalized recommender system for social media using the collaborative-filtering technique. *ACM SIGSOFT Software Engineering Notes, 39*(3), 1-4.

Ab Rahim, N. Z. (2009). *Multiple Perspectives of Open Source Software Appropriation in Malaysian Public Sector.* Universiti Teknologi Malaysia.

Abbas, F. (2018). *Serendipity in Recommender System: A Holistic Overview.* Paper presented at the 2018 IEEE/ACS 15th International Conference on Computer Systems and Applications (AICCSA), 1-2.

Abdollahi, B., and Nasraoui, O. (2016). Explainable Matrix Factorization for Collaborative Filtering. *Proceedings of the 25th International Conference Companion on World Wide Web(ACM).*

Abubakar, A. M., Ilkan, M., Meshall Al-Tal, R., and Eluwole, K. K. (2017). eWOM, revisit intention, destination trust and gender. *Journal of Hospitality and Tourism Management, 31*, 220-227.

Abumalloh, R., Ibrahim, O., and Nilashi, M. (2020). Loyalty of young female Arabic customers towards recommendation agents: A new model for B2C E-commerce. *Technology in Society*, 101253.

Adamopoulos, P., and Tuzhilin, A. (2014). On Unexpectedness in Recommender Systems. *ACM Transactions on Intelligent Systems and Technology, 5*(4), 1-32.

Adomavicius, G., and Kwon, Y. (2011). *Maximizing aggregate recommendation diversity: A graph-theoretic approach.* Paper presented at the Proc. of the 1st International Workshop on Novelty and Diversity in Recommender Systems (DiveRS 2011), 3-10.

Adomavicius, G., and Zhang, J. (2012). Stability of Recommendation Algorithms. *ACM Trans. Inf Syst. Article, 30*(23), 1-31.

Afolabi, A. O., and Toivanen, P. (2019). Improving the design of a recommendation system using evaluation criteria and metrics as a guide. *Journal of Systems and Information Technology, 21*(3), 304-324.

Afridi, A. H. (2018a). Stakeholders analysis for serendipitous recommenders system in learning environments. *Procedia computer science, 130*, 222-230.

Afridi, A. H. (2019). Transparency for beyond-accuracy experiences: a novel user interface for recommender systems. Procedia Computer Science, 151, 335-344.

Afridi, A. H. (2018b). Visualizing serendipitous recommendations in user controlled recommender system for learning. *Procedia Computer Science, 141*, 496-502.

Agrawal, R., Gollapudi, S., Halverson, A., and Ieong, S. (2009). *Diversifying search results.* Paper presented at the Proceedings of the second ACM international conference on web search and data mining, 5-14.

Ahmad, A., and Khan, M. N. (2017). Developing a Website Service Quality Scale: A Confirmatory Factor Analytic Approach. *Journal of Internet Commerce, 16*(1), 104-126.

Ahn, T., Ryu, S., and Han, I. (2004). The impact of the online and offline features on the user acceptance of Internet shopping malls. *Electronic commerce research and applications, 3*(4), 405-420.

Ahrholdt, D. C., Gudergan, S. P., and Ringle, C. M. (2018). Enhancing loyalty: When improving consumer satisfaction and delight matters.

Ajay Kaushik, N., & Potti Srinivasa, R. (2017). Effect of website quality on customer satisfaction and purchase intention in online travel ticket booking websites. Management, 7(5), 168-173.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Akamavi, R. K., Mohamed, E., Pellmann, K., and Xu, Y. (2015). Key determinants of passenger loyalty in the low-cost airline business. *Tourism Management, 46*, 528-545.

Al-Qeisi, K., Dennis, C., Alamanos, E., and Jayawardhena, C. (2014). Website design quality and usage behavior: Unified theory of acceptance and use of technology. *Journal of Business Research, 67*(11).

Al-Taie, M. Z. (2013). *Explanations in recommender systems: overview and research approaches.* Paper presented at the Proceedings of the 14th International Arab Conference on Information Technology, Khartoum, Sudan, ACIT.

Al-Taie, M. Z., and Kadry, S. (2014). Visualization of Explanations in Recommender

Systems. *Journal of Advanced Management Science, 2*(1), 140-144.

Alharbi, H., and Sandhu, K. (2019). New Discoveries for User Acceptance of E-Learning Analytics Recommender Systems in Saudi Arabia. *International Journal of Innovation in the Digital Economy, 10*(1), 31-42.

Alhijawi, B. (2019). Improving collaborative filtering recommender system results and performance using satisfaction degree and emotions of users. *Web Intelligence, 17*(3), 229-241.

Aljukhadar, M., and Senecal, S. (2016). The user multifaceted expertise: Divergent effects of the website versus e-commerce expertise. *International Journal of Information Management, 36*(3), 322-332.

Aljukhadar, M., Senecal, S., and Daoust, C.-E. (2010). *Information overload and usage of recommendations.* Paper presented at the Proceedings of the ACM RecSys 2010 workshop on User-Centric Evaluation of Recommender Systems and Their Interfaces (UCERSTI). CEUR-WS. org.

Al-Manasra, E., Khair, M., Zaid, S. A., & TaherQutaishat, F. (2013). Investigating the impact of website quality on consumers' satisfaction in Jordanian telecommunication sector. Arab Economic and Business Journal, 8(1-2), 31-37.

Anderson, R. E., and Srinivasan, S. S. (2003). E-satisfaction and e-loyalty: A contingency framework. *Psychology and Marketing, 20*(2), 123-138.

Anderson, R. E., and Swaminathan, S. (2011). Customer Satisfaction and Loyalty in E-Markets: A PLS Path Modeling Approach. *Journal of Marketing Theory and Practice, 19*(2), 221-234.

Antiopi, P., and Basilis, B. (2019). *Improvement of similarity-diversity trade-off in recommender systems based on a facility location model.* Paper presented at the 2019 10th International Conference on Information, Intelligence, Systems and Applications (IISA), 1-7.

Arana-Llanes, J. Y., Rendón-Miranda, J. C., González-Serna, J. G., and Alejandres-Sánchez, H. O. (2014). *Design and user-centered evaluation of recommender systems for mobile devices-Methodology for user-centered evaluation of context-aware recommender systems.* Paper presented at the 2014 International Conference on Computational Science and Computational Intelligence, 277-280.

Asadi, S., OmSalameh Pourhashemi, S., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., et al. (2020). Investigating influence of green innovation on sustainability performance: A case on Malaysian hotel industry. *Journal of Cleaner Production, 258*, 120860.

Asiamah, E. Y., Nimako, S. G., Quaye, D. M., and Buame, S. (2016). Implicit and explicit loyalty: the role of satisfaction, trust and brand image in mobile telecommunication industry. *International Journal of Business and Emerging Markets, 8*(1), 94-94.

Asosheh, A., Bagherpour, S., and Yahyapour, N. (2008). Extended Acceptance Models for Recommender System Adaption, Case of Retail and Banking Service in Iran. *WSEAS Transactions on Business and Economics, 5*(5), 189-200.

Audrain-Pontevia, A. F., N'Goala, G., and Poncin, I. (2013). A good deal online: The Impacts of acquisition and transaction value on E-satisfaction and E-loyalty. *Journal of Retailing and Consumer Services, 20*(5), 445-452.

Aytekin, T., and Karakaya, M. Ö. (2014). Clustering-based diversity improvement in top-N recommendation. *Journal of Intelligent Information Systems, 42*(1), 1-18.

Bag, S., Ghadge, A., and Kumar, M. (2019). An integrated recommender system for improved accuracy and aggregate diversity. *Computers & Industrial Engineering, 130*(August 2018), 187-197.

Bagozzi, R. P. (1992). The Self-Regulation of Attitudes, Intentions, and Behavior. *Social Psychology Quarterly, 55*(2), 178-178.

Bai, B., Law, R., and Wen, I. (2008). The impact of website quality on customer satisfaction and purchase intentions: Evidence from Chinese online visitors. *International Journal of Hospitality Management, 27*(3), 391-402.

Bakar, M. S. A., and Bidin, R. (2014). Technology Acceptance and Purchase Intention towards Movie Mobile Advertising among Youth in Malaysia. *Procedia - Social and Behavioral Sciences, 130*, 558-567.

Balakrishnan, B. K. P. D., Dahnil, M. I., and Yi, W. J. (2014). The Impact of Social Media Marketing Medium toward Purchase Intention and Brand Loyalty among Generation Y. *Procedia - Social and Behavioral Sciences, 148*, 177-185.

Bandura, A. (2012). Social Foundations of Thought and Action. In (pp. 94-106).

Barnes, S., and Vidgen, R. (2002). An Integrative Approach to the Assessment of E-Commerce Quality: online book stores. *Journal of Electronic Commerce Research, 3*(3), 114-127.

Barnes, S. J., and Vidgen, R. T. (2000). Webqual: An Exploration of Web Site Quality in Proceedings of the Eight European Conference on Information System. *Vienna. July*, 298-305.

Barnes, S. J., and Vidgen, R. T. (2001). Assessing the Quality of Wap News Sites: The Webqual/M Method. *Vision: The Journal of Business Perspective, 5*(1_suppl), 81-91.

Barth, M., Jugert, P., and Fritsche, I. (2016). Still underdetected - Social norms and collective efficacy predict the acceptance of electric vehicles in Germany. *Transportation Research Part F: Traffic Psychology and Behaviour, 37*(2016), 64-77.

Bélanger, F., and Carter, L. (2008). Trust and risk in e-government adoption. *The Journal of Strategic Information Systems, 17*(2), 165-176.

Berbague, C. E., Karabadji, N. E.-i., Seridi, H., Symeonidis, P., Manolopoulos, Y., & Dhifli, W. (2021). An overlapping clustering approach for precision, diversity and novelty-aware recommendations. Expert Systems with Applications, 177, 114917.

Benbasat, I., and Wang, W. (2005). Trust in and adoption of online recommendation agents. *Journal of the association for information systems, 6*(3), 4.

Bhattacherjee, A. (2012). *Social Science Research: principles, methods, and practices* (Vol. 2).

Bilgihan, A. (2016). Gen Y customer loyalty in online shopping: An integrated model of trust, user experience and branding. *Computers in Human Behavior, 61*, 103-113.

Bollen, D., Knijnenburg, B. P., Willemsen, M. C., and Graus, M. (2010). *Understanding choice overload in recommender systems.* Paper presented at the Proceedings of the fourth ACM conference on Recommender systems, 63-70.

Bonastre, L., and Granollers, T. (2014). A Set Of Heuristics for User Experience Evaluation in E-commerce Websites. (c), 27-34.

Boratto, L., and Carta, S. (2014). *Impact of content novelty on the accuracy of a*

group recommender system. Paper presented at the International Conference on Data Warehousing and Knowledge Discovery, 159-170.

Bressolles, G., and Nantel, J. (2008). The measurement of electronic service quality: Improvements and application. *International Journal of e-Business Research, 4*(3), 1-19.

Buchanan, B. G., and Shortliffe, E. H. (1984). Rule-based expert systems: the MYCIN experiments of the Stanford Heuristic Programming Project.

Budiardjo, E. K., Pamenan, G., Hidayanto, A. N., and Cofriyanti, E. (2017). The impact of knowledge management system quality on the usage continuity and recommendation intention. *Knowledge Management & E-Learning: An International Journal, 9*(2), 200-224.

Bunt, A., Lount, M., and Lauzon, C. (2012). *Are explanations always important? A study of deployed, low-cost intelligent interactive systems.* Paper presented at the Proceedings of the 2012 ACM international conference on Intelligent User Interfaces, 169-178.

Burrell, G., and Morgan, G. (2017). *Sociological paradigms and organisational analysis: Elements of the sociology of corporate life*: Routledge.

Byrne, D., and Griffitt, W. (1969). Similarity and awareness of similarity of personality characteristics as determinants of attraction. - PsycNET. *Journal of Experimental Research in Personality, 3*(3), 179-186.

Calefato, F., Lanubile, F., and Novielli, N. (2015). The role of social media in affective trust building in customer–supplier relationships. *Electronic Commerce Research, 15*(4), 453-482.

Calero Valdez, A., and Ziefle, M. (2019). The users' perspective on the privacy-utility trade-offs in health recommender systems. *International Journal of Human Computer Studies, 121*(May 2017), 108-121.

Cao, L. (2016). Non-IID Recommender Systems: A Review and Framework of Recommendation Paradigm Shifting. *Engineering, 2*(2), 212-224.

Castells, P., Hurley, N. J., and Vargas, S. (2015). Novelty and diversity in recommender systems. In *Recommender systems handbook* (pp. 881-918): Springer.

Castells, P., Wang, J., Lara, R., and Zhang, D. (2011). *Workshop on novelty and*

diversity in recommender systems-DiveRS 2011. Paper presented at the Proceedings of the fifth ACM conference on Recommender systems, 393-394.

Castells, P., Wang, J., Lara, R., and Zhang, D. (2014). Introduction to the Special Issue on Diversity and Discovery in Recommender Systems. *ACM Transactions on Intelligent Systems and Technology, 5*(4), 1-3.

Cenfetelli, and Bassellier. (2009). Interpretation of Formative Measurement in Information Systems Research. *MIS Quarterly, 33*(4), 689-689.

Chakraborty, A., Ghosh, S., Ganguly, N., and Gummadi, K. P. (2019). Optimizing the recency - relevance - diversity trade - offs in non - personalized news recommendations. *Information Retrieval Journal*(0123456789).

Chang, C.-C. (2015). Exploring mobile application customer loyalty: The moderating effect of use contexts. *Telecommunications Policy, 39*(8), 678-690.

Chang, H. H., and Chen, S. W. (2008). The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator. *Online Information Review, 32*(6), 818-841.

Chang, H. H., and Chen, S. W. (2009). Consumer perception of interface quality, security, and loyalty in electronic commerce. *Information & Management, 46*(7), 411-417.

Chang, K.-C., Kuo, N.-T., Hsu, C.-L., and Cheng, Y.-S. (2014). The impact of website quality and perceived trust on customer purchase intention in the hotel sector: website brand and perceived value as moderators. *International Journal of Innovation, Management and Technology, 5*(4), 255.

Chau, P. Y. K., Ho, S. Y., Ho, K. K. W., and Yao, Y. (2013). Examining the effects of malfunctioning personalized services on online users' distrust and behaviors. *Decision Support Systems, 56*, 180-191.

Chen, C.-F., and Phou, S. (2013). A closer look at destination: Image, personality, relationship and loyalty. *Tourism Management, 36*, 269-278.

Chen, J. V., Yen, D. C., Pornpriphet, W., and Widjaja, A. E. (2015). E-commerce web site loyalty: A cross cultural comparison. *Information Systems Frontiers, 17*(6), 1283-1299.

Chen, L., and Pu, P. (2009). Interaction design guidelines on critiquing-based recommender systems. *User Modeling and User-Adapted Interaction, 19*(3),

167-206.

Chen, L., and Pu, P. (2010). *User evaluation framework of recommender systems.* Paper presented at the Workshop SRS.

Chen, L., and Wang, F. (2017). *Explaining recommendations based on feature sentiments in product reviews.* Paper presented at the Proceedings of the 22nd International Conference on Intelligent User Interfaces, 17-28.

Chen, Y.-y., Tsai, M.-l., and Chang, F.-j. (2017). The design of secure mobile coupon mechanism with the implementation for NFC smartphones R. *Computers and Electrical Engineering, 59*, 204-217.

Cheng, F.-F., Wu, C.-S., and Chen, Y.-c. (2018). Creating customer loyalty in online brand communities. *Computers in Human Behavior*.

Chiou, J.-S. (2004). The antecedents of consumers' loyalty toward Internet Service Providers. *Information & Management, 41*(6), 685-695.

Chiu, C.-M., Lin, H.-Y., Sun, S.-Y., and Hsu, M.-H. (2009). Understanding customers' loyalty intentions towards online shopping: an integration of technology acceptance model and fairness theory. *Behaviour & Information Technology, 28*(4), 347-360.

Choi, J., Lee, H. J., and Kim, H.-W. (2017). Examining the effects of personalized App recommender systems on purchase intention: A self and social-interaction perspective. *Journal of Electronic Commerce Research, 18*(1), 73-102.

Cleger, S., Fernández-Luna, J. M., and Huete, J. F. (2014). Learning from explanations in recommender systems. *Information Sciences, 287*, 90-108.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*: Routledge.

Cooke, A. D. J., Sujan, H., Sujan, M., and Weitz, B. A. (2002). Marketing the Unfamiliar: The Role of Context and Item-Specific Information in Electronic Agent Recommendations. *Journal of Marketing Research, 39*(4), 488-497.

Cramer, H., Evers, V., Ramlal, S., Van Someren, M., Rutledge, L., Stash, N., et al. (2008a). The effects of transparency on trust in and acceptance of a content-based art recommender. *User Modeling and User-Adapted Interaction, 18*(5), 455-496.

Cramer, H., Wielinga, B., Ramlal, S., Evers, V., Rutledge, L., and Stash, N. (2008b). The effects of transparency on perceived and actual competence of a content-

based recommender. *Proceedings of the Semantic Web User Interaction Workshop at CHI.*

Cremonesi, P., Epifania, F., and Garzotto, F. (2012a). *User profiling vs. accuracy in recommender system user experience.* Paper presented at the Proceedings of the International Working Conference on Advanced Visual Interfaces, 717-720.

Cremonesi, P., Garzotto, F., Negro, S., Papadopoulos, A., and Turrin, R. (2011). Comparative evaluation of recommender system quality. In *CHI'11 Extended Abstracts on Human Factors in Computing Systems* (pp. 1927-1932).

Cremonesi, P., Garzotto, F., and Turrin, R. (2013). *User-centric vs. system-centric evaluation of recommender systems.* Paper presented at the IFIP Conference on Human-Computer Interaction, 334-351.

Cremonesi, P., Garzotto, F., Turrin, R., and Di Milano, P. (2012b). Investigating the Persuasion Potential of Recommender Systems from a Quality Perspective. *ACM Transactions on Interactive Intelligent Systems, 2*(2), 1-41.

Cresswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches* (Vol. 3).

Cui, X., and Lai, V. S. (2013). *E-Loyalty to Online Auction Websites: A Stimulus-Organism-Response Model.* Paper presented at the PACIS, 126.

Cyr, D. (2008). Modeling Web Site Design Across Cultures: Relationships to Trust, Satisfaction, and E-Loyalty. *Journal of Management Information Systems, 24*(4), 47-72.

da Silva, E. Q., Camilo-Junior, C. G., Pascoal, L. M. L., and Rosa, T. C. (2016). An evolutionary approach for combining results of recommender systems techniques based on collaborative filtering. *Expert Systems with Applications, 53*, 204-218.

Dabrowski, M., and Acton, T. (2013). The performance of recommender systems in online shopping: A user-centric study. *Expert Systems with Applications, 40*(14), 5551-5562.

Dagger, T. S., and O'Brien, T. K. (2010). Does experience matter? *European Journal of Marketing, 44*(9/10), 1528-1552.

Dattalo, P. (2008). *Determining sample size: Balancing power, precision, and practicality*: Oxford University Press.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

Davis, F. D., and Davis, J. F. D. (1985). A Technology Acceptance Model for Empirically Testing New End-User Information Systems. *Massachusetts Institute of Technology*(December 1985), 291-291.

de Nooij, G. J. (2008). Recommender systems: an overview. *Vrije Univ. Amsterdam*.

De Pessemier, T., Courtois, C., Vanhecke, K., Van Damme, K., Martens, L., De Marez, L., et al. (2016). A user-centric evaluation of context-aware recommendations for a mobile news service. *Multimedia Tools and Applications, 75*(6), 3323-3351.

Deci, E. L., Ryan, R. M., Vallerand, R. J., and Pelletier, L. G. (1991). Motivation and Education: The Self-Determination Perspective. *Educational Psychologist, 26*(3-4), 325-346.

Deshmukh, A. A. (2018). A Scalable Clustering Algorithm for Serendipity in Recommender Systems. *2018 IEEE International Conference on Data Mining Workshops (ICDMW)*, 1279-1288.

Díaz, J., Rusu, C., and Collazos, C. A. (2017). Experimental validation of a set of cultural-oriented usability heuristics: e-Commerce websites evaluation. *Computer Standards & Interfaces, 50*, 160-178.

Díez, J., Amparo, D. M.-r., Luaces, A.-b. O., Bahamonde, A., and Martínez-rego, D. (2019). Optimizing novelty and diversity in recommendations. *Progress in Artificial Intelligence, 8*(1), 101-109.

Donie, R. S., Prihantoro, E., & Lestari, F. D. (2019). The Effect of Usability , Quality of Information , And Interaction Services Quality on User Satisfaction of DEPOK City Government Website Services Using WEBQUAL 4 . 0 Method. 8(10), 234-241.

Dix, A., Dix, A. J., Finlay, J., Abowd, G. D., and Beale, R. (2003). Human-computer interaction: Pearson Education.

Dodig-Crnkovic, G. (2002). Scientific methods in computer science. Paper presented at the Proceedings of the Conference for the Promotion of Research in IT at New Universities and at University Colleges in Sweden, Skövde, Suecia, 126-130.

Eagly, A. H., and Chaiken, S. (1993). *The psychology of attitudes* (Vol. 12). Orlando, FL, US: Harcourt Brace Jovanovich College Publishers.

Ebrahimi, L., Mirabi, V. R., Ranjbar, M. H., and Pour, E. H. (2019). A Customer Loyalty Model for E-Commerce Recommendation Systems. *Journal of Information & Knowledge Management, 18*(03), 1950036.

Ehrlich, K., Kirk, S. E., Patterson, J., Rasmussen, J. C., Ross, S. I., and Gruen, D. M. (2011). *Taking advice from intelligent systems: the double-edged sword of explanations.* Paper presented at the Proceedings of the 16th international conference on Intelligent user interfaces, 125-134.

Eid, M. I. (2011). Determinants of e-commerce customer satisfaction, trust, and loyalty in Saudi Arabia. *Journal of Electronic Commerce Research, 12*(1), 78-93.

Elahi, M., Ricci, F., and Rubens, N. (2013). Active learning strategies for rating elicitation in collaborative filtering: A system-wide perspective. *ACM Transactions on Intelligent Systems and Technology, 5*(1).

Elkhani, N., Soltani, S., and Jamshidi, M. H. M. (2014). Examining a hybrid model for e-satisfaction and e-loyalty to e-ticketing on airline websites. *Journal of Air Transport Management, 37*, 36-44.

eMarketer. (2019). Global Ecommerce 2019.

Erciş, A., Ünal, S., Candan, F. B., and Yıldırım, H. (2012). The Effect of Brand Satisfaction, Trust and Brand Commitment on Loyalty and Repurchase Intentions. *Procedia - Social and Behavioral Sciences, 58*, 1395-1404.

Eric Hostler, R., Yoon, V. Y., Guimaraes, T., and Hostler, R. E. (2012). Recommendation agent impact on consumer online shopping: The Movie Magic case study. *Expert Systems with Applications, 39*(3), 2989-2999.

Eshaghi, S. M. S., Afshardoost, M., and Ahmadi, M. M. (2016). *Antecedents of online purchase intention: A cross-national study between Iran and Malaysia.* Paper presented at the 2016 10th International Conference on e-Commerce in Developing Countries: with focus on e-Tourism (ECDC), 1-13.

Faul, F., Erdfelder, E., Lang, A.-G., and Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods, 39*(2), 175-191.

Fayad, R., and Paper, D. (2015). The Technology Acceptance Model E-Commerce Extension: A Conceptual Framework. *Procedia Economics and Finance, 26*, 1000-1006.

Fazeli, S., Drachsler, H., Bitter-rijpkema, M., Brouns, F., Vegt, W. V. D., and Sloep, P. B. (2018). User-Centric Evaluation of Recommender Systems in Social Learning Platforms : Accuracy is Just the Tip of the Iceberg. *IEEE Transactions on Learning Technologies, 11*(3), 294-306.

Fishbein, M., and Ajzen, I. (1977). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. *Contemporary Sociology, 6*(2), 244-244.

Flavián, C., Guinalíu, M., and Gurrea, R. (2006). The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information and Management, 43*(1), 1-14.

Frank, B., Herbas Torrico, B., Enkawa, T., and Schvaneveldt, S. J. (2014). Affect versus Cognition in the Chain from Perceived Quality to Customer Loyalty: The Roles of Product Beliefs and Experience. *Journal of Retailing, 90*(4), 567-586.

Fytraki, A. T., Dellaert, B. G., & Benbasat, I. (2014). Recommendation Agent Acceptance: The Impact of Decision Difficulty in RA Sets of Multidimensional Products.

Gan, X., Jiao, Y., Liu, L., & Zhang, Y. (2018). Research on the Factors Influencing Users' Adoption Intention of E-commerce Recommendation System. Paper presented at the International Conference on Data Mining and Big Data.

Gao, C., Chen, X., Feng, F., Zhao, K., He, X., Li, Y., & Jin, D. (2019). Cross-domain recommendation without sharing user-relevant data. Paper presented at the The world wide web conference.

Garcin, F., Faltings, B., Donatsch, O., Alazzawi, A., Bruttin, C., and Huber, A. (2014). *Offline and online evaluation of news recommender systems at swissinfo.ch*, 169-176.

Gasparic, M., Janes, A., Ricci, F., and Zanellati, M. (2017). *GUI Design for IDE Command Recommendations*, New York, New York, USA, 595-599.

Ge, M., Delgado-Battenfeld, C., and Jannach, D. (2010). User-perceived recommendation quality-factoring in the user interface. In *ACM RecSys* (pp. 22-

25).

Ge, M., Gedikli, F., and Jannach, D. (2011). *Placing High-Diversity Items in Top-N Recommendation Lists.* Paper presented at the ITWP@ IJCAI.

Gefen, D. (2002). Customer Loyalty in E-Commerce. *Journal of the Association for Information Systems, 3*(1), 27-53.

Gefen, D., Karahanna, E., and Straub, D. W. (2003). Trust and tam in online shopping: AN integrated model. *MIS Quarterly: Management Information Systems, 27*(1), 51-90.

Gessner, G. H., and Snodgrass, C. R. (2015). Designing e-commerce cross-border distribution networks for small and medium-size enterprises incorporating Canadian and U.S. trade incentive programs. *Research in Transportation Business & Management, 16*, 84-94.

Ginty, L. M., and Smyth, B. (2002). Comparison-Based Recommendation. In (pp. 575-589): Springer, Berlin, Heidelberg.

Gogna, A., and Majumdar, A. (2017a). Balancing accuracy and diversity in recommendations using matrix completion framework. *Knowledge-Based Systems, 125*, 83-95.

Gogna, A., and Majumdar, A. (2017b). DiABlO: Optimization based design for improving diversity in recommender system. *Information Sciences, 378*, 59-74.

Golbeck, J., and Hansen, D. L. (2011). A framework for recommending collections. *CEUR Workshop Proceedings, 816*, 35-42.

Goswami, D. S. (2013). Measuring Customer Satisfaction on Webqual Dimension for Online Banking: An Empirical Study. *Paradigm, 17*(1-2), 25-36.

Grant, J. S., and Davis, L. L. (1997). Selection and use of content experts for instrument development. *Research in nursing & health, 20*(3), 269-274.

Gravino, P., Monechi, B., and Loreto, V. (2019). Towards novelty-driven recommender systems (Vol. 1, pp. 1-9): Elsevier Masson SAS.

Gregor, S., and Benbasat, I. (1999). Explanations from Intelligent Systems: Theoretical Foundations and Implications for Practice. *MIS Quarterly, 23*(4), 497-497.

Gretzel, U., Hwang, Y. H., and Fesenmaier, D. R. (2012). Informing destination recommender systems design and evaluation through quantitative research.

International Journal of Culture, Tourism and Hospitality Research, 6(4), 297-315.

Gu, L., Yang, P., and Dong, Y. (2017a). Diversity optimization for recommendation using improved cover tree. *Knowledge-Based Systems, 135*, 1-8.

Gu, L., Yang, P., and Dong, Y. (2017b). Knowle dge-Base d Systems Diversity optimization for recommendation using improved cover tree. *Knowledge-Based Systems, 135*, 1-8.

Gu, R., Oh, L.-b., and Wang, K. (2016). Developing user loyalty for social networking sites: A relational perspective. *Journal of Electronic Commerce Research, 17*(1), 1-21.

Guba, E. G., and Lincoln, Y. S. (1989). *Fourth generation evaluation*: Sage Publications.

Gunawardana, A., and Shani, G. (2015). Evaluating recommender systems. *Recommender Systems Handbook, Second Edition*, 265-308.

Guo, G., Zhang, J., Thalmann, D., and Yorke-Smith, N. (2014). Leveraging prior ratings for recommender systems in e-commerce. *Electronic Commerce Research and Applications, 13*(6), 440-455.

Hair, J., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2013a). *A Primer on Partial Least Squares Structural Equation Modeling* (Vol. 46). Thousand Oaks, United States: SAGE Publications Inc.

Hair, J. F., Ringle, C. M., and Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice, 19*(2), 139-152.

Hair, J. F., Ringle, C. M., and Sarstedt, M. (2013b). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long range planning, 46*(1-2), 1-12.

Hall, P. (2005). Measurement in Nursing and Health Research, Fifth Edition. *Nephrology Nursing Journal, 33*(1), 76-76.

Han, H., Kim, Y., and Kim, E. K. (2011). Cognitive, affective, conative, and action loyalty: Testing the impact of inertia. *International Journal of Hospitality Management, 30*(4), 1008-1019.

Hasan, L., Morris, A., and Probets, S. (2009). *Using Google Analytics to evaluate the usability of e-commerce sites.* Paper presented at the International Conference

on Human Centered Design, 697-706.

Hasanov, J., and Khalid, H. (2015). The Impact of Website Quality on Online Purchase Intention of Organic Food in Malaysia: A WebQual Model Approach. *Procedia Computer Science, 72*, 382-389.

Hassenzahl, M. (2008). *User experience (UX) towards an experiential perspective on product quality.* Paper presented at the Proceedings of the 20th Conference on l'Interaction Homme-Machine, 11-15.

Häubl, G., and Murray, K. B. (2003). Preference construction and persistence in digital marketplaces: The role of electronic recommendation agents (Vol. 13, pp. 75-91): No longer published by Elsevier.

Häubl, G., and Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing Science, 19*(1), 4-21.

Helberger, N., Karppinen, K., Acunto, L. D., and D 'acunto, L. (2017). Exposure diversity as a design principle for recommender systems. *Information, Communication & Society, 21*(2), 191-207.

Hengki, R. (2014). *Analysis quality Dino tour travel management website using WebQual 4.0.* Paper presented at the International Conference on Engineering and Technology Development (ICETD).

Henseler, J., Ringle, C. M., and Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing, 20*, 277-319.

Herlambang, A. D., Priyangga, R. W., & Wardani, N. H. (2019). Quality Evaluation of Pasuruan Regency Office of Education's Website Using Webqual 4.0 Framework and Importance Performance Analysis (IPA). Jurnal Penelitian Pos dan Informatika, 9(1), 1-12.

Herlocker, J. L., Konstan, J. A., and Riedl, J. (2000). *Explaining collaborative filtering recommendations.* Paper presented at the Proceedings of the 2000 ACM conference on Computer supported cooperative work, 241-250.

Herlocker, J. L., Konstan, J. A., Terveen, L. G., and Riedl, J. T. (2004). Evaluating collaborative filtering recommender systems. *ACM Transactions on Information Systems, 22*(1), 5-53.

Hernando, A., Bobadilla, J., Ortega, F., and Gutiérrez, A. (2013). Trees for explaining recommendations made through collaborative filtering. *Information Sciences, 239*, 1-17.

Hertzog, M. A. (2008). Considerations in determining sample size for pilot studies. *Research in Nursing & Health, 31*(2), 180-191.

Hirschheim, R., Klein, H. K., and Lyytinen, K. (1995). *Information systems development and data modeling: conceptual and philosophical foundations*: Cambridge University Press.

Homburg, C., and Fürst, A. (2005). How organizational complaint handling drives customer loyalty: an analysis of the mechanistic and the organic approach. *Journal of Marketing, 69*(3), 95-114.

Hong, I. B., and Cho, H. (2011). The impact of consumer trust on attitudinal loyalty and purchase intentions in B2C e-marketplaces: Intermediary trust vs. seller trust. *International Journal of Information Management, 31*(5), 469-479.

Hostler, R. E., Yoon, V. Y., Guo, Z., Guimaraes, T., and Forgionne, G. (2011). Assessing the impact of recommender agents on on-line consumer unplanned purchase behavior. *Information & Management, 48*(8), 336-343.

Hou, L., Liu, K., Liu, J., and Zhang, R. (2017). Solving the stability–accuracy–diversity dilemma of recommender systems. *Physica A: Statistical Mechanics and its Applications, 468*, 415-424.

Hu, R. (2010). *Design and user issues in personality-based recommender systems.* Paper presented at the Proceedings of the fourth ACM conference on Recommender systems, 357-360.

Hu, R., and Pu, P. (2011). *Helping Users Perceive Recommendation Diversity.* Paper presented at the DiveRS@ RecSys, 43-50.

Hu, X., Zeng, A., and Shang, M.-S. (2016). Recommendation in evolving online networks. *Eur. Phys. J. B, 89*(2), 46-46.

Hua, N., Morosan, C., and DeFranco, A. (2015). The other side of technology adoption: Examining the relationships between e-commerce expenses and hotel performance. *International Journal of Hospitality Management, 45*, 109-120.

Huang, Y. M., Liu, C. H., Lee, C. Y., and Huang, Y. M. (2012). Designing a personalized guide recommendation system to mitigate information overload in

museum learning. *Educational Technology and Society, 15*(4), 150-166.

Huitt, W., and Cain, S. (2005). An overview of the conative domain. educational psychology interactive: Valdosta, GA: Valdosta State University.

Hurley, N., and Zhang, M. (2011). Novelty and Diversity in Top-N Recommendation Analysis and Evaluation. *ACM Transactions on Internet Technology, 10*(4), 1-30.

Hwang, S., and Kim, S. (2018). Does mIM experience affect satisfaction with and loyalty toward O2O services? *Computers in Human Behavior, 82*(2018), 70-80.

Isufi, E., Pocchiari, M., & Hanjalic, A. (2021). Accuracy-diversity trade-off in recommender systems via graph convolutions. Information Processing & Management, 58(2), 102459.

Jackson, T. W., and Farzaneh, P. (2012). Theory-based model of factors affecting information overload. *International Journal of Information Management, 32*(6), 523-532.

Janita, M. S., and Miranda, F. J. (2013). The antecedents of client loyalty in business-to-business (B2B) electronic marketplaces. *Industrial Marketing Management, 42*(5), 814-823.

Jannach, D., Lerche, L., and Jugovac, M. (2015a). Item Familiarity as a Possible Confounding Factor in User-Centric Recommender Systems Evaluation. *i-com, 14*(1), 29-39.

Jannach, D., Lerche, L., and Jugovac, M. (2015b). *Item Familiarity Effects in User-Centric Evaluations of Recommender Systems.* Paper presented at the RecSys Posters.

Jannach, D., Lerche, L., Kamehkhosh, I., and Jugovac, M. (2015c). What recommenders recommend: an analysis of recommendation biases and possible countermeasures. *User Modeling and User-Adapted Interaction, 25*(5), 427-491.

Jannach, D., Nunes, I., and Jugovac, M. (2017). *Interacting with Recommender Systems.* Paper presented at the Proceedings of the 22nd International Conference on Intelligent User Interfaces Companion, 25-27.

Jannach, D., Zanker, M., and Fuchs, M. (2014). Leveraging multi-criteria customer feedback for satisfaction analysis and improved recommendations An empirical

eval- uation on datasets from different domains finally shows that our method helps us to. *Inf Technol Tourism, 14*, 119-149.

Jarvenpaa, S. L., Tractinsky, N., and Vitale, M. (2000). Consumer trust in an Internet store. *Information technology and management, 1*(1-2), 45-71.

Jiang, L., Jun, M., and Yang, Z. (2016). Customer-perceived value and loyalty: how do key service quality dimensions matter in the context of B2C e-commerce? *Service Business, 10*(2), 301-317.

Johnson, D., and Grayson, K. (2005). Cognitive and affective trust in service relationships. *Journal of Business Research, 58*(4), 500-507.

Johnson, H., and Johnson, P. (1993). *Explanation facilities and interactive systems.* Paper presented at the Proceedings of the 1st international conference on Intelligent user interfaces, 159-166.

Johnson, R. A. (1989). *He: Understanding masculine psychology*: New York: Harper & Row.

Jones, N. (2010). *User Perceived Qualities and Acceptance of Recommender Systems: The Role of Diversity THÈSE N O 4680 (2010) École* Polytecnique Federale De Lausanine.

Jones, N., and Pu, P. (2007). *User technology adoption issues in recommender systems.* Paper presented at the Proceedings of the 2007 Networking and Electronic Commerce Research Conference, 379-394.

Kaminskas, M., and Bridge, D. (2016a). 2 Diversity, Serendipity, Novelty, and Coverage: A Survey and Empirical Analysis of Beyond-Accuracy Objectives in Recommender Systems.

Kaminskas, M., and Bridge, D. (2016b). Diversity, Serendipity, Novelty, and Coverage. *ACM Transactions on Interactive Intelligent Systems, 7*(1), 1-42.

Kang, D., Jang, W., and Park, Y. (2016). Evaluation of e-commerce websites using fuzzy hierarchical TOPSIS based on E-S-QUAL. *Applied Soft Computing, 42*, 53-65.

Karahanna, E., Straub, D. W., and Chervany, N. L. (1999). Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS quarterly*, 183-213.

Karga, S., and Satratzemi, M. (2019). Using explanations for recommender systems

in learning design settings to enhance teachers' acceptance and perceived experience. *Education and Information Technologies, 24*(5), 2953-2974.

Kasunic, M. (2005). *Designing an effective survey*: Carnegie-Mellon Univ Pittsburgh PA Software Engineering Insto. Document Number)

Kavu, T. D., Dube, K., Raeth, P. G., and Hapanyengwi, G. T. (2017). A Characterisation and Framework for User-Centric Factors in Evaluation Methods for Recommender Systems. *International Journal of ICT Research in Africa and the Middle East, 6*(1), 1-16.

Kelly, J. P., and Bridge, D. (2007). Enhancing the diversity of conversational collaborative recommendations: a comparison. *Artificial Intelligence Review, 25*(1-2), 79-95.

Kim, D. J., Song, Y. I., Braynov, S. B., and Rao, H. R. (2005). A multidimensional trust formation model in B-to-C e-commerce: a conceptual framework and content analyses of academia/practitioner perspectives. *Decision Support Systems, 40*(2), 143-165.

Kim, D. J., Yim, M.-S., Sugumaran, V., and Rao, H. R. (2016). Web assurance seal services, trust and consumers' concerns: an investigation of e-commerce transaction intentions across two nations. *European Journal of Information Systems, 25*(3), 252-273.

Kim, H.-W., Chan, H. C., and Gupta, S. (2007). Value-based Adoption of Mobile Internet: An empirical investigation. *Decision Support Systems, 43*(1), 111-126.

Kim, J., Jin, B., and Swinney, J. L. (2009). The role of etail quality, e-satisfaction and e-trust in online loyalty development process. *Journal of Retailing and Consumer Services, 16*(4), 239-247.

Kim, S., and Stoel, L. (2004). Apparel retailers: website quality dimensions and satisfaction. *Journal of Retailing and Consumer Services, 11*(2), 109-117.

Knijnenburg, B. P., Niels Reijmer, u. J. M., and Martijn Willemsen, s. C. (2011a). Each to His Own: How Different Users Call for Different Interaction Methods in Recommender Systems. *Proceedings of the fifth ACM conference on Recommender systems*, pp. 141-148.

Knijnenburg, B. P., Schmidt-Thieme, L., and Bollen, D. G. (2010). *Workshop on user-centric evaluation of recommender systems and their interfaces.* Paper

presented at the Proceedings of the fourth ACM conference on Recommender systems, 383-384.

Knijnenburg, B. P., Willemsen, M. C., and Alfred Kobsa, T. (2011b). A Pragmatic Procedure to Support the User-Centric Evaluation of Recommender Systems. *Proceedings of the fifth ACM conference on Recommender systems*, pp. 321-324.

Knijnenburg, B. P., Willemsen, M. C., Gantner, Z., Soncu, H., and Newell, C. (2012). Explaining the user experience of recommender systems. *User Modeling and User-Adapted Interaction, 22*(4-5), 441-504.

Koenemann, J., and Belkin, N. J. (1996). *A case for interaction: A study of interactive information retrieval behavior and effectiveness.* Paper presented at the Proceedings of the SIGCHI conference on human factors in computing systems, 205-212.

Kohavi, R., and Provost, F. (2000). Applications of Data Mining to Electronic Commerce. *Applications of Data Mining to Electronic Commerce*, 115-153.

Köhler, C. F., Breugelmans, E., and Dellaert, B. G. C. (2011). Consumer Acceptance of Recommendations by Interactive Decision Aids: The Joint Role of Temporal Distance and Concrete Versus Abstract Communications. *Journal of Management Information Systems, 27*(4), 231-260.

Komiak, S. Y., and Benbasat, I. (2006). The effects of personalization and familiarity on trust and adoption of recommendation agents. *MIS quarterly*, 941-960.

Konstan, J. A. (2008). *Introduction to recommender systems.* Paper presented at the Proceedings of the 2008 ACM SIGMOD international conference on Management of data, 1373-1374.

Konstan, J. A., McNee, S. M., Ziegler, C.-N., Torres, R., Kapoor, N., and Riedl, J. (2006). *Lessons on applying automated recommender systems to information-seeking tasks.* Paper presented at the AAAI, 1630-1633.

Konstan, J. A., and Riedl, J. (2012). Recommender systems: from algorithms to user experience. *User Modeling and User-Adapted Interaction, 22*(1-2), 101-123.

Kotkov, D., Veijalainen, J., and Wang, S. (2020). How does serendipity affect diversity in recommender systems? A serendipity-oriented greedy algorithm. *Computing, 102*(2), 393-411.

Kotkov, D., Wang, S., and Veijalainen, J. (2016). A survey of serendipity in recommender systems. *Knowledge-Based Systems, 111*.

Koutsopoulos, I., and Halkidi, M. (2018). Efficient and Fair Item Coverage in Recommender Systems. *2018 IEEE 16th Intl Conf on Dependable, Autonomic and Secure Computing, 16th Intl Conf on Pervasive Intelligence and Computing, 4th Intl Conf on Big Data Intelligence and Computing and Cyber Science and Technology Congress(DASC/PiCom/DataCom/CyberSciTech)*, 912-918.

Kowalczyk, W., Szlávik, Z., and Schut, M. C. (2011). *The impact of recommender systems on item-, user-, and rating-diversity.* Paper presented at the International Workshop on Agents and Data Mining Interaction, 261-287.

Kramer, T. (2007). The Effect of Measurement Task Transparency on Preference Construction and Evaluations of Personalized Recommendations. *Journal of Marketing Research, 44*(2), 224-233.

Krishnamurthy, S., 2004. Amazon. Com-a Comprehensive Case History.

Krohn-grimberghe, A., Nanopoulos, A., and Schmidt-thieme, L. (2010). A Novel Multidimensional Framework for Evaluating Recommender Systems The Role of a Multidimensional Model. *i*, 34-41.

Kuhn, T. (1962). *The structure of scientific revolutions*. The structure of scientific revolutions. Chicago and London.

Kumar, N., and Benbasat, I. (2006). Research Note: The Influence of Recommendations and Consumer Reviews on Evaluations of Websites. *Information Systems Research, 17*(4), 425-439.

Kumar Ranganathan, S., Madupu, V., Sen, S., and R. Brooks, J. (2013). Affective and cognitive antecedents of customer loyalty towards e-mail service providers. *Journal of Services Marketing, 27*(3), 195-206.

Kumar, V., Dalla Pozza, I., and Ganesh, J. (2013). Revisiting the satisfaction–loyalty relationship: empirical generalizations and directions for future research. *Journal of retailing, 89*(3), 246-262.

Kunaver, M., and Požrl, T. (2017). Diversity in recommender systems – A survey. *Knowledge-Based Systems, 123*, 154-162.

Kurniawan, S. (2004). Interaction design: Beyond human–computer interaction by

Preece, Sharp and Rogers (2001), ISBN 0471492787.

Kveton, B., and Berkovsky, S. (2016). Minimal Interaction Content Discovery in Recommender Systems. *ACM Transactions on Interactive Intelligent Systems, 6*(2), 1-25.

Kwon, J., and Vogt, C. A. (2010). Identifying the Role of Cognitive, Affective, and Behavioral Components in Understanding Residents' Attitudes toward Place Marketing. *Journal of Travel Research, 49*(4), 423-435.

Lam, S. K. T., Frankowski, D., and Riedl, J. (2006). Do You Trust Your Recommendations? An Exploration of Security and Privacy Issues in Recommender Systems. In (Vol. 3995 LNCS, pp. 14-29).

Lam, S. Y., Shankar, V., Erramilli, M. K., and Murthy, B. (2004). Customer Value, Satisfaction, Loyalty, and Switching Costs: An Illustration From a Business-to-Business Service Context. *Journai of the Academy of Marketiag Science, 32*(3), 293-311.

Lazarus, R. S. (1991). Cognition and motivation in emotion. *American Psychologist, 46*(4), 352-367.

Lee, G. G., and Lin, H. F. (2005). Customer perceptions of e-service quality in online shopping. *International Journal of Retail & Distribution Management, 33*(2), 161-176.

Lee, J., Park, D. h., Han, I., and Park, D.-H. (2011). The different effects of online consumer reviews on consumers' purchase intentions depending on trust in online shopping malls: An advertising perspective. *Internet Research Iss-Review, 21*(1), 187-206.

Lee, K. K. K. (2015). Escaping your comfort zone: A graph-based recommender system for finding novel recommendations among relevant items. *Expert Systems with Applications, 42*(10), 4851-4858.

Lee, W. O., and Wong, L. S. (2016). Determinants of Mobile Commerce Customer Loyalty in Malaysia. *Procedia - Social and Behavioral Sciences, 224*(6), 60-67.

Lenzini, G., van Houten, Y., Huijsen, W., and Melenhorst, M. (2010). Shall I Trust a Recommendation? Towards an Evaluation of the Trustworthiness of Recommender Sites. In (Vol. 5968 LNCS, pp. 121-128).

Leong, L. Y., Hew, T. S., Lee, V. H., and Ooi, K. B. (2015). An SEM-artificial-

neural-network analysis of the relationships between SERVPERF, customer satisfaction and loyalty among low-cost and full-service airline. *Expert Systems with Applications, 42*(19), 6620-6634.

Levin, D., Cross, R., Abrams, L., and Lesser, E. (2002). Why should i trust you? Antecedents of trust in a knowledge transfer context. *Cambridge, MA*, 32.

Li, H., Fang, Y., Wang, Y., Lim, K. H., and Liang, L. (2015). Are all signals equal? Investigating the differential effects of online signals on the sales performance of e-marketplace sellers. *Information Technology and People, 28*(3), 699-723.

Liang, T.-P., and Lai, H.-J. (2002). Effect of store design on consumer purchases: an empirical study of on-line bookstores. *Information & Management, 39*(6), 431-444.

Lichtenthal, J. D., and Tellefsen, T. (2001). Toward a theory of business buyer-seller similarity. *Journal of Personal Selling and Sales Management, 21*(1), 1-14.

Lin, H.-H., and Wang, Y.-S. (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. *Information & Management, 43*(3), 271-282.

Lin, L. Y., and Lu, C. Y. (2010). The influence of corporate image, relationship marketing, and trust on purchase intention: the moderating effects of word-of-mouth. *Tourism Review, 65*(3), 16-34.

Linden, G., Smith, B., and York, J. (2003). Amazon.com recommendations: item-to-item collaborative filtering. *IEEE Internet Computing, 7*(1), 76-80.

Liu, J.-G., Shi, K., and Guo, Q. (2012). Solving the accuracy-diversity dilemma via directed random walks. *Physical Review E, 85*(1), 016118-016118.

Liu, Q., and Gan, X. (2016). Combining User Contexts and User Opinions for Restaurant Recommendation in Mobile Environment. *Journal of Electronic Commerce in Organizations, 14*(1), 45-63.

Liviatan, I., Trope, Y., and Liberman, N. (2008). Interpersonal similarity as a social distance dimension: Implications for perception of others' actions. *Journal of Experimental Social Psychology, 44*(5), 1256-1269.

Loiacono, E. T., Watson, R. T., and Goodhue, D. L. (2002). WebQual: A measure of website quality. *Marketing theory and applications, 13*(3), 432-438.

Love, A. C. (2015). Collaborative explanation, explanatory roles, and scientific

explaining in practice. *Studies in History and Philosophy of Science Part A, 52*, 88-94.

Lü, L., Medo, M., Yeung, C. H., Zhang, Y.-C., Zhang, Z.-K., and Zhou, T. (2012). Recommender systems. *Physics Reports, 519*(1), 1-49.

Lu, Y., Lu, Y., and Wang, B. (2012). Effects of Dissatisfaction on Customer Repurchase Decisions in E-Commerce — an Emotion-Based Perspective. *Journal of Electronic Commerce Research, 13*(3), 224-237.

Lu, Z., Wang, H., Mamoulis, N., Tu, W., and Cheung, D. W. (2017). Personalized location recommendation by aggregating multiple recommenders in diversity. *GeoInformatica, 21*(3), 459-484.

Luarn, P., and Lin, H. H. (2003). A Customer Loyalty Model for E-Service Context. *Journal of Electronic Commerce Research, 4*(4), 156-167.

MacKenzie, I., Meyer, C., Noble, S., 2013. How retailers can keep up with consumers. McKinsey & Company 18.

Mägi, A. W. (2003). Share of wallet in retailing: the effects of customer satisfaction, loyalty cards and shopper characteristics. *Journal of retailing, 79*(2), 97-106.

Mahmood, T., Mujtaba, G., and Venturini, A. (2014). Dynamic personalization in conversational recommender systems. *Information Systems and e-Business Management, 12*(2), 213-238.

Maneeroj, S., Jirachanchaisiri, P., Suksomjit, C., and Zatloukal, A. (2019). *Cross-Category Product Recommender System based on Multi-Criteria Rating using Diversity and Novelty Evaluation.* Paper presented at the 2019 16th International Joint Conference on Computer Science and Software Engineering (JCSSE), 193-198.

Mansouri, A., Amani, D., Karousli, B., Sarbaz Barazandeh, N., Mohammadi, F., Khoshghadam, N., et al. (2012). The Impact Assessment of the Quality Factors of Different Brands of Machine-made Carpet in Increasing Customer's Satisfaction (A case study: machine-made carpet produced in Boukan). *Journal of Basic and Applied Scientific Research, 2*, 6128-6132.

Manzuma-Ndaaba, N. M., Harada, Y., Romle, A. R., and Shamsudin, A. S. (2016). Cognitive, affective and conative loyalty in higher education marketing: Proposed model for emerging destinations. *International Review of*

Management and Marketing, 6(4S), 168-175.

Markowitz, H. (1959). Portfolio selection. *Investment under Uncertainty*.

Martin, F. J. (2009). *Recsys' 09 industrial keynote: top 10 lessons learned developing deploying and operating real-world recommender systems.* Paper presented at the Proceedings of the third ACM conference on Recommender systems, 1-2.

Matt, C., Hess, T., and Weiß, C. (2019). A factual and perceptional framework for assessing diversity effects of online recommender systems. *Internet Research*, INTR-06-2018-0274.

McFarlane, D. (2006). Research in Organizations: Foundations and Methods of Inquiry. *Journal of Applied Management and Entrepreneurship, 11*(2), 120-120.

McGinty, L., and Smyth, B. (2003). *On the role of diversity in conversational recommender systems.* Paper presented at the International Conference on Case-Based Reasoning, 276-290.

McKnight, D. H., and Chervany, N. L. (2001). What Trust Means in E-Commerce Customer Relationships: An Interdisciplinary Conceptual Typology. *International Journal of Electronic Commerce, 6*(2), 35-59.

McKnight, D. H., Choudhury, V., and Kacmar, C. (2002). The impact of initial consumer trust on intentions to transact with a web site: a trust building model. *The journal of strategic information systems, 11*(3-4), 297-323.

McKnight, D. H., Cummings, L. L., and Chervany, N. L. (1998). InitialTrustAMR. *Academy of management review, 23*(3), 473-490.

McNee, S. M., Lam, S. K., Konstan, J. A., and Riedl, J. (2003). Interfaces for Eliciting New User Preferences in Recommender Systems. In (pp. 178-187): Springer, Berlin, Heidelberg.

McNee, S. M., Riedl, J., and Konstan, J. A. (2006). *Being accurate is not enough: how accuracy metrics have hurt recommender systems.* Paper presented at the CHI'06 extended abstracts on Human factors in computing systems, 1097-1101.

Meymandpour, R., and Davis, J. G. (2020). Measuring the diversity of recommendations: a preference-aware approach for evaluating and adjusting diversity. *Knowledge and Information Systems, 62*(2), 787-811.

Miller, G. A. (1956). The magical number seven, plus or minus two: some limits on

our capacity for processing information. *Psychological Review, 63*(2), 81-97.

Mittal, B., and Lassar, W. M. (1998). Why do customers switch? The dynamics of satisfaction versus loyalty. *Journal of Services Marketing, 12*(3), 177-194.

Möller, J., Trilling, D., Helberger, N., and van Es, B. (2018). Do not blame it on the algorithm: an empirical assessment of multiple recommender systems and their impact on content diversity. *Information, Communication & Society, 21*(7), 959-977.

Montesdioca, G. P. Z., & Maçada, A. C. G. (2015). Quality dimensions of the DeLone-McLean model to measure user satisfaction: an empirical test on the information security context. Paper presented at the 2015 48th Hawaii International Conference on System Sciences.

Moody, J., and Glass, D. H. (2016). A Novel Classification Framework for Evaluating Individual and Aggregate Diversity in Top-N Recommendations. *ACM Transactions on Intelligent Systems and Technology, 7*(3), 1-21.

Moons, I., and De Pelsmacker, P. (2015). An Extended Decomposed Theory of Planned Behaviour to Predict the Usage Intention of the Electric Car: A Multi-Group Comparison. *Sustainability, 7*(5), 6212-6245.

Moore, G. C., and Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research, 2*(3), 192-222.

Mourão, F., Fonseca, C., Araujo, C. S., and Meira Jr, W. (2011). *The Oblivion Problem: Exploiting Forgotten Items to Improve Recommendation Diversity.* Paper presented at the DiveRS@ RecSys, 27-34.

Musto, C., Semeraro, G., Lops, P., De Gemmis, M., and Lekkas, G. (2015). Personalized finance advisory through case-based recommender systems and diversification strategies. *Decision Support Systems, 77*, 100-111.

Nadeem, W., Andreini, D., Salo, J., and Laukkanen, T. (2015). Engaging consumers online through websites and social media: A gender study of Italian Generation Y clothing consumers. *International Journal of Information Management, 35*(4), 432-442.

Nanou, T., Lekakos, G., and Fouskas, K. (2010). The effects of recommendations' presentation on persuasion and satisfaction in a movie recommender system.

Multimedia Systems, 16(4-5), 219-230.

Napitupulu, D. (2017). Analysis of Factors Affecting The Website Quality (Study Case: XYZ University). *International Journal on Advanced Science, Engineering and Information Technology, 7*(3), 792-792.

Nilashi, M., and Ibrahim, O. B. (2014). A Model for Detecting Customer Level Intentions to Purchase in B2C Websites Using TOPSIS and Fuzzy Logic Rule-Based System. *Arabian Journal for Science and Engineering, 39*(3), 1907-1922.

Nilashi, M., Jannach, D., Ibrahim, O. b., Esfahani, M. D., and Ahmadi, H. (2016). Recommendation quality, transparency, and website quality for trust-building in recommendation agents. *Electronic Commerce Research and Applications, 19*, 70-84.

Niranjanamurthy, M., Kavyashree, N., S.Jagannath, and Chahar, D. (2013). Analysis of E-Commerce and M-Commerce: Advantages, Limitations and Security issues. *International Journal of Advanced Research in Computer and Communication Engineering, 2*(6), 2360-2370.

Nizar Hidayanto, A., Ovirza, M., Anggia, P., Ayuning Budi, N. F., and Phusavat, K. (2017). The Roles of Electronic Word of Mouth and Information Searching in the Promotion of a New E-Commerce Strategy: A Case of Online Group Buying in Indonesia. *Journal of theoretical and applied electronic commerce research, 12*(3), 69-85.

O'Donovan, J., and Smyth, B. (2005). *Trust in recommender systems.* Paper presented at the Proceedings of the 10th international conference on Intelligent user interfaces, 167-174.

O'Donovan, J., Smyth, B., Gretarsson, B., Bostandjiev, S., & Höllerer, T. (2008). PeerChooser: visual interactive recommendation. Paper presented at the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, 1085-1088.

Odin, Y., Odin, N., and Valette-Florence, P. (2001). Conceptual and operational aspects of brand loyalty: an empirical investigation. *Journal of Business Research, 53*(2), 75-84.

Oku, K. (2011). Fusion-based Recommender System for Improving Serendipity.

DiveRS@ RecSys 816, 19-26.

Oliver, R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *Journal of Marketing Research, 17*(4), 460-460.

Oliver, R. L. (1999). Whence Consumer Loyalty ? *Journal of marketing, 63*(4_suppl1), 33-44.

Orlikowski, W. J., and Baroudi, J. J. (1991). Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information systems research, 2*(1), 1-28.

Özge, M., and Tevfik, K. (2018). Effective methods for increasing aggregate diversity in recommender systems. *Knowledge and Information Systems, 56*(2), 355-372.

Ozok, a. A., Fan, Q., and Norcio, A. F. (2010). Design guidelines for effective recommender system interfaces based on a usability criteria conceptual model: results from a college student population. *Behaviour & Information Technology, 29*(1), 57-83.

Ozturk, A. B., Bilgihan, A., Nusair, K., and Okumus, F. (2016). What keeps the mobile hotel booking users loyal? Investigating the roles of self-efficacy, compatibility, perceived ease of use, and perceived convenience. *International Journal of Information Management, 36*(6), 1350-1359.

Panniello, U., Tuzhilin, A., and Gorgoglione, M. (2014). Comparing context-aware recommender systems in terms of accuracy and diversity 1 Motivation and introduction. *User Modeling and User-Adapted Interaction, 24*(1-2), 35-65.

Park, S.-H., and Han, S. P. (2013). From Accuracy to Diversity in Product Recommendations: Relationship Between Diversity and Customer Retention. *International Journal of Electronic Commerce, 18*(2), 51-72.

Paudel, B., Christoffel, F., Newell, C., and Bernstein, A. (2016). Updatable, Accurate, Diverse, and Scalable Recommendations for Interactive Applications. *ACM Transactions on Interactive Intelligent Systems, 7*(1), 1-34.

Payne, J. W. (1982). Contingent decision behavior. *Psychological Bulletin, 92*(2), 382-402.

Payne, J. W., Bettman, J. R., and Johnson, E. J. (1988). Adaptive strategy selection in decision making. *Journal of Experimental Psychology: Learning, Memory, and*

Cognition, 14(3), 534-552.

Payne, J. W., Bettman, J. R., and Johnson, E. J. (1993). *The Adaptive Decision Maker*: Cambridge University Press.

Pentland, B. T. (1995). Information systems and organizational learning: The social epistemology of organizational knowledge systems. *Accounting, Management and Information Technologies, 5*(1), 1-21.

Pine, B. J., Peppers, D., and Rogers, M. (1995). Do you want to keep your customers forever? *Long Range Planning, 28*(3), 119-119.

Preissle, J. (2000). Book Review: The Foundations of Social Research: Meaning and Perspective in the Research Process. *Field Methods, 12*(1), 72-79.

Pu, P., and Chen, L. (2006). Trust Building with Explanation Interfaces. *Proceedings of the 11th international conference on Intelligent user interfaces - IUI '06*, 93-93.

Pu, P., and Chen, L. (2007). Trust-inspiring explanation interfaces for recommender systems. *Knowledge-Based Systems, 20*(6), 542-556.

Pu, P., and Chen, L. (2008). User-Involved Preference Elicitation for Product Search and Recommender Systems.

Pu, P., Chen, L., and Hu, R. (2011). *A user-centric evaluation framework for recommender systems.* Paper presented at the Proceedings of the fifth ACM conference on Recommender systems, 157-164.

Pu, P., Chen, L., and Hu, R. (2012). Evaluating recommender systems from the user's perspective: survey of the state of the art. *User Modeling and User-Adapted Interaction, 22*(4-5), 317-355.

Raghunathan, S. (1999). Impact of information quality and decision-maker quality on decision quality: a theoretical model and simulation analysis. *Decision support systems, 26*(4), 275-286.

Raja, K. (2018). Novelty - driven recommendation by using integrated matrix factorization and temporal - aware clustering optimization. (October), 1-16.

Rais, A. N., Erawati, W., Handayani, N., & Mayatopani, H. (2020). Webqual and Importance Performance Analysis Method: The Evaluation of Tegal City's Public Service Information System Web Quality. Paper presented at the 2020 Fifth International Conference on Informatics and Computing (ICIC).

Reichheld, F. F., and Schefter, P. (2000). E-loyalty: Your secret weapon on the Web - ProQuest.

Reinartz, W. J., and Kumar, V. (2000). On the Profitability of Long-Life Customers in a Noncontractual Setting: an Empirical Investigation and Implications for Marketing. *Journal of marketing, 64*(4), 17-35.

Resnick, P., Iacovou, N., Suchak, M., Bergstrom, P., and Riedl, J. (1994). *GroupLens: an open architecture for collaborative filtering of netnews.* Paper presented at the Proceedings of the 1994 ACM conference on Computer supported cooperative work, 175-186.

Ribeiro, M. T., Ziviani, N., Moura, E. S. D., Hata, I., Lacerda, A., and Veloso, A. (2014). Multiobjective Pareto-Efficient Approaches for Recommender Systems. *ACM Transactions on Intelligent Systems and Technology, 5*(4), 1-20.

Ricci, F., Rokach, L., Shapira, B., Kantor, P. B., Kantor, F. R. L. R. B. S. P. B., and Editors. (2011a). *Recommender Systems Handbook*. Boston, MA: Springer US.

Ricci, F., Semeraro, G., De Gemmis, M., and Lops, P. (2011b). *Decision making and recommendation acceptance issues in recommender systems.* Paper presented at the International Conference on User Modeling, Adaptation, and Personalization, 86-91.

Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. Heliyon, 5(10), e02690.

Ritzer, G., and Guba, E. (1991). The Paradigm Dialog. *Canadian Journal of Sociology / Cahiers canadiens de sociologie, 16*(4), 446-446.

Rojas, G., and Garrido, I. (2017). Toward a Rapid Development of Social Network-Based Recommender Systems. *15*(4), 753-759.

Rosenzweig, E. (2015). *Successful user experience: Strategies and roadmaps*: Morgan Kaufmann.

Roudposhti, V. M., Nilashi, M., Mardani, A., Streimikiene, D., Samad, S., and Ibrahim, O. (2018). A new model for customer purchase intention in e-commerce recommendation agents. *Journal of International Studies, 11*(4).

Safa, N. S., and Ismail, M. A. (2013). A customer loyalty formation model in electronic commerce. *Economic Modelling, 35*, 559-564.

Safa, N. S., and Von Solms, R. (2016). Customers repurchase intention formation in e-commerce. *SA Journal of Information Management, 18*(1), 1-9.

Said, A., De Luca, E. W., Kille, B., Jain, B., Micus, I., and Albayrak, S. (2012a). *KMulE: a framework for user-based comparison of recommender algorithms.* Paper presented at the Proceedings of the 2012 ACM international conference on Intelligent User Interfaces, 323-324.

Said, A., Fields, B., Jain, B. J., and Albayrak, S. (2013). *User-centric evaluation of a k-furthest neighbor collaborative filtering recommender algorithm.* Paper presented at the Proceedings of the 2013 conference on Computer supported cooperative work, 1399-1408.

Said, A., Jain, B. J., Lommatzsch, A., and Albayrak, S. (2012b). Correlating Perception-Oriented Aspects in User-Centric Recommender System Evaluation. 294-297.

Santini, S., and Castells, P. (2011). *An evaluation of novelty and diversity based on fuzzy logic.* Paper presented at the CEUR Workshop Proceedings.

Santos, O. C., and Boticario, J. G. (2015). User-centred design and educational data mining support during the recommendations elicitation process in social online learning environments. *Expert Systems, 32*(2), 293-311.

Santoso, H. B. (2017). E-learning quality analysis of use of web conference in the improvement of students with learning method Webqual (Case Study: Universitas KH. A. Wahab Hasbullah). *IEESE International Journal of Science and Technology, 6*(1), 8.

Schafer, J. B., Konstan, J., and Riedl, J. (1999). *Recommender systems in e-commerce.* Paper presented at the Proceedings of the 1st ACM conference on Electronic commerce, 158-166.

Schafer, J. B., Konstan, J. A., and Riedl, J. (2001). E-Commerce Recommendation Applications. In (pp. 115-153). Boston, MA: Springer US.

Scheel, C., Castellanos, A., Lee, T., and De Luca, E. W. (2014). The Reason Why: A Survey of Explanations for Recommender Systems. *Springer International Publishing Switzerland.*

Schneider, D., Berent, M., Thomas, R., and Krosnick, J. (2008). *Measuring customer satisfaction and loyalty: Improving the 'Net-Promoter'score.* Paper presented at

the Poster presented at the Annual Meeting of the American Association for Public Opinion Research, New Orleans, Louisiana.

Sekaran, U., and Bougie, R. (2003). Research Methods For Business, A Skill Building Approach, John Willey & Sons. *Inc. New York*.

Sekaran, U., & Bougie, R. (2019). Research methods for business: A skill building approach. john wiley & sons.

Setó-Pamies, D. (2012). Customer loyalty to service providers: examining the role of service quality, customer satisfaction and trust. *Total Quality Management & Business Excellence, 23*(11-12), 1257-1271.

Shahmanzari, M. (2013). *Assessing the influence of e-commerce item recommender systems on user continuance intention for future use of recommender system.*

Shao, J., Yang, H., Xing, X., and Yang, L. (2016). E-commerce and traffic congestion: An economic and policy analysis. Transportation Research Part B: Methodological, 83, 91-103.

Shardanand, U., and Maes, P. (1995). *Social information filtering: algorithms for automating "word of mouth"*. Paper presented at the Proceedings of the SIGCHI conference on Human factors in computing systems, 210-217.

Sharma, A., and Cosley, D. (2013). Do Social Explanations Work? Studying and Modeling the Effects of Social Explanations in Recommender Systems. *Proceedings of the 22nd international conference on World Wide Web(ACM)*.

Sheugh, L., and Alizadeh, S. H. (2018). A novel 2D-Graph clustering method based on trust and similarity measures to enhance accuracy and coverage in recommender systems. *Information Sciences, 432*, 210-230.

Sin, S. S., Nor, K. M., and Al-Agaga, A. M. (2012). Factors Affecting Malaysian young consumers' online purchase intention in social media websites. *Procedia - Social and Behavioral Sciences, 40*, 326-333.

Singh, H. (2006). The importance of customer satisfaction in relation to customer loyalty and retention. *Academy of Marketing Science, 60*(193-225), 46.

Sinha, R., and Swearingen, K. (2002). The role of transparency in recommender systems. *CHI 02 extended abstracts on Human factors in computing systems CHI 02*, 830-830.

Sodera, N., and Kumar, A. (2017). *Open problems in recommender systems diversity.*

Paper presented at the 2017 International Conference on Computing, Communication and Automation (ICCCA), 82-87.

Spano, L. D., and Boratto, L. (2018). Advances in computer-human interaction for recommender systems (AdCHIReS).

Srinivasan, S. S., Anderson, R., Ponnavolu, K., Srinivasan, S. S., R, A., and K, P. (2002). Customer loyalty in e-commerce: an exploration of its antecedents and consequences. *Journal of retailing, 78*(1), 41-50.

Sulikowski, P., Zdziebko, T., Turzyński, D., and Kańtoch, E. (2018). Human-website interaction monitoring in recommender systems. *Procedia Computer Science, 126*, 1587-1596.

Sun, H., and Zhang, P. (2006). The role of moderating factors in user technology acceptance. International Journal of Human Computer Studies, 64(2), 53-78.

Swearingen, K., and Sinha, R. (2002). Interaction design for recommender systems. *Designing Interactive Systems, 6*(12), 1-10.

Symeonidis, P., Coba, L., Zanker, M., Ghidini, C., Magnini, B., and Passerini, A. (2019). Counteracting the filter bubble in recommender systems: Novelty-aware matrix factorization. *Intelligenza Artificiale, 13*(1), 37-47.

Symeonidis, P., Nanopoulos, A., and Manolopoulos, Y. (2008). Providing Justifications in Recommender Systems. *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans, 38*(6), 1262-1272.

Szymanski, D. M., and Henard, D. H. (2001). Customer satisfaction: A meta-analysis of the empirical evidence. *Journal of the academy of marketing science, 29*(1), 16.

Takhti, K. Z. (2013). *Technology acceptance model for nursing process in hospital information system.*

Tam, C., and Oliveira, T. (2017). Understanding mobile banking individual performance. *Internet Research.*

Tarhini, A., Arachchilage, N. A. G., Masa'deh, R. e., and Abbasi, M. S. (2015). A Critical Review of Theories and Models of Technology Adoption and Acceptance in Information System Research. *International Journal of Technology Diffusion, 6*(4), 58-77.

Tarigan, J. (2008). User satisfaction using Webqual instrument: A research on stock

exchange of Thailand (SET). *Jurnal Akuntansi dan Keuangan, 10*(1), 24-47.

Tarnowska, K., Ras, Z. W., and Daniel, L. (2019). Recommender system for improving customer loyalty (Vol. 55): Springer.

Taylor, E. W., and Cranton, P. (2012). *The handbook of transformative learning: Theory, research, and practice*: John Wiley & Sons.

Taylor, S., DiPietro, R. B., and So, K. K. F. (2018). Increasing experiential value and relationship quality: An investigation of pop-up dining experiences. *International Journal of Hospitality Management, 74*(May), 45-56.

Taylor, S., and Todd, P. (1995). Assessing IT Usage: The Role of Prior Experience. *MIS Quarterly, 19*(4), 561-561.

Tenemaza, M., Luján-Mora, S., De Antonio, A., & Ramirez, J. (2020). Improving itinerary recommendations for tourists through metaheuristic algorithms: an optimization proposal. IEEE Access, 8, 79003-79023.

Thabane, L., Ma, J., Chu, R., Cheng, J., Ismaila, A., Rios, L. P., et al. (2010). A tutorial on pilot studies: the what, why and how. *BMC medical research methodology, 10*(1), 1-1.

Thaichon, P., and Quach, T. N. (2015). The relationship between service quality, satisfaction, trust, value, commitment and loyalty of Internet service providers' customers. *Journal of Global Scholars of Marketing Science, 25*(4), 295-313.

Thompson, A., and Tong, X. (2016). Factors influencing college students ' purchase intention towards Bamboo textile and apparel products. *3266*(July).

Thompson, R. L., Higgins, C. A., and Howell, J. M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *MIS Quarterly, 15*(1), 125-125.

Tintarev, N. (2009). *Explaining recommendations.*

Tintarev, N., and Masthoff, J. (2007). *A survey of explanations in recommender systems.* Paper presented at the 2007 IEEE 23rd international conference on data engineering workshop, 801-810.

Tintarev, N., and Masthoff, J. (2012). Evaluating the effectiveness of explanations for recommender systems. *User Modeling and User-Adapted Interaction, 22*(4-5), 399-439.

Tongxiao, Z., Agarwal, and Lucas. (2011). The Value of It-Enabled Retailer Learning: Personalized Product Recommendations and Customer Store Loyalty

in Electronic Markets. *MIS Quarterly, 35*(4), 859-859.

Trinh, G. T., Anesbury, Z. W., and Driesener, C. (2017). Has behavioural loyalty to online supermarkets declined? *Australasian Marketing Journal (AMJ), 25*(4), 326-333.

Tseng, T. H., and Lee, C. T. (2018). Facilitation of consumer loyalty toward branded applications: The dual-route perspective. *Telematics and Informatics, 35*(5), 1297-1309.

Tu, T. T., Nguyen, Q., Konstan, J. A., and Terveen, L. (2016). Enhancing User Experience with Recommender Systems Beyond Prediction Accuracies.

Ueasangkomsate, P. (2015). Adoption E-Commerce for Export Market of Small and Medium Enterprises in Thailand. *Procedia - Social and Behavioral Sciences, 207*, 111-120.

Vaishnavi, S. (2013). Ranking Technique to Improve Diversity in Recommender Systems. *International Journal of Computer Applications (0975, 68*(2), 20-25.

Valvi, A. C., and Fragkos, K. C. (2012). Critical review of the e-loyalty literature: a purchase-centred framework. *Electronic Commerce Research, 12*(3), 331-378.

Van Meteren, R., and Van Someren, M. (2000). *Using content-based filtering for recommendation.* Paper presented at the Proceedings of the Machine Learning in the New Information Age: MLnet/ECML2000 Workshop, 47-56.

Venkatesh, Morris, Davis, and Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27*(3), 425-425.

Venkatesh, V., Thong, J. Y. L., Chan, F. K. Y., Hu, P. J. H., and Brown, S. A. (2011). Extending the two-stage information systems continuance model: Incorporating UTAUT predictors and the role of context. *Information Systems Journal, 21*(6), 527-555.

Venkatesh, V., Thong, J. Y. L., and Xu, X. (2012). Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly, 36*(1), 157-178.

Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. MIS quarterly, 115-139.

Verma, V. K., Chandra, B., and Kumar, S. (2019). Values and ascribed responsibility

to predict consumers' attitude and concern towards green hotel visit intention. *Journal of Business Research, 96*, 206-216.

Vizine Pereira, A. L., and Hruschka, E. R. (2015). Simultaneous co-clustering and learning to address the cold start problem in recommender systems. *Knowledge-Based Systems, 82*, 11-19.

W.Anderson, L., Postlethwaite, T. N., Anderson, L. W., Neville Postlethwaite, T., Erik De Corte, B., and Barry Fraser, B. (2007). Program evaluation: large-scale and small-scale studies. *The International Institute for Educational Planning*, 1-34.

Walczuch, R., and Lundgren, H. (2004). Psychological antecedents of institution-based consumer trust in e-retailing. *Information & Management, 42*(1), 159-177.

Wang, H.-C., and Doong, H.-S. (2010). Online customers' cognitive differences and their impact on the success of recommendation agents. *Information & Management, 47*(2), 109-114.

Wang, H.-F., and Wu, C.-T. (2012). A strategy-oriented operation module for recommender systems in E-commerce. *Computers & Operations Research, 39*(8), 1837-1849.

Wang, W., and Benbasat, I. (2005). Trust in and Adoption of Online Recommendation. *6*(3), 72-101.

Wang, W., and Benbasat, I. (2007). Recommendation Agents for Electronic Commerce: Effects of Explanation Facilities on Trusting Beliefs. *Journal of Management Information Systems, 23*(4), 217-246.

Wang, Y.-S. (2008). Assessing e-commerce systems success: a respecification and validation of the DeLone and McLean model of IS success. *Information Systems Journal, 18*(5), 529-557.

Wang, Y.-S., Tseng, T. H., Wang, W.-T., Shih, Y.-W., and Chan, P.-Y. (2019). Developing and validating a mobile catering app success model. *International Journal of Hospitality Management, 77*(April), 19-30.

Wang, Y.-Y., Luse, A., Townsend, A. M., and Mennecke, B. E. (2015). Understanding the moderating roles of types of recommender systems and products on customer behavioral intention to use recommender systems.

Information Systems and e-Business Management, 13(4), 769-799.

Wang, Y., Zhang, J., and Vassileva, J. (2010). *A user-centric approach for social data integration and recommendation.* Paper presented at the 2010 3rd International Conference on Human-Centric Computing, 1-8.

Wardani, D. A. K., and Riskayanto. (2019). Analysis of Information System Quality and User Acceptance on Internet Banking Industry. *Journal of Global Economics Wardani, 7*(1), 1-8.

Watson, R. T., Berthon, P., Pitt, L. F., and Zinkhan, G. M. (2007). *Electronic Commerce: The Strategic Perspective*: Harcourt College Publishers1999.

Wei, N., Baharudin, A., Hussein, L. A., and Hilmi, M. (2019). Factors Affecting User's Intention to Adopt Smart Home in Malaysia.

Wen, C., R. Prybutok, V., Blankson, C., and Fang, J. (2014). The role of E-quality within the consumer decision making process. *International Journal of Operations & Production Management, 34*(12), 1506-1536.

Wen, C., R.Prybutok, V., and Xu, C. (2011). An integrated model for customer online repurchase intention. *Journal of Computer Information Systems, 52*(1), 14-23.

Wetsch, L. R. (2013). Trust, satisfaction and loyalty in customer relationship management: An application of justice theory. In (Vol. 4, pp. 29-42): The Haworth Press, Inc.

Wu, H., Cui, X., He, J., Li, B., and Pei, Y. (2014). On improving aggregate recommendation diversity and novelty in folksonomy-based social systems. *Personal and Ubiquitous Computing, 18*(8), 1855-1869.

Wu, J., Chen, L., Yu, Q., Han, P., Wu, Z., and Chen, L. (2015). Trust-aware media recommendation in heterogeneous social networks. *World Wide Web, 18*(1), 139-157.

Wu, L.-L., Joung, Y.-J., and Lee, J. (2013). *Recommendation systems and consumer satisfaction online: moderating effects of consumer product awareness.* Paper presented at the 2013 46th Hawaii International Conference on System Sciences, 2753-2762.

Wu, M.-C. (2013). A Study on University Students Intention to Use The Digital Museum of Sport Litelature. *Journal of International Management Studies,*

8(2), 17-30.

Wu, P. F. (2012). A mixed methods approach to technology acceptance research. *Journal of the Association of Information Systems, 13*(3), 172-187.

Wu, W., Chen, L., and Zhao, Y. (2018). Personalizing recommendation diversity based on user personality. *User Modeling and User-Adapted Interaction, 28*(3), 237-276.

Wynd, C. A., Schmidt, B., and Schaefer, M. A. (2003). Two Quantitative Approaches for Estimating Content Validity. *Western Journal of Nursing Research, 25*(5), 508-518.

Xia, W., Ping, Z., Gao, W., Jia, L. I. U., Wang, X., Zhao, P., et al. (2007). Market segmentation based on customer satisfaction-loyalty links. *Frontiers of Business Research in China, 1*(2), 211-221.

Xiao, and Benbasat. (2007). E-Commerce Product Recommendation Agents: Use, Characteristics, and Impact. *MIS Quarterly, 31*(1), 137-209.

Xiao, L., Guo, Z., D'Ambra, J., and Fu, B. (2016). Building loyalty in e-commerce: Towards a multidimensional trust-based. *Program, 50*(4), 431-461.

Yadegaridehkordi, E. (2015). *An adoption model for cloud-based collaborative learning applications from top Malaysian universities' experience.*

Yang, X., Guo, W., Li, X., and Chen, Y. (2015). *The influence factors on channel selection: A study on online shopping for infant milk powders.* Paper presented at the 2015 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), 1830-1834.

Yeo, J. S., Aurum, A., Handzic, M., and Parkin, P. (2002). *When technology is mandatory-factors influencing users satisfaction.* Paper presented at the International Conference on Computers in Education, 2002. Proceedings., 1023-1024.

Yera, R., and Martínez, L. (2017). A recommendation approach for programming online judges supported by data preprocessing techniques. *Applied Intelligence, 47*(2), 277-290.

Yoo, J., and Park, M. (2016). The effects of e-mass customization on consumer perceived value, satisfaction, and loyalty toward luxury brands. *Journal of Business Research, 69*(12), 5775-5784.

Yoon, V. Y., Hostler, R. E., Guo, Z., and Guimaraes, T. (2013). Assessing the moderating effect of consumer product knowledge and online shopping experience on using recommendation agents for customer loyalty. *Decision Support Systems, 55*(4), 883-893.

Yu, T., Guo, J., Li, W., Wang, H. J., & Fan, L. (2019). Recommendation with diversity: An adaptive trust-aware model. Decision Support Systems, 123, 113073.

Yuan, D., Lin, Z., and Zhuo, R. (2016). What drives consumer knowledge sharing in online travel communities?: Personal attributes or e-service factors? *Computers in Human Behavior, 63*, 68-74.

Yuan, X., Lee, J. H., Kim, S. J., & Kim, Y. H. (2013). Toward a user-oriented recommendation system for real estate websites. Information Systems, 38(2), 231-243.

Zanker, M., and Ninaus, D. (2010). *Knowledgeable explanations for recommender systems.* Paper presented at the 2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology, 657-660.

Zehir, C., and Narcıkara, E. (2016). E-Service Quality and E-Recovery Service Quality: Effects on Value Perceptions and Loyalty Intentions. *Procedia - Social and Behavioral Sciences, 229*, 427-443.

Zehir, C., Sehitoglu, Y., Narcikara, E., and Zehir, S. (2014). E-S-Quality, Perceived Value and Loyalty Intentions Relationships in Internet Retailers. *Procedia - Social and Behavioral Sciences, 150*, 1071-1079.

Zhang, C., Liang, H., and Wang, K. (2016a). Trip Recommendation Meets Real-World Constraints. *ACM Transactions on Information Systems, 35*(1), 1-28.

Zhang, F., Gong, T., Lee, V. E., Zhao, G., Rong, C., and Qu, G. (2016b). Fast algorithms to evaluate collaborative filtering recommender systems. *Knowledge-Based Systems, 96*, 96-103.

Zhang, F., Zheng, K., Yuan, N. J., Xie, X., Chen, E., and Zhou, X. (2015). *A novelty-seeking based dining recommender system.* Paper presented at the Proceedings of the 24th International Conference on World Wide Web, 1362-1372.

Zhang, H., Lu, Y., and Shi, X. (2012). Mood and social presence on consumer purchase behaviour in C2C E-commerce in Chinese culture. *2003*(Rogers

1983).

Zhang, K. Z. K., Benyoucef, M., and Zhao, S. J. (2016c). Building brand loyalty in social commerce: The case of brand microblogs. *Electronic Commerce Research and Applications, 15*, 14-25.

Zhang, L., Wei, Q., Zhang, L., Wang, B., and Ho, W.-H. (2020). Diversity Balancing for Two-Stage Collaborative Filtering in Recommender Systems. *Applied Sciences, 10*(4), 1257.

Zhang, X.-L., Lee, T. M. D., and Pitsilis, G. (2013). Securing Recommender Systems Against Shilling Attacks Using Social-Based Clustering. *Journal of Computer Science and Technology, 28*(4), 616-624.

Zhang, Y. (2014). *Browser-oriented universal cross-site recommendation and explanation based on user browsing logs.* Paper presented at the Proceedings of the 8th ACM Conference on Recommender systems, 433-436.

Zhao, X. W., Guo, Y., He, Y., Jiang, H., Wu, Y., and Li, X. (2014). *We know what you want to buy*, New York, New York, USA, 1935-1944.

Zhou, Y., Lü, L., Liu, W., and Zhang, J. (2013). The Power of Ground User in Recommender Systems. *PLoS ONE, 8*(8), e70094-e70094.

Ziegler, C.-N., McNee, S. M., Konstan, J. A., and Lausen, G. (2005). *Improving recommendation lists through topic diversification*, New York, New York, USA, 22-22.

Zins, A. H., and Bauernfeind, U. (2005). Explaining Online Purchase Planning Experiences with Recommender Websites. In (pp. 137-148). Vienna: Springer