ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF MARKETING MANAGEMENT

EVALUATING USER EXPERIENCE OF SELECTED E-COMMERCE WEBSITES IN ETHIOPIA: A COMPARATIVE STUDY

BY:
BESELAM GIRMA MULUWORK

ADVISOR:
MULATU MEBRATE (Ph.D)

A THESIS SUBMITTED TO THE SCHOOL OF COMMERCE OF ADDIS ABABA UNIVERSITY DEPARTMENT OF MARKETING MANAGEMENT IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN DIGITAL MARKETING AND E-COMMERCE

October, 2024
Addis Ababa, Ethiopia

Addis Ababa University

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Approval Sheet

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By

Beselam Girma

Approved by Board of Examiners

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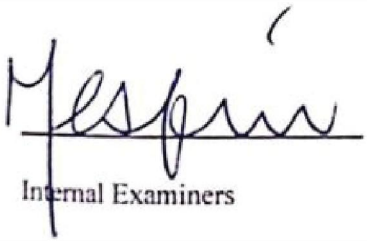
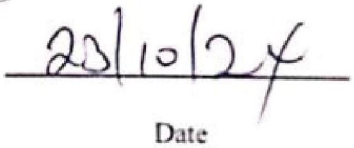
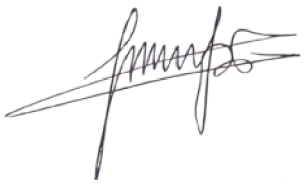
 Internal Examiners	 Signature	 Date
Mulatu Mesrate (PhD) 		**10/23/2024 GC**
Research Advisor	Signature	Date

Statement of Declaration

I, the undersigned, declares that this research paper entitled “Evaluating User Experience of Selected E-Commerce Websites in Ethiopia: A Comparative Study” is my original work and has not been submitted for consideration for any academic program at any other university, and that all sources of information utilized in the study have been properly cited.

Declared By:

Name: Beselam Girma

Signature:

Date:

Addis Ababa University,
October, 2024

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Acronyms and Abbreviations

AI	Artificial Intelligence
B2C	Business to Consumer
CFA	Confirmatory Factor Analysis
CW	Cognitive Walkthrough
CX	Customer Experience
E-Commerce	Electronic Commerce
EFA	Exploratory Factor Analysis
HCI	Human Computer Interaction
IxDF	Interaction Design Foundation
PSD	Persuasive System Design
PT	Persuasive Technologies
SEO	Search Engine Optimization
SEM	Structural Equation Modeling
STD	Standard Deviation
UEQ	User Experience Questionnaire
UI	User Interaction
UX	User Experience

Abstract

The rapidly developing e-commerce industry has revolutionized business operations globally, providing consumers with convenient access to products and services. In these ongoing interactions, what sets a brand apart for consumers is the quality of their experience. However, in emerging markets like Ethiopia, the application of User Experience (UX) principles in e-commerce platforms remains underexplored. This study evaluates the UX of the two Ethiopian e-commerce websites: Addisber and Addis Mercato, to understand their effectiveness in delivering a positive customer experience. Specifically, the research examines the attractiveness, pragmatic quality, and hedonic quality of these platforms. Using a descriptive and a mixed-methods approach, the research used quantitative measures through the User Experience Questionnaire (UEQ) and qualitative insights from Cognitive Walkthroughs. The findings reveal that both websites performed well in terms of efficiency and dependability, but struggled with novelty and stimulation, indicating a lack of innovative and engaging features. Addisber scored higher in attractiveness and perspicuity, reflecting a more intuitive user experience. Addis Mercato, while slightly less attractive, performed better in efficiency and excitement, largely due to its detailed product descriptions. Despite Addisber's higher UX scores, user preferences were evenly split between the two platforms, suggesting that factors beyond UX, such as brand familiarity and product variety, influence user decisions. The study recommends targeted UX improvements for both platforms, focusing on navigation, content quality, and SEO performance. Future research should explore the impact of these external factors on long-term user engagement and conversion rates.

Keywords: *User Experience (UX), Usability, E-commerce, Pragmatic quality, Hedonic quality, Attractiveness, Customer Journey, Customer Satisfaction*

CHAPTER ONE

INTRODUCTION

This thesis explores the user experience of an Ethiopian e-commerce website and examines how its design influences both user experience (UX) and the customer journey. The study focuses on delving into the significance of usability and user experience within the context of e-commerce, particularly how these aspects influence user interactions and perceptions during online customer journeys. While this chapter briefly introduces these keywords, a more detailed exploration is provided in the literature review.

1.1 Background of the Study

In recent years where the digital landscape is rapidly growing, consumers have learned to be smart, savvy and time starved, their expectations is higher than ever before. They want their needs delivered in an instant (Digital Marketing Insititute, 2020).

Ethiopia, like numerous other nations, has experienced a notable increase in digital engagement, particularly following the COVID-19 pandemic. The country has seen a rise in internet access and the adoption of smartphones. Data expenses have become more reasonable, and conventional businesses are increasingly embracing digital transformation (Kaleab, 2023). This trend includes the use of the internet for buying and selling goods or services, as well as the transfer of money and data to facilitate these transactions, commonly referred to as E-Commerce or Electronic Commerce (Shega, 2020).

Consumers regularly use the internet to find the ideal product or service for their requirements. In these ongoing interactions, what sets a brand apart for consumers is the quality of their experience. Consequently, UX design plays a crucial role not only in shaping user experience but also in influencing the user's perception of the product or service (Imarticus, 2023). In the case of an e-commerce business, a positive UX also contributes to building a trustworthy relationship with customers, as it confirms their expectations (Al Sokkar et al., 2022).

User Experience (UX) design encompasses the interface design that facilitates users' interaction with a product or service. This includes elements like visual design, micro-interactions, layout, and graphical user interface, all of which contribute to the information and content presented to

users within the interface (Eldad et al., 2020). In the present day, a new technology, artificial intelligence (AI), is being integrated into e-commerce websites' UX design (Ansari et al., 2024). Features such as personalization, recommendations, and predictive search are transforming how users interact with platforms, making experiences more seamless and engaging. In the context of an e-commerce website, UX design is more than just visual appeal; it significantly influences how users browse the site, interact with products, and ultimately decide to make purchases.

This research, through a comparative study, seeks to contribute valuable insights into the usability, user experience, and customer journey dynamics specific to Ethiopian e-commerce websites. By examining multiple platforms, it aimed to identify best practices, potential challenges, and areas for improvement, ultimately informing strategic decisions for enhancing the digital shopping experience in this unique and evolving landscape.

In the course of this research, it is essential to note the specific scope and focus. This study will exclusively delve into the impact of User Experience (UX) on the success of the selected Ethiopian e-commerce websites. While acknowledging the multifaceted nature of e-commerce success, this research deliberately excludes an in-depth examination of factors such as social media engagement, promotional strategies, and other external variables. By narrowing the focus to UX, the aim is to provide a concentrated and comprehensive analysis, offering targeted insights into the role of user experience in shaping the success of these digital platforms.

1.2 Statement of the Problem

The global e-commerce sector has grown exponentially, transforming how businesses operate and consumers engage with products and services. However, research on e-commerce in Ethiopia remains limited, particularly regarding user experience (UX). While several studies have explored challenges, business aspects, and market readiness within the e-commerce sector (Singh et al., 2016; Gemeda & Gelata, 2022; Hassen, 2014; Nigatu & Atsbeha, 2021), these studies primarily focus on the business side, leaving gaps in understanding the customer experience and user interaction with platforms. One study (Sani, 2023) explored website quality dimensions related to impulse buying behavior but did not address the broader UX environment, including functionality and overall user engagement (Garrett, 2011).

There is a notable lack of both theoretical and empirical studies on UX tailored to Ethiopian e-commerce platforms. Most existing literature is grounded in established markets, failing to consider the cultural, infrastructural, and socio-economic factors that shape user interactions in Ethiopia. This results in a theoretical gap, as comprehensive UX models addressing the unique needs of local users remain underdeveloped.

Empirical research focused on UX within Ethiopian e-commerce platforms is also scarce. Studies from other regions (Ritonummi & Niininen, 2020; Diaz et al., 2016; Forsstrom, 2019) provide valuable insights into UX, but their applicability to the Ethiopian context could be limited due to differences in cultural norms, technology infrastructure, and consumer behavior. From a practical perspective, the absence of localized UX guidelines poses significant challenges for Ethiopian e-commerce platforms. Without clear insights into user preferences, behaviors, and pain points, platforms struggle with engagement, conversion rates, and customer retention. Poor usability, such as complex interfaces, can lead to users abandoning a site (Forsstrom, 2019), underscoring the importance of UX in self-service platforms where user autonomy is key (Garrett, 2011).

Given these challenges, this study aims to evaluate the user experience of two prominent Ethiopian e-commerce websites—Addisber and Addis Mercato. By focusing on both pragmatic qualities (e.g., usability, efficiency) and hedonic qualities (e.g., stimulation, novelty), the research aims to describe current UX practices and identify areas for improvement the user experience in Ethiopian e-commerce platforms (Schrepp, 2015; Garrett, 2011). This study contributes to the understanding of user interactions and satisfaction, offering insights into the unique UX dynamics of these platforms.

1.3 Research Questions

1. What are users' perceptions of the overall attractiveness of the selected Ethiopian e-commerce websites?

2. How do users perceive the pragmatic qualities of the selected Ethiopian e-commerce websites?

3. What are users' views on the hedonic qualities of the selected Ethiopian e-commerce websites?

1.4 Research Objectives

The general objective of this research is to evaluate User Experience of the selected Ethiopian e-commerce websites.

The specific objectives of this research involve the following:

1. To evaluate the attractiveness of the selected Ethiopian e-commerce websites
2. To study the pragmatic qualities of the selected Ethiopian e-commerce websites.
3. To examine the hedonic qualities of the selected Ethiopian e-commerce websites.

1.5 Significance of the Study

The significance of this study lies in its potential to address critical gaps in the understanding of user experience (UX) on e-commerce websites in the Ethiopian context. By analyzing usability elements, user perceptions, navigation behavior, and the overall impact of UX on the success of Ethiopian e-commerce platforms, this research contributes valuable insights to both academia and industry. Understanding the nuances of UX in the Ethiopian e-commerce landscape can inform the development of tailored design principles. Moreover, by bridging the empirical gap and providing contextually relevant findings, this study offers practical implications for e-commerce practitioners, policymakers, and stakeholders seeking to optimize the performance of online platforms in Ethiopia. Furthermore, as e-commerce continues to evolve globally, insights from this research can inform broader discussions on cross-cultural UX considerations and contribute to the advancement of knowledge in the field of human-computer interaction. Ultimately, the significance of this study extends beyond the Ethiopian context, offering lessons and insights applicable to diverse e-commerce environments worldwide.

1.6 Scope of the Study

The scope of this study encompasses a comparative analysis of the user experience on two selected Ethiopian e-commerce websites: Addis Mercato, and Addisber, operating within Ethiopia. The study will focus on examining the user experience, through their usability and customer journey of these specified e-commerce platforms, considering both desktop and mobile phone users accessing the websites in English and/or Amharic.

The research is conceptually focused on the evaluation of user experience (UX) based on the dimensions of attractiveness, pragmatic qualities (perspicuity, efficiency, dependability) and hedonic qualities (stimulation, novelty). It studies how these dimensions influence user interactions and overall satisfaction with e-commerce platforms.

Methodologically, the study employs a descriptive and mixed-methods approach, combining quantitative data collection through User Experience Questionnaire (UEQ) and qualitative insights via Cognitive Walkthroughs. The focus is limited to analyzing user experience data without delving into external factors like social media engagement and marketing strategies.

1.7 Limitations of the Study

While this study provides valuable insights into the user experience of the selected Ethiopian e-commerce websites, several limitations must be acknowledged. The study mainly depends on self-reported data, introducing the potential for response bias. Furthermore, the scope of this study is specifically focused on evaluating the User Experience (UX) of the e-commerce websites, rather than encompassing the broader Customer Experience (CX), which includes additional aspects such as customer service, branding, and overall customer journey. These limitations should be taken into consideration when interpreting the results and applying them to broader contexts..

1.8 Definition of Key Terms

User Experience (UX): User experience refers to the comprehensive connection, which includes perceptions, emotions, and interactions, that a person forms with a product, service, or company (Kaplan, 2024).

Usability: addresses efficiency, effectiveness, and satisfaction (i.e. user's ability to use an interface) (Ritonummi & Niininen, 2020).

Hedonic Quality: non-goal-oriented aspects such as stimulation, enjoyment in use, novelty, emotions (Norman, 2007).

Pragmatic Quality: refers to the ease to learn, efficiency in its use, and provision of a sense of control that directly impact user experience (Hassenzahl, 2001).

Online Customer Journey: The sum of all interactions and touch points a customer has with a brand or product throughout their entire relationship, from awareness and consideration to purchase and post-purchase experiences (Ritonummi & Niininen, 2020).

E-Commerce: Electronic Commerce refers to the buying and selling of goods and services over the internet, involving online transactions, digital payments, and electronic data interchange. (Forsstrom, 2019).

Human Computer Interaction (HCI): The design and study of how humans interact with computer systems, emphasizing the usability and accessibility of interfaces to enhance user experience and interaction (Spiliotopoulos et al., 2010).

1.9 Organization of the Study

This research paper consists of five chapters. Chapter One is the introduction section of the paper, containing the background of the study, statement of the problem, the research questions, the research objectives, the significance of the study, the scope of the study and the research limitations. Chapter Two is the Literature review segment of this study, covering the theoretical and empirical studies of related literature. Chapter Three presents the research methodology consisting of the design and approach of the study, the techniques used for sampling the population, and for collecting, analyzing and validating the data. Chapter Four consists of the research findings and interpretations. Finally, Chapter Five encompasses the Summary of the findings mentioned on the previous chapter, Conclusion, Recommendations for improvement and Future Research Suggestions.

2 CHAPTER TWO

LITERATURE REVIEW

E-commerce platforms globally have embraced user-centered design, optimizing for usability, functionality, and the overall experience. Research on established markets provides a wealth of knowledge on how effective UX design can increase user satisfaction and boost business outcomes.This chapter reviews existing theoretical and empirical studies on UX, usability, and consumer journey in e-commerce, highlighting gaps in research specific to Ethiopia.

2.1 Theoretical Review

2.1.1 Human-Computer Interaction and Interaction design

According to Spiliotopoulos et al. (2010), Human-Computer Interaction is focused on the design, development, and assessment of interactions established on computers, consisting of software, input/ output devices, hardware, training, displays and documentation. The goal is to enable individuals to use these systems quickly, successfully, securely, and with contentment. HCI is characterized by its interdisciplinary nature, drawing from various fields, including:

- **Human factors**: Focuses on task analysis and designing to minimize human error in human-computer interaction (HCI).
- **Ergonomics**: Involves designing devices, workstations, and work environments for optimal human use.
- **Cognitive psychology**: Centers on creating models of user behavior and thought processes.
- **Behavioral psychology and psychometrics**: Concerned with measuring and analyzing user performance.
- **Systems engineering**: Emphasizes pre-design analysis to ensure system effectiveness.
- **Information systems**: Develops computer artifacts that prioritize user needs and experiences.
- **Computer science**: Deals with the creation of graphical interfaces, software tools, and the architecture of software systems.

The concept of HCI has evolved significantly since the 1980s, pioneered by figures like Don Norman. His seminal works, "User Centered System Design" (Norman & Draper, 1986) and

"The Psychology of Everyday Things" (later republished as "The Design of Everyday Things" in 2013), have been instrumental in shaping the field. The focus of HCI has broadened from usability to encompass user experience (UX), a term that became official in 1995 and encapsulates various aspects of technology use, often associated with positive emotional outcomes (Ritonummi & Niininen, 2020; Hassenzahl & Tractinsky, 2006).

UX research, traditionally aligned with preventing user frustration, now emphasizes the role of positive emotions in enhancing learning, curiosity, and creative problem-solving (Norman, 2004; Sulaiman et al., 2015). The study of emotional user experience considers factors like technological problem-solving tendency, frustration tendency, pre-task self-confidence, and task performance, all of which shape the user's emotional experience and coping strategies during task performance (Jokinen, 2015).

The shift towards User-Centered Design (UCD) in HCI reflects a paradigm change from controlling to interacting with systems, using task analysis as a critical tool in usability testing to identify discrepancies between a designer's vision and the user's experience. The aesthetic dimension has also gained recognition, with studies affirming that visual elements like color and layout significantly influence user satisfaction and behavior (van der Heijden et al., 2003).

Recent HCI research has increasingly recognized the importance of flow theory, which models states like enjoyment, satisfaction, playfulness, and engagement in user interactions (Pace, 2004). Hoffman & Novak notably applied flow theory to web usage, highlighting the seamless interaction sequence that makes online experiences enjoyable.

Additionally, designing for trust and understanding its impact on UX has emerged as a crucial theme in HCI. Effective website design, particularly in the early stages of the customer journey, plays a significant role in building trust and enhancing the user experience (Seckler et al., 2014).

This enriched perspective on HCI underscores its critical role in evaluating both the functional and experiential aspects of technology use, reflecting its evolution from focusing merely on efficiency to embracing the comprehensive quality of user interactions. The integration of aesthetics, emotion, and user satisfaction into HCI research aligns with the broader goals of ensuring effective, enjoyable, and meaningful human-computer interactions.

2.1.2 What is User Experience (UX)?

The user experience encompasses the impressions and interactions an individual could have with a system or product in real-world scenarios. It is centered around the functionality, ease of use, and overall feel, rather than the specific features or capabilities a product or system offers. While the development of new products often emphasizes internal attributes and functions that distinguish them from others, there is a tendency to overlook the external aspect — how effectively and seamlessly users can interact with and use the product or system (Garrett, 2011).

"The challenge is to use the principles of human-centered design to produce positive results, products that enhance lives and add to our pleasure and enjoyment. The goal is to produce a great product, one that is successful, and that customers love. It can be done." -Don Norman (IxDF, 2021). In the 1980's, the origin of UX can be tracked back with Don Norman's works such as "User Centered System Design: New Perspectives on Human-Computer Interaction" (co-authored with Draper in 1986) and "The Psychology of Everyday Things" (later republished as "The Design of Everyday Things" in 2013), marked significant progress in the domain of HCI.

Norman introduced the term "User experience" (UX) for the first time in 1995 regarding human interface research and application (Norman D. M., 1995). In its original meaning, UX is intended as the experience between a human being and a system, also regarding many aspects that go beyond the "human interface" or "usability". According to Norman, an ideal UX involves an interdisciplinary approach, requiring joint efforts from people in engineering, marketing, graphics, industrial design, and interface design (Berni & Borgianni, 2021).

User experience (UX) is a distinct perspective on interactive technology quality, focusing on human experiences and the drivers of positive experience, with implications for Human-Computer Interaction (Hassenzahl M., 2008). It refers to an overall designation of how people experience a system, focusing on outcomes and memories (Roto et al., 2011).

User engagement with technology is a four-stage process characterized by challenge, positive affect, endurability, aesthetic appeal, attention, feedback, variety-novelty, interactivity, and perceived user control (O'Brien & Toms, 2008).

UX qualities encompass aspects such as the hedonic aspects of interaction, functionality, affordances, responsiveness, and aesthetics (Hassenzahl & Tractinsky, 2006), along with affect, emotion, enjoyment, and flow (Law, 2011). Unlike the earlier usability paradigm, which focused more on task-related aspects, UX extends beyond mere functionality. From the early stages of defining UX, beauty and aesthetics were acknowledged as important quality aspects of technology use (Coursaris & Osch, 2016).

UX can be interpreted in various ways: as an experience, an academic discipline, or a professional practice. Regarding it as a phenomenon entail defining its essence, categorizing types, and exploring its various aspects. Approaching UX as a field of study involves researching the formation of experiences, understanding user expectations, and developing methods to design systems that facilitate specific experiences. In the realm of practice, UX encompasses envisioning it as part of the design process, representing it through prototypes for effective communication, evaluating user experiences, and delivering designs to achieve desired outcomes (Roto, et al., 2011).

All in all, UX is a multifaceted concept viewed through different lenses: as a historical evolution, a distinct perspective in human-computer interaction, and a phenomenon, field of study, and practice. Its interdisciplinary nature, emphasis on understanding user needs, and focus on outcomes contribute to its significance. The qualities of UX, including functionality, aesthetics, and emotional aspects, go beyond traditional usability paradigms. In the online realm, customer expectations are heightened by leading platforms. Understanding UX involves considering its dynamic nature, engagement process, and the overall encounter with a system. As technology advances, the importance of imagining, representing, evaluating, and delivering designs for desired UX outcomes becomes increasingly crucial in design and technology.

2.1.3 Factors of UX

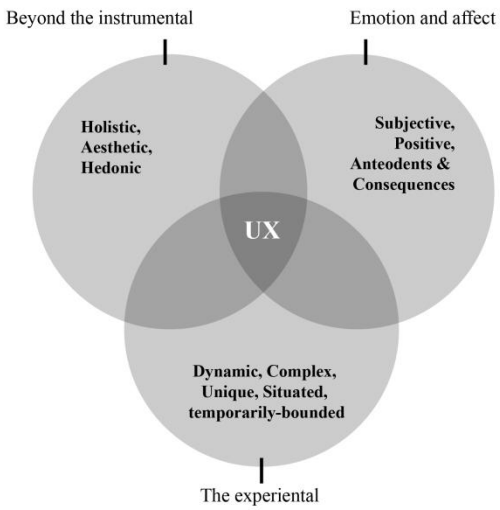
Based on ISO 9241-210:2019, UX, as outlined by factors such as system, user, and context, is the result of a user's perceptions and responses during system interaction. This view is supported by various researchers, comprising Hassenzahl & Tractinsky (2006) and Roto et al. (2011). Time was introduced as the additional factor by Sulaiman et al. (2015), arguing its significance in shaping experiences. Personality traits and attitudes play a crucial role in UX, influencing user behavior and judgments, with extroverts often identifying more usability issues. User abilities,

disabilities, and demographic factors impact performance, highlighting the dynamic nature of UX. System characteristics define UX aspects, while context encompasses physical, social, technical, information, and task-related circumstances, making UX a dynamic process influenced by user resources, mood, and expectations.

As Hassenzahl & Tractinsky (2006)'s research concluded, User Experience involves technology that meets more than just practical needs, recognizing its use as a subjective, context-dependent, intricate, and evolving experience. UX results from a user's internal state (such as predispositions, expectations, needs, motivation, mood, etc.) and the features of the designed system (like complexity, purpose, usability, functionality, etc.).

Figure 1

Facets of UX



Source: (Roto, Law, Vermeeren, & Hoonhout, 2011)

2.1.4 User Experience in E-commerce

User experience (UX) refers to the encounter a person has with a product or system in real-life situations, emphasizing how it works, feels, and its ease of use. Unlike the internal focus on product attributes during development, UX is concerned with the external aspect — how users interact with the product or system. Online UX specifically relates to the experience of interacting with an online system, such as a website. Garrett also points out that online UX is

crucial, particularly for self-service products like websites, where users rely solely on their experience and judgment. Garrett highlights that users may blame themselves for a bad experience, but he argues that it is not their fault; rather, it underscores the importance of a seamless user experience on websites (Garrett, 2011, pp. 4-11).

2.1.5 User Experience and Customer Experience

User experience (UX) and customer experience (CX) are interconnected but distinct concepts. UX primarily focuses on designing and enhancing digital products, ensuring interactions with them are seamless and satisfying. CX, however, encompasses the entire customer journey with a brand, including all touchpoints such as advertising, customer support, and post-purchase follow-ups. While UX is often a subset of CX, the latter takes a broader view, considering the customer's overall relationship with the brand (Kaplan, 2024).

The distinction between UX and CX can blur, especially as digital interactions increasingly influence brand perception. Despite this, both share a common objective: delivering meaningful, positive experiences that build loyalty and satisfaction (Kaplan, 2024).

2.1.6 What is Usability?

Usability is a critical part of User experience in the context of electronic commerce websites. Defined by the ISO 9241-210:2019 standard, refers to limit to where the system can utilized in a specific environment to achieve goals quickly, successfully and with satisfaction. (Ritonummi & Niininen, 2020). It is also strongly linked to user satisfaction, affective experiences, and the aesthetic perspective of affection, emphasizing perceived usability (Coursaris & Osch, 2016).

From a holistic perspective, usability is a quality attribute evaluated during the design phase of websites, ensuring they are easy to use and enhance the overall user experience (Forsstrom, 2019). It is characterized by five key components: learnability, efficiency, memorability, errors, and satisfaction. Poor usability, such as a complex interface, can lead visitors to abandon a site, underscoring its pivotal role in retaining users (Forsstrom, 2019).

Usability, as perceived by different stakeholders, is integral to interactive products like e-commerce applications, focusing on ensuring ease of learning, effectiveness, and enjoyment

from the user's perspective (Singh, 2010). Several usability principles, including effectiveness, efficiency, safety, utility, learnability, flexibility, robustness, and memorability, guide the improvement of e-commerce websites (Preece & Rogers, 2002 ; Singh, 2010).

The definition of usability varies among stakeholders, with considerations such as performance measures (objective observations of user behaviour) and attitude measures (subjective user opinions) contributing to its evaluation (Singh, 2010).

According to Kang (2010), it is stated that usability is consistently underscored as a pivotal factor in the evaluation of electronic commerce systems' quality in various research works. It is achieved when all functions of an electronic commerce system are developed to simplify end-users' actions, reflecting high usability characterized by easy learning and remembrance, efficiency, visual appeal, enjoyment, and swift error recovery. Despite the existence of numerous frameworks and guidelines supported by industry experts, achieving electronic commerce website usability remains a challenge due to the lack of a unified view on how to build a usable website (Balfagih et al., 2010).

Usability's critical role extends beyond the development phase, influencing user decisions to revisit, recommend the website to others, and potentially make a purchase, thereby contributing significantly to the overall performance of electronic commerce (Sutcliffe A. G., 2002; Sutcliffe A. G., 2001). Design considerations for electronic commerce websites encompass various elements such as design features, content visualization, navigation and control, accessibility, and attractiveness, with the latter being particularly emphasized for user attraction and sustained transactions (Sutcliffe A. G., 2001 ; Sutcliffe A. G., 2002).

In recognition of electronic commerce systems' impact on product quality and design, researchers have brought together critical elements into frameworks or models. Key models, including Rayport and Jaworski 7C’s Framework, DeLone and McLean Electronic Commerce Model, The ISO 9126 Quality Model, WebQual 4.0 Model, Palmer's Model, and Stefani and Xenos Quality Model, contribute to the discourse on quality in electronic commerce design (Singh, 2010).

2.1.7 Usability of E-commerce

Usability has gained heightened significance in the Internet economy compared to traditional physical product development (Seilheimer, 2004). Unlike in the past, where customers experienced the usability of a product only after purchase, it is now considered an essential consideration for E-commerce.

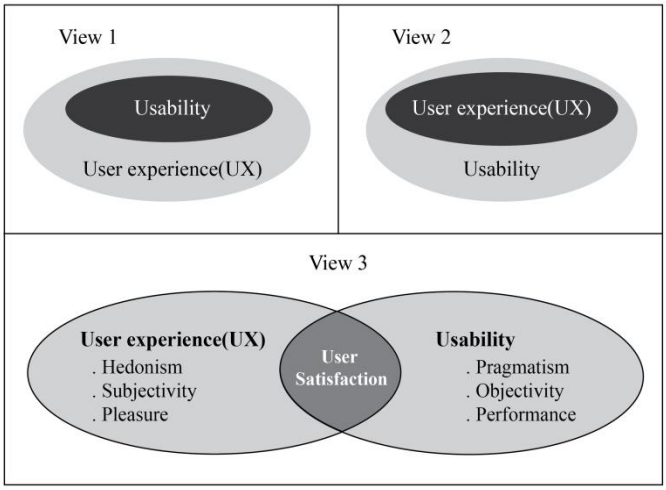
To address common issues in E-commerce related to business models, project management, information architecture, page design, content authoring, and linking strategy, Nielsen (2000) recommends incorporating usability into the design of interactive software through various techniques. These techniques fall into two groups: usability evaluation and designing with usability in mind. Usability evaluation methods encompass heuristic evaluations, checklists, usability testing, and think-aloud protocols. Each method has its own benefits and drawbacks (Alva, 2003).

2.1.8 Usability and UX?

In terms of usability and user experience (UX), ISO 9241-210:2019 defines usability, including the emotional and affective aspects associated with UX, which are particularly important in an e-commerce environment for business success. According to HCI research, there are different perspectives on their relationship, and some see how they can be used as a subset of UX. Alternatively, UX is viewed as a broad term that includes satisfaction, which is an indicator of usability. Another perspective sees UX and usability as closely related but distinct, where usability is related to task-related capabilities, while UX is the totality of communication including ideas, feelings and emotions.

Figure 2

Different views of the relationship between usability and UX



Source : (De Villiers, Van Biljon, & Moczarny, 2012)

Law (2011) notes different perspectives on the UX - usability relationship but reveals agreement that basic usability levels are important for good User Experience. Evaluation process in usability and user experience is different, with assessing performance related to assessing tasks, primarily based on cognitive factors, while studies on User experience focus more on hedonic qualities besides performance. UX goals are subjective, reflecting user evaluations, while usability goals are more objective, emphasizing performance. This distinction is often characterized as pragmatism and hedonism, with pragmatism aligning with behavioral goals and ease-of-use (usability) and hedonism relating to enjoyment and stimulation (UX).

The difference between UX and usability measures lies in their focus, where UX measures describe the interaction outcome, while usability measures pinpoint the origin of issues. However, data collection methods for both UX and usability often overlap, including questionnaires, interviews, observations, video recordings, focus groups, and think-aloud sessions (Law, 2011). Creating an optimal UX is complex, requiring consideration of interconnected elements and balancing usability principles with UX enhancements.

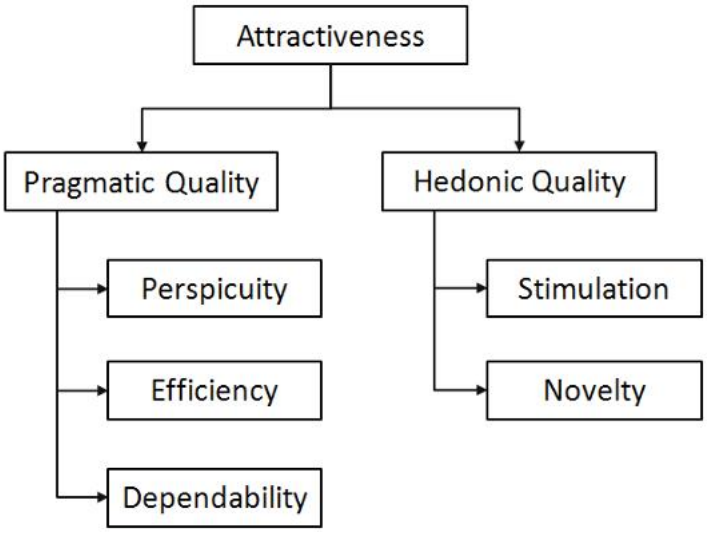
Striking a balance between good UX and usability is crucial for e-commerce websites, offering a competitive edge, differentiation from competitors, and fostering customer trust and loyalty (De Villiers et al., 2012).

Based on Hassenzahl's theoretical framework, a tool called UEQ was developed (Schrepp et al., 2017). This study aims to assess user experience using twenty-six items across six scales: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. These scales are categorized into two groups: pragmatic quality aspects (goal-oriented) and hedonic quality aspects (not goal-oriented). Attractiveness measures users' overall liking or disliking of the interface. Perspicuity evaluates how easy it is for users to understand and learn to use the interface. Efficiency assesses how effectively and quickly users can complete tasks with minimal effort. Dependability gauges users' sense of control and predictability during interaction. Stimulation measures the excitement and motivation users feel, while novelty assesses the interface's innovativeness and ability to capture users' attention (Schrepp, 2019).

The scales are not considered independent; rather, a user's overall impression, reflected in the Attractiveness scale, is expected to be shaped by the values of the other five scales. (See Fig)

Figure 3

Assumed scale structure of the UEQ



Source: (Schrepp et al., 2017)

These six scales will serve as independent variables in this research to examine the user experience of two Ethiopian e-commerce websites, Addis Mercato and Addisber, offering valuable insights for improving e-commerce platform design in Ethiopia. This research focuses on View 1 of the different views of the relationship between User experience and Usability.

2.1.9 What is Online Customer Journey?

Customer journey is a series of interactions between a consumer and a company, where each contact elicits positive, negative or neutral experiences in the consumer (Micheaux & Bosio, 2019). The customer journey, characterized by interactions between consumers and companies, is important in marketing and service design research.

Customer journey mapping, based on buyer persona, seeks to understand interactions between customers and companies. Buyer personas, representing ideal customers with demographic, behavioral, and motivational features, help in user-centered design. Personas, rooted in market research and data, reveal customer frustrations, guiding better user experience design (Micheaux & Bosio, 2019).

Ritonummi & Niininen (2020) also mentioned an alternative to buyer personas is jobs-to-be-done, focusing on understanding persona's circumstances and tasks, emphasizing the persona's experience and important elements influencing their buying intention. Jobs-to-be-done is applied in usability testing, recognizing distinctions between UX and marketing personas.

For e-commerce website usability assessment, Kantner & Rosenbaum (1997) recommend considering the website's purpose, profiles of intended users, and typical user scenarios. Profiling likely visitors helps direct usability efforts toward target user groups, assessing both problems and successful features supporting user goals and needs.

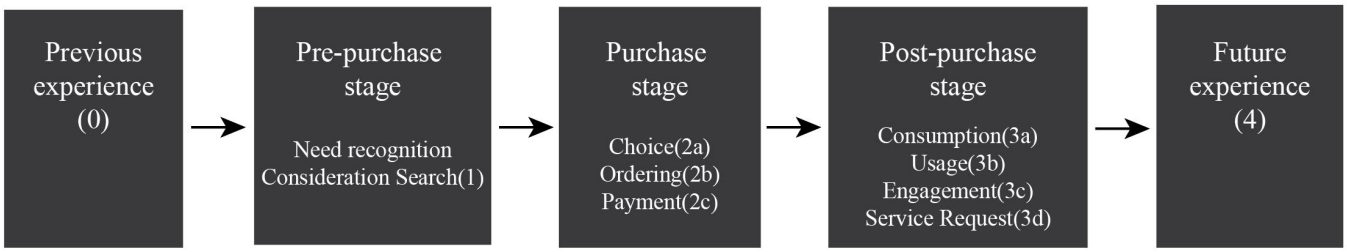
2.1.9.1 Customer Journey Stages and Touch points

The Communication channels in which the customer and the brand interact directly at different stages of customer journey are called Touch points (Chaffey & Ellis-Chadwick, 2000). As Ritonummi & Niininen (2020) mentioned in their study, emotions are also important for customer journey; they assist in the discovery of where customer is having difficulties and solutions to solve them. Ritonummi & Niininen (2020) also put the different stages of customer

journey in a modified figure modified, the numbers zero to four representing consecutive touch points during a customer journey.

Figure 4

Customer Journey Touch points of an e-commerce website



Source: (Ritonummi & Niininen, 2020)

This study will exclusively concentrate on the 'Pre-Purchase stage' and 'Purchase stage,' specifically when the consumer is navigating a website, and aims to explore how the user experience (UX) influences their customer journey. According to Edelman & Singer (2015) effective customer journeys embody four key features: automation, proactive personalization, contextual interaction, and journey innovation. An authentic customer journey, as outlined by Haugstveit, Halvorsrud, & Amela Karahasanovic (2016), is the tangible path a customer takes, and its mapping necessitates a profound understanding of customer data.

2.1.9.2 Consumer Value Dimensions of UX in E-commerce

Research into user experience (UX) in e-commerce has increasingly emphasized the role of both hedonic and utilitarian values in shaping consumer behavior. Hedonic values refer to the emotional and pleasurable aspects of using a website, while utilitarian values are related to the practicality and efficiency of the platform.

Karbasivar and Yarahmadi (2011) argue that hedonic factors play a significant role in impulse buying behavior, where consumers feel emotionally drawn to products. This is supported by Rook's (1987) findings, where consumers described products as "calling" them, emphasizing how emotional triggers can drive impulsive purchases. Sani (2023) elaborates on this, explaining

that online impulse buying often stems from a consumer's emotional connection to the platform, highlighting the importance of visual appeal and novelty in the user experience.

Utilitarian values, as outlined by Kim (2006), are equally important in online shopping environments. These values pertain to the practical aspects of a website, such as ease of navigation, availability of information, and the efficiency of completing transactions. Subagio (2011) notes that consumer satisfaction is often linked to the efficiency and time-saving features of e-commerce platforms, which are key components of pragmatic qualities like efficiency and dependability in UX.

In the context of Ethiopian e-commerce, this balance between hedonic and utilitarian dimensions is crucial for understanding how local users engage with platforms like Addisber and Addis Mercato. The emotional and functional aspects of user experience must both be optimized to enhance user satisfaction and retention.

2.1.9.3 The Impact of Website Quality on UX and E-commerce Success

Website quality has been shown to have a direct impact on user experience and the overall success of e-commerce platforms. According to Liu et al. (2013), websites that offer an intuitive, visually appealing design, and ease of use are more likely to retain customers and encourage repeat purchases. Moez (2013) also notes that website navigation, visual appeal, and the absence of barriers such as product unavailability are critical to positive user experiences.

Verhagen and van Dolen (2011) suggest that the functional and representational aspects of a website's design—such as ease of navigation and overall aesthetic—can significantly affect a user's emotional response, thereby influencing their likelihood to engage in impulse buying. These factors can either enhance or detract from the user's overall experience, demonstrating the importance of thoughtful UX design in creating an engaging and reliable platform.

Loiacono et al. (2007) emphasize that a high-quality website should balance usability, utility, and entertainment, as these are essential for creating a satisfying user experience. Their research aligns with the goals of the present study, which aims to assess how these qualities manifest in Ethiopian e-commerce websites.

The goal of UX design is to smoothly direct users toward intended actions while minimizing the cognitive effort needed for use, allowing them to easily complete tasks and move through different sections (Garrett, 2011). Usability testing can evaluate how closely the actual customer journey matches the planned one, helping to identify any discrepancies.

2.2 Empirical Review

The current empirical review initiates a focused exploration into the user experience on e-commerce websites, aiming to dissect user interactions within diverse cultural and geographical landscapes. In the dynamic realm of global e-commerce, understanding the distinctive factors influencing user behavior and satisfaction in Ethiopia emerges as a critical facet. This research, therefore, centers on comprehending the User Experience on local E-commerce websites through a comparative analysis of selected platforms in the country.

By delving into key aspects such as User Experience, usability, and Customer journey, this review establishes the framework for an extensive investigation into the intricacies of e-commerce user experience in Ethiopia. The study seeks to bridge the empirical gap concerning User Experience on E-commerce websites in the Ethiopian and broader African context. As the digital landscape in Ethiopia unfolds, this research aims to contribute valuable insights into the unique dynamics shaping user interactions and satisfaction within the local e-commerce ecosystem.

The realm of User Experience (UX) is a dynamic arena encompassing the study, design, and evaluation of the encounters people have with systems (Roto et al., 2011). In the context of Finnish e-commerce, Ritonummi & Niininen's (2020) study emphasize the critical role of usability and UX in shaping user perceptions of design aesthetics, functionality, and interactivity on e-commerce websites. Usability, defined as the efficiency, effectiveness, and satisfaction in user-interface interactions, plays a pivotal role in addressing pragmatic user needs, while UX delves into the hedonic quality of interactions. The study sheds light on how addressing usability elements contributes to a positive user experience, particularly focusing on the pre-purchase and purchase stages of the customer journey. Efficient navigation is crucial, including processes such as finding, selecting, and purchasing products or services, enhancing user satisfaction and expediting decision-making processes.

Ritonummi & Niininen's research (2020) establishes a correlation between positive user experiences, consumer trust, and increased purchase intentions. The ultimate goal for e-commerce platforms is not only to generate more sales but also to elevate customer satisfaction levels, reinforcing the significance of prioritizing user experience.

In parallel, Forsstrom's (2019) study provides a nuanced exploration of the user experience and visual attention of Finnish consumers on the redesigned e-commerce website Byggmax.fi. Leveraging eye-tracking devices and respondent interviews, the study aims to uncover insights into user behavior and perceptions.

The exploration extends to Indonesian e-commerce, specifically focusing on two giants—Shopee and Tokopedia. While these platforms boast the highest user counts in the country, the study seeks to decipher the intricate factors that sway online purchasing decisions, including the user interface (UI), user experience (UX), and user habits (Sawal, 2021).

In addition, Diaz et al.'s (2016) investigation into Latin American e-commerce adds a layer of cultural nuance, emphasizing the need for usability heuristics and user-centered design recommendations tailored to specific cultural expectations. The synthesis of these studies contributes to a general comprehension of the multifaceted landscape of UX in e-commerce. Zhou (2022) further explains the influence of culture on user experience, categorizing users based on geographical locations and cultural perceptions.

Forsstrom (2019) identifies a significant trust issue within the payment phase of the website's checkout process, emphasizing the impact of trust on user experience and highlighting the need for refining the checkout flow to enhance user satisfaction.

Together with Ritonummi & Niininen's (2020) study, Forsstrom's (2019) research complements the broader understanding of usability and user experience on e-commerce websites in the Finnish context. The emphasis on user experience, usability, and customer factors provides valuable insights applicable to the comparative analysis of e-commerce platforms in Ethiopia.

Diaz et al. (2016) delve into the dynamic landscape of electronic commerce (e-Commerce) in Latin America (LA), emphasizing the pivotal role of User Experience (UX) in ensuring the

success and competitiveness of e-commerce websites. The significance of Diaz et al.'s (2016) research lies in its potential to foster a more nuanced understanding of the intersection between e-Commerce, culture, and UX. As e-commerce continues to evolve in Latin America, the proposed heuristics and design recommendations are poised to play a crucial role in shaping user interactions, fostering positive experiences, and promoting the overall success of e-Commerce ventures in the region.

To evaluate the effectiveness of e-commerce websites, Ritonummi & Niininen (2020) employed qualitative usability testing methodologies, specifically utilizing cognitive walkthroughs. The study aligns with broader usability testing practices aimed at enhancing user interactions.

To evaluate the UX and usability of Byggmax.fi, Forsstrom (2019) employs the FFF model and The UX Pyramid frameworks. These models serve as comprehensive tools to evaluate various facets of user interactions, encompassing visual attention, usability, and overall user experience.

Sawal (2021) used usability measurements, UX Measurement, and Path analysis for influence assessment, including:

- **Cognitive Walkthrough (CW):** A user-involved assessment gauging the usability of Shopee and Tokopedia. Remarkably, the CW exhibited an impressive success rate, ranging from 60% to 100% across three tasks.

- **User Experience Questionnaire (UEQ):** An instrument employed to delve into the user experience realm, offering a comprehensive understanding. Shopee and Tokopedia left a positive imprint, with all indicator values surpassing the 0.8 threshold.

- **Path Analysis:** Unraveling the intricate web of influence, the study employed path analysis to quantify the impact of UI/UX on online purchasing decisions. Consumer habits assumed the role of an intervening variable.

Research by Childers et al. (2001) on webmospherics—the web equivalent of atmospherics in physical stores—demonstrates how features such as graphics, layout, and ease of use can influence consumer behavior. When a website’s design is aesthetically pleasing and easy to

navigate, consumers are more likely to engage with the platform, make purchases, and return in the future.

Ranganathan and Ganapathy (2002) found that elements such as site security, content accuracy, and privacy are vital for building consumer trust, which is essential for e-commerce platforms to succeed. This aligns with the pragmatic qualities (such as dependability and efficiency) measured in this study. Additionally, Huizingh (2000) emphasizes the importance of content quality and website appearance in influencing purchasing decisions, further reinforcing the need for high-quality UX design in e-commerce.

Verhagen and van Dolen (2011) also note that functional convenience and representational design—the website's look and feel—can evoke emotional responses from users, directly affecting their purchasing behavior. These empirical insights help to frame the validity of the findings in this study regarding the importance of UX design for Ethiopian e-commerce platforms.

Impulse buying is a common behavior in online shopping, driven by both external stimuli and internal motivations. Akram et al. (2017a) found that factors such as novelty, fun elements, and visual appeal often encourage impulsive purchases, even when consumers have not planned to buy. Similarly, Ozen and Engizek (2013) highlight how social media posts and peer recommendations can create a sense of urgency, prompting users to make spontaneous purchases.

In the realm of user experience, persuasive technologies (PT) play a crucial role in motivating and influencing users' behavior, attitudes, and thoughts without resorting to coercion or deception (Makuochi S. N. & Rita Orji, 2018). These technologies employ persuasive techniques or principles strategically designed to achieve expected changes in behavior, and they have been successfully applied in various domains, including e-commerce in developed countries (Adaji & Vassileva, 2016) (Schafer et al., 1999). However, there is a noticeable gap in research, with most existing studies focusing on developed countries and a lack of exploration in developing continents such as Africa (Makuochi S. N. & Rita Orji, 2018). Despite this, indigenous African e-commerce sites, exemplified by Jumia, demonstrate an understanding of the potential PT has in promoting sales and influencing consumer behavior (Makuochi S. N. & Rita Orji, 2018).

To address this gap, a study applied the persuasive system design (PSD) principles to analyze Jumia, exploring the operationalization of PT techniques on the platform. This research aims to identify how Jumia utilizes persuasive techniques to enhance the customer experience and increase sales, especially in the context of the African audience. The findings contribute valuable insights for future e-commerce businesses targeting the African market, emphasizing the effective application of persuasive techniques to motivate desirable behaviors in the African audience.

Adding to this landscape, the study by Makuochi S. N. and Rita Orji (2018) focuses on the success of PT in encouraging desirable behaviors in the context of an African online marketplace, Jumia. This study addresses a gap in existing research by exploring the application of persuasive technology (PT) techniques to e-commerce within the African context. The authors conducted an expert evaluation using the Persuasive System Design (PSD) framework to identify and analyze PT techniques employed by Jumia. Additionally, a study was conducted to assess their awareness and appreciation of PT techniques on the Jumia site. The results indicate that Jumia successfully used certain persuasive techniques to draw in and keep customers, and users were aware of and appreciated these techniques.

In conclusion, the synthesis of diverse studies on user experience in e-commerce underscores the intricate factors influencing user interactions within varied cultural and geographical contexts. The emphasis on usability, visual attention, and cultural considerations highlights the need for tailored design principles to address specific user needs. The correlation between positive user experiences, trust, and increased purchase intentions reinforces the pivotal role of user satisfaction in the success of e-commerce platforms.

Navigating the intricate web of user interactions, this review advocates for a holistic approach, encompassing usability testing methodologies such as Cognitive Walkthrough, UEQ, and Path analysis. Additionally, the integration of persuasive technologies emerges as a promising avenue for enhancing user experience, as demonstrated by the study on Jumia within the African context. This research landscape informs and motivates the specific focus on 'User Experience on E-commerce Websites in Ethiopia: A Comparative Study of selected e-commerce websites'.

Delving into this specific context, the aim is to add up to the empirical understanding of UX in the Ethiopian e-commerce landscape. By building upon the insights gathered from global perspectives, it is aspire to provide valuable recommendations and design implications that resonate with the unique needs and preferences of users in Ethiopia. In doing so, this study seeks to bridge existing gaps in the literature and pave the way for more contextually informed e-commerce design practices globally.

3 CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter outlines the research design and methodology adopted to achieve the objectives of the study. It provides a detailed explanation of the systematic approach employed to evaluate the user experience (UX) of the selected Ethiopian e-commerce websites, Addisber and Addis Mercato. The chapter discusses the research design, data sources, sampling techniques, data collection instruments, and analytical methods used to evaluate UX dimensions. By integrating quantitative and qualitative methods, this chapter ensures a comprehensive understanding of how users interact with these platforms and identifies areas for improvement.

3.2 Research Approach

The research approach used a hybrid of qualitative and quantitative methods. Qualitative usability testing was conducted using the cognitive walkthrough method, focusing on understanding user interactions. For quantitative measurement of user experience (UX), the study used the User Experience Questionnaire (UEQ) by Schrepp et al. (2019). The research studied user performance with task completion in the usability test, providing performance measures, while subjective measures were derived from UEQ responses. The research followed an inductive approach, starting with detailed user observations and deriving broader insights from these findings. This dual-method approach aimed to capture both the practical aspects of user interaction and the subjective experiences of users engaging with e-commerce websites.

3.3 Research Design

The research design of this study is descriptive, aimed at analyzing and comparing the user experience (UX) across two selected Ethiopian e-commerce websites: Addisber and Addis Mercato. Descriptive research focuses on systematically describing user experiences, identifying patterns, and outlining the role of UX in shaping user satisfaction and platform success. As social research inherently involves comparison Lieberson (1985), this study also adopted a comparative perspective to analyse the relative effects of user experience variables across the two e-commerce websites in Ethiopia. By comparing these websites directly with each other, the study

aimed to gain insights into the role of user experience in influencing the success of e-commerce platforms in the Ethiopian context.

3.4 Population and Sampling

3.4.1 Population

The study focused on individual e-commerce platform user respondents with prior experience of using e-commerce websites, and that could be potential customers of the selected e-commerce websites (Ritonummi & Niininen, 2020).

3.4.2 Sampling Technique

One of the non-probability sampling methods, snowball sampling, was used in this study. Snowball sampling, also known as chain-referral sampling, is a technique where existing study participants help recruit future participants from their own networks. This approach is particularly effective for reaching populations with specific traits or experiences that may be difficult to identify through random sampling methods. In this research, snowball sampling was used to recruit participants who had experience using e-commerce platforms that could be potential customers to the selected websites: Addisber and Addis Mercato. This criterion ensured that the participants had a general familiarity with online shopping while allowing for unbiased evaluations of the usability and user experience of the two websites.

For the Cognitive Walkthrough, purposive sampling was employed to carefully select six participants with relevant expertise and experience (Lyon A.R. et al., 2021). These participants included:

- A web designer with professional knowledge of website functionality and design.
- A UX researcher with expertise in evaluating user interfaces and experiences.
- Two software engineers with technical insight into website development and performance.
- A frequent e-commerce user who regularly engages with online shopping platforms.
- A participant with over 10 years of e-commerce experience who conducts most of their purchases online.

This diverse selection of participants for the Cognitive Walkthrough ensured a well-rounded evaluation of the websites, incorporating perspectives from both technical experts and regular users. By leveraging their combined expertise and familiarity with e-commerce platforms, the study aimed to provide a comprehensive analysis.

3.4.3 Sample Size

Yamane's Formula was used to recognize the sample size:

N=N/(1+N(e)2)

The sample size for this study was determined to be 250 participants. This sample size was based on the average organic website traffic records of the chosen e-commerce websites, which is an average of ~1325 visits with return rate of ~50%. The selected websites were the most visited all-purpose B2C e-commerce websites locally, in between the months of November and April of 2024. A sample size of 250 was considered sufficient to achieve the objectives of the study and ensure statistical reliability.

In qualitative usability studies, testing with 15 users is suggested to obtain all usability problems in the design, although a sample size of 5 to 6 is typically taken to uncover 85 – 90% of usability problems (Nielsen J., 2000). According to Landauer and Nielsen's previous research by the usability problems number found in a usability test with *n* users can be estimated using the formula N (1-(1-L)n), where N is the total number of usability problems in the design and L is the proportion of usability problems discovered while testing a single user. The typical value of L is 31%, making 6 users the optimal sample size for qualitative usability studies.

For collecting quantitative data, the User Experience Questionnaire (UEQ) was used as part of a classical usability test. Typically, 20-30 persons already provide stable results for products evaluated so far (Schrepp M. , 2015). When collecting quantitative usability metrics, testing with at least 20 users typically offers a reasonably tight confidence interval (Nielsen J., 2006).

3.5 Data Collection

3.5.1 Sources of Data

Churchill and Iacobucci (2002) define secondary data as information that has been collected by researchers for previous studies, while primary data is data originated by researchers for

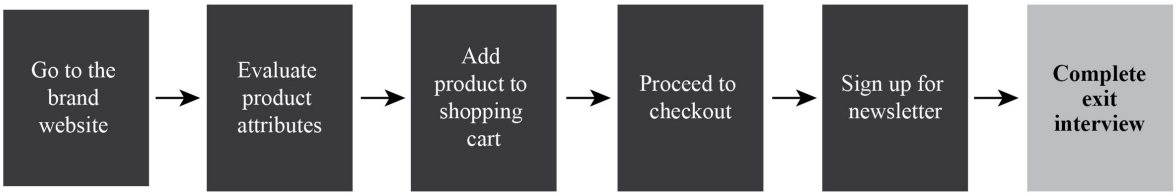
immediate use in their investigation. This study used both primary and secondary data sources to ensure more reliable findings.

3.5.2 Data Collection Methods

To achieve a comprehensive understanding, this research combined qualitative and quantitative methods. The qualitative method involved a cognitive walkthrough, which simulates a user's problem-solving process at each step in the human-computer dialogue, checking for ease of learning and user goal achievement (Ritonummi & Niininen, 2020). The cognitive walkthrough task list includes sample tasks based on the case company's e-commerce goals and typical user interactions.

Figure 4

Cognitive Walkthrough Task Flow



Source: (Ritonummi & Niininen, 2020)

In addition, the research employed a quantitative approach using a user experience questionnaire (UEQ) to evaluate the overall user experience. This method complemented the cognitive walkthrough by providing quantitative measurements of user impressions and hedonic quality aspects that may not be captured through qualitative methods alone (Quinones et al., 2014; Schrepp et al., 2017). By combining these methods, the study aimed to gather both in-depth qualitative insights and quantitative data, leading to a more comprehensive assessment of human-computer interaction on the selected e-commerce websites. Different social media platforms like Telegram groups, Linkedin, and Facebook and social networks were used to collect the quantitative data.

An Ubersuggest traffic estimation was also conducted to determine the websites organic user traffic.

3.6 Data Analysis Method

The data analysis in this research involved several stages to comprehensively evaluate the UX of the selected e-commerce websites. The initial step included analysing observations from the usability testing to define and prioritize usability problems, UEQ data analysis tool was used. This analysis also used usability heuristics specific to the e-commerce context (Nielsen J., 1994; Quiñones et al., 2014) as they are both principles for good design and a tool for evaluating usability.

To ensure the robustness and consistency of the data collected via the User Experience Questionnaire (UEQ), reliability and validity tests were conducted using Python and R. Cronbach's Alpha was used to measure the internal consistency of the factors, assessing how closely related the items within each UX dimension are. Additionally, Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) Test were employed to verify the factorability of the data. The Measure of Sampling Adequacy, indicated that the data was suitable for Exploratory Factor Analysis (EFA). This was complemented by Confirmatory Factor Analysis (CFA) to refine and verify the factor structure proposed by the EFA, affirming the construct validity of the UEQ. In addition to these, the content of the UEQ was reviewed and validated by experienced subject matter experts who are knowledgeable in this field, other than the extensive validation in previous research and its recognition evaluating user experience across various contexts.

The evaluation stage focused on examining goal problems, action problems, and goal modifications that users engage in during the cognitive walkthrough (Polson et al., 1992). Task analysis was implemented using the IxDF's adaptation of four questions for cognitive walkthrough on websites, which are designed to identify usability problems such as ineffective search functionality or missing confirmation messages (Jadhav et al., 2013). The task analysis will also include a fifth question regarding task completion rate to assess the overall usability of the websites.

Table 1

Cognitive Walkthrough Questions

	Cognitive Walkthrough Questions	Meaning
1	Did the user achieve the right outcome?	Evaluates if the user was able to achieve their intended result (e.g., adding an item to the cart or finding product information).
2	Did the user notice that the correct action is available to the user?	Determines whether the user recognized the correct interface element (e.g., a button or link) to perform the action.
3	Did the user associate the correct action with the outcome the user expected to achieve?	Determines if the user understood that the action they took would lead to the desired outcome.
4	If the correct action is performed, did the user see that progress is being made towards the intended outcome?	Evaluates whether the user received feedback indicating that they were on the right track.
5	Was the user able to complete the task?	Determines if the user was ultimately able to complete the task without additional help or confusion.

Source: (Ritonummi & Niininen, 2020)

The cognitive walkthrough task analysis was based on transcribed screen and audio recordings of the walkthroughs, while the user experience questionnaire results were analysed using the UEQ Data Analysis tool. UX questions included in the exit questionnaire captured immediate impressions concerning UX.

3.7 Ethical Consideration

The research prioritized ethical considerations, particularly regarding confidentiality and transparency. Ethical concerns, including consent and confidentiality, were carefully addressed in this study. To ensure ethical acceptability, the research purpose and significance were clearly communicated to participants in advance. Furthermore, participants were assured that their responses will remain confidential and were used only for research purposes.

4 CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the findings from the analysis of Addisber and Addis Mercato using the User Experience Questionnaire (UEQ) and Cognitive Walkthrough methods.

4.1 Website Information

This research evaluates two of the most widely used all-purpose e-commerce websites in Ethiopia: Addisber and Addis Mercato. Both websites provide a broad range of products by serving various shopping needs and they are competitive in terms of social media popularity and monthly organic user traffic.

In January 2024, Addisber received approximately 1050 organic monthly visitors, while Addis Mercato received approximately 1600 organic monthly visitors.

As observed on the social media platforms Facebook and Instagram, these two e-commerce websites have similar popularity in Ethiopia. Both websites have built competitive number of followings and engagement, which signifies their popularity in the Ethiopian e-commerce market.

The study utilized the international User Experience Questionnaire (UEQ) and Cognitive Walkthrough to collect both quantitative and qualitative data, capturing the pragmatic and hedonic quality of the websites.

4.2 User Experience Questionnaire

User Experience Questionnaire (UEQ) by Schrepp et al. (2019) is a tool used to analyze whether a product offers a good User Experience and identify general areas for improvement, though it doesn't directly signify specific changes to be made for improving the user experience.

As King et al. (2016) stated in their article millennials (aged 18 - 34) dominate the online shopping landscape despite having lower incomes than older adults. Addisber and Addis Mercato are also designed to meet the needs of this group, offering a wide range of products that appeal to millennial consumers who value convenience, accessibility, and efficiency when shopping online. There were 162 people who

participated in this stated to fill out this User Experience Questionnaire (UEQ). Participants demographics categorized in Age and Gender follows.

This research aimed to understand the user experience from a representative sample of this demographic group. As 56.94% of the research participants actively seek information before making purchase decisions, the websites' ability to provide understandable and clear product information plays a critical role in influencing their shopping behavior. For the remaining 43.05% of the research participants who rely on intuition on past experience, elements like ease of navigation, familiarity, and visual appeal are crucial to their decision-making process.

The participants included in this study are from different age groups and gender categories to provide a general understanding of how users from varying backgrounds observe the user experience on both websites.

4.2.1 Age Distribution

The data in Table 2 provides insight into how different age groups perceive their user experience across the two platforms. Notably, the majority of participants fall within the 18-34 range, which aligns with the fact that millennial consumers tend to dominate online shopping platforms. The slightly higher proportion of participants in the 25-34 age group for Addisber indicates that it attracts more users in this age range.

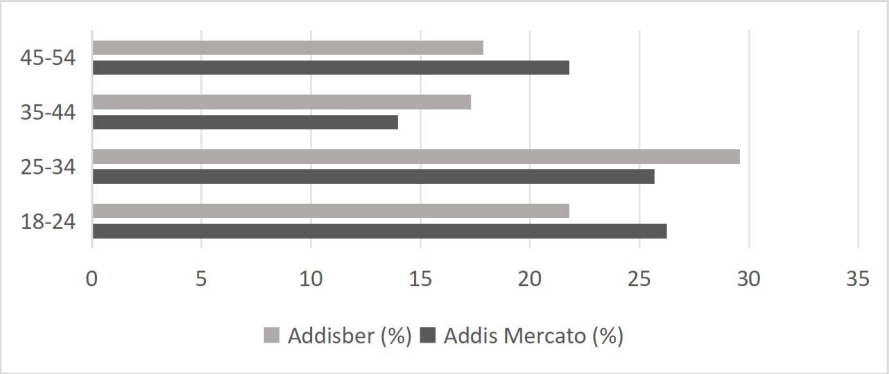
Table 2

UEQ Participants Age Demographics

Age Group	Addis Mercato (%)	Addisber (%)
18-24	26.25	21.78
25-34	25.69	29.60
35-44	13.96	17.31
45-54	21.78	17.87

Figure 5

UEQ Participants Age Demographics



4.2.2 Gender Distribution

Table 3 provides insight into how gender representation might influence user experiences on these platforms. Although the data shows a relatively balanced gender representation, small differences exist, such as Addisber having a slightly higher proportion of male participants, while Addis Mercato has a higher percentage of female users.

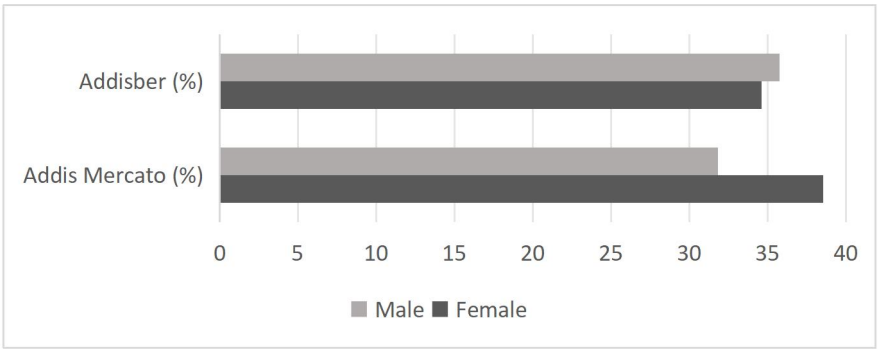
Table 3

UEQ Participants Gender Demographics

Gender	Addis Mercato (%)	Addisber (%)
Female	38.54	34.63
Male	31.84	35.75

Figure 6

UEQ Participants Gender Demographics



The participant demographics reflect a balanced representation of both gender and age, ensuring that the findings are applicable across a broad segment of the user base. This mix of participants allowed for detailed insights into the websites' usability across different age groups and gender preferences.

4.2.3 Preference Analysis

While filling out the questionnaire, participants were asked which platform they preferred to use and both e-commerce websites were almost equally preferred. They have provided insights into why they preferred one platform over the other. The key factors driving their preferences included:

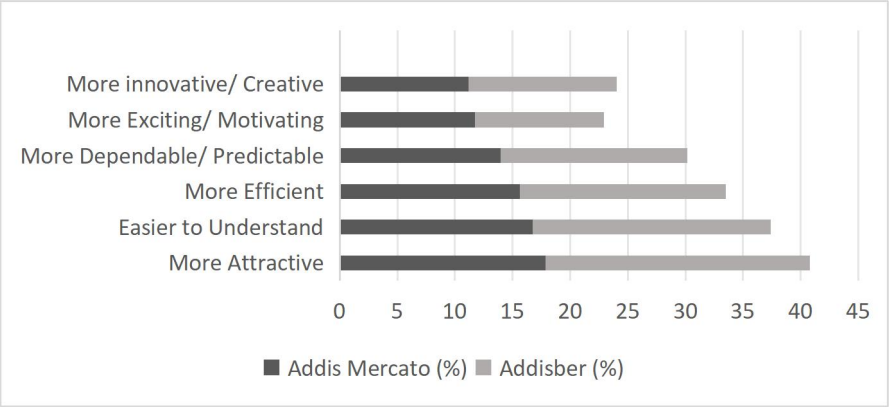
Table 4

Key factors driving participants preference

Preference Reason	Addis Mercato (%)	Addisber (%)
More Attractive	17.87	22.90
Easier to Understand	16.75	20.67
More Efficient	15.64	17.87
More Dependable/ Predictable	13.96	16.20
More Exciting/ Motivating	11.73	11.17
More innovative/ Creative	11.17	12.84

Figure 7

Key factors driving participants preference



Addisber was rated higher in terms of Attractiveness, Ease of Understanding, Efficiency, Dependability/ Predictability and Innovation/ Creativity. While Addis Mercato received positive feedback, and slightly higher scores for being Exciting/ Motivating, it received a slightly lower score than Addisber in terms of the above mentioned criterion.

4.2.4 Influence of User Experience on Purchase Behavior

The questionnaire results provided further insights into how the quality of user experience on these e-commerce websites affects participants' purchase decisions.

Table 5

The influence of participants UX on their purchase behavior

Influence of participants UX on their purchase behavior	Number of Response (%)
It highly affects it	26.4
Yes, it affects it	38.9
Maybe	23.6
It might not affect it much	6.9
It doesn't affect it at all	4.2

This implies that 2/3 of the users are likely to be influenced by their experience on the e-commerce websites to have a significant impact on their purchasing decisions, emphasizing the importance of positive and seamless user interaction.

4.2.5 Structural Equation Modeling (SEM)

The primary aim of Structural Equation Modeling (SEM) in this study is to assess the adequacy of the measurement model representing the sample data. SEM in the context of this study involves only the measurement model, which is essential for defining the relationships between observed indicator variables and the underlying latent constructs they intend to measure (Byrne, 2010). This is particularly relevant for verifying the structure of the User Experience Questionnaire (UEQ) scales within the sample.

4.2.5.1 Measurement Model

The UEQ measurement model was validated using both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The EFA was used to determine the underlying structure of the questionnaire and to ensure that items robustly represented their intended constructs. The EFA was crucial for verifying the dimensionality proposed by the initial conceptual framework of the UEQ.

4.2.5.1.1 Exploratory Factor Analysis (EFA)

The analysis started with raw data consisting of responses for 26 items. A factorability check was ensured by the Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity, both of which indicated the data was suitable for factor analysis.

Table 6

Validity Test Results

Test	Result
Bartlett's Test	chi-square = 4032.79, p-value = 0.000
KMO Test	0.837

Source: Researcher's Survey Output using Python on Pycharm 2024.2.3 (2024)

The results show valid outcomes for the dataset, with a KMO value of 0.837, indicating that the sample size is adequate for factor analysis. Bartlett's Test produced significant results ($p < 0.05$), confirming that the data is suitable for factor analysis, as it indicates a sufficient correlation between the items for further exploration.

Detailed factor loadings are provided to demonstrate how each item associates with its designated factor, confirming the appropriateness of the factor structure.

Table 7

Factor Loading

	0	1	2	3	4
Attr_1	0.573032	0.551513	0.442168	0.670850	-0.155348
Attr_2	0.400870	0.561181	0.532308	0.447775	-0.090337
Attr_3	0.638921	0.594970	0.757143	-0.034936	0.779102
Attr_4	0.185000	0.083987	0.756841	0.145061	-0.024262
Attr_5	0.477787	0.263699	0.449083	0.097671	0.074306
Attr_6	0.210214	0.032117	0.793166	0.144712	-0.112658
Pers_1	0.165912	0.791847	0.011532	0.265828	0.003336
Pers_2	0.085561	0.572592	0.194027	0.427767	-0.078804
Pers_3	0.031379	0.204467	0.538945	0.123884	0.185802
Pers_4	0.070364	0.625470	0.293321	0.035903	0.187336
Eff_1	0.106622	0.100962	0.000096	0.703341	0.055943
Eff_2	0.055894	-0.005034	0.206321	0.657974	0.150752
Eff_3	0.085700	0.067128	0.176545	0.618569	0.100802
Eff_4	0.315927	0.207850	0.050957	0.507048	0.246318
Dep_1	0.715810	0.346281	0.163773	0.019769	0.106702
Dep_2	0.545810	0.463776	0.088682	0.067841	-0.000972
Dep_3	0.683354	0.205417	0.041438	0.014593	0.163156
Dep_4	0.609703	0.235143	0.099117	0.182813	0.088972
Stim_1	0.672727	0.041301	0.174674	0.080131	0.209228
Stim_2	0.792602	0.166668	0.089539	0.087795	0.137068
Stim_3	0.702463	0.088168	0.132025	0.002985	0.144129
Stim_4	0.616739	0.104293	0.043010	0.285040	0.133798
Nov_1	0.427501	0.224432	0.012346	0.180527	0.462919
Nov_2	0.131896	0.055215	0.051626	0.076380	0.644974
Nov_3	0.202419	0.044739	0.071027	0.258294	0.643025
Nov_4	0.060861	0.316290	0.030172	0.013400	0.602413

Source: Researcher's Survey Output using R on RStudio (2024)

The six scales of the User Experience Questionnaire (UEQ) assess various aspects. The Attractiveness scale measures general appeal through items like 'annoying/enjoyable', 'good/bad', 'unlikable/pleasing', 'unpleasant/pleasant', 'attractive/unattractive', and 'friendly/unfriendly'. Perspicuity evaluates ease of understanding with items such as 'not understandable/understandable', 'easy to learn/difficult to learn', 'complicated/easy', and 'clear/confusing'. Efficiency focuses on the performance aspect with 'fast/slow', 'inefficient/efficient', 'impractical/practical',

and 'organized/cluttered'. Dependability measures reliability through 'unpredictable/predictable', 'obstructive/supportive', 'secure/not secure', and 'meets expectations/does not meet expectations'. Stimulation checks for engagement levels with 'valuable/inferior', 'boring/exciting', 'not interesting/interesting', and 'motivating/demotivating'. Lastly, Novelty assesses innovation through 'creative/dull', 'inventive/conventional', 'usual/leading edge', and 'conservative/innovative'. Each item contributes to a nuanced understanding of how users perceive and interact with a product (Schrepp et al., 2008).

4.2.5.1.2 Confirmatory Factor Analysis (CFA)

The CFA was conducted to test the hypotheses regarding the factor structure derived from the EFA. It further refined the model by estimating the relationships between observed variables and their underlying latent constructs. The results supported a good fit of the model, enhancing confidence in the construct validity of the measurement.

4.2.5.2 Reliability Test Results

Cronbach's Alpha values were calculated for each scale to assess the internal consistency and reliability. All scales showed acceptable reliability, with values exceeding 0.7, indicating strong internal consistency.

Table 8:

Cronbach's Alpha Values

Scale	Cronbach's Alpha
Attractiveness	0.801
Perspicuity	0.721
Efficiency	0.781
Dependability	0.833
Stimulation	0.833
Novelty	0.740

Source: Researcher's Survey Output using Python on Pycharm 2024.2.3 (2024)

The results indicate that all scales showed acceptable reliability, with Cronbach's Alpha values exceeding 0.7. Stimulation has the highest internal consistency (0.833), indicating a high level of reliability in how users responded to items in this scale. Attractiveness, Dependability, and Novelty also show strong reliability, while Perspicuity and Efficiency are slightly above the 0.7 threshold, indicating moderate internal consistency but still within acceptable limits.

4.2.5.3 Validity Test Results

The content validity of the User Experience Questionnaire (UEQ) is well-established, as the instrument has undergone extensive validation in previous research and is widely recognized for evaluating user experience across various contexts (Schrepp et al., 2017). Additionally, it has also been reviewed and validated by experienced subject matter experts who are knowledgeable in this field. Construct validity was supported by the good fit indices from the CFA.

Table 9

CFA Fit Indices

Index	Value
CFI	0.976
TLI	0.962
RMSEA	0.057
SRMR	0.070

Source: Researcher's Survey Output using R on RStudio (2024)

The above results from SEM, encompassing both EFA and CFA, affirm the robustness of the UEQ scales in measuring user experience accurately and reliably, aligning well with established theoretical frameworks.

4.2.5.4 UEQ Results per Scale

Participants' evaluations of Addisber and Addis Mercato were assessed across six UEQ scales: Attractiveness, Perspicuity, Efficiency, Dependability (pragmatic

qualities), Stimulation, and Novelty (hedonic qualities). The results for both platforms are displayed below:

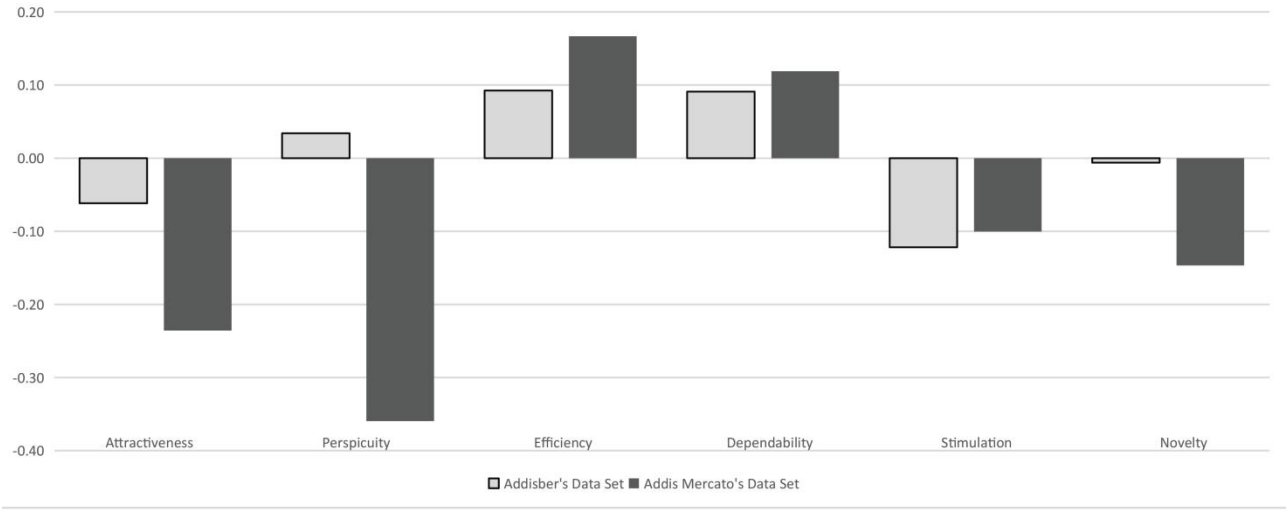
Table 10:

UEQ Results for Addisber and Addis Mercato

Scale	Addisber's Data Set		Addis Mercato's Data Set	
	Mean	**STD**	**Mean**	**STD**
Attractiveness	-0.06	0.38	-0.24	0.46
Perspicuity	0.02	0.47	-0.36	0.54
Efficiency	0.09	0.45	0.17	0.50
Dependability	0.09	0.49	0.12	0.49
Stimulation	-0.12	0.48	-0.10	0.49
Novelty	-0.01	0.59	-0.15	0.62

Figure 8

UEQ results per scale



The results indicate that Addisber was rated higher in Attractiveness (-0.06) compared to Addis Mercato (-0.24). Addisber also received a positive score in Perspicuity (0.02),

while Addis Mercato scored negatively (-0.36), suggesting that users found Addisber easier to navigate and understand.

In terms of Efficiency, Addis Mercato slightly outperformed Addisber, with a mean score of 0.17 compared to 0.09. Both platforms performed similarly in Dependability, with Addis Mercato (0.12) slightly higher than Addisber (0.09).

Regarding the hedonic qualities of Stimulation and Novelty, both websites scored low, reflecting that users found the websites less engaging and innovative. This suggests room for improvement in creating more dynamic and creative user interactions.It also highlights the perception that the sites are somewhat conventional and not particularly creative or cutting-edge. Based on Interaction Design Foundation (2019) and Nielsen's usability heuristics (using common website conventions for consistency), adequately is a sign of effective UI design. In this case, the websites being conventional and predictable is not considered negatively, because when an e-commerce website uses well known navigation structures and iconography, this means it is familiarizing the users with their previous experience.

When a specific item significantly deviates from others within the same scale, it may suggest that participants are interpreting it differently. In this study, the Novelty scale showed the highest standard deviation, which implies that some participants may have viewed conventionality as a positive indicator of reliability, while others saw it as a negative sign of being outdated. Thus, the context of the study could have influenced the responses, making the results less straightforward and more open to interpretation (Schrepp et al., 2019). Addressing the lower scores in Stimulation and Novelty could enhance the overall user by making the websites more engaging and interesting for users. Adding more creative design elements and interactive features might increase user satisfaction and make the sites more enjoyable to use. Additionally, improving the Attractiveness of the sites could help boost users' initial impressions and encourage longer engagement.

In conclusion, the results suggest that while the pragmatic quality of the e-commerce websites is strong—particularly in terms of ease of use and control—there is room for improvement in the hedonic aspects of UX, which could make the websites more exciting and innovative for users.

4.3 Cognitive Walkthrough Task Analysis

The following analysis is based on the usability test results filled into cognitive walkthrough templates. It has four plus one questions for Cognitive walkthrough (Polson et al., 1992). The task analysis determines goal problems, action problems and goal modifications encountered by users.

All the participants have not used both e-commerce websites before and they didn't report any issues related to forming or understanding the necessary goals to operate the system or perform the tasks. They were able to define their objectives while interacting with both e-commerce websites: Addisber and Addis Mercato.

Various action problems were found across multiple tasks. Participants often tried to perform the correct action but faced difficulties or delays in seeing the results. For instance, at the start some participants encountered difficulties in finding both websites through search engines.

> "While searching on my browser, Addisber didn't appear… If it wasn't for the shared link, I wouldn't have found it."
>
> "While searching on my browser, Addis Mercato appeared third on the list… The SEO needs work."

many participants encountered issues adding items to the cart and understanding whether the action was successful, particularly on Addisber.

Addisber: Participants were often unsure if the item had been added to the cart, leading to confusion and requiring them to check by clicking on the cart icon. Some comments from participants when trying to figure out what's happening include:

> "I'm adding items to the cart but I don't know if it is adding it…oh okay, I just saw that it has been adding it all the way when I click on the bag icon at the top."
>
> "It's not obvious when I add items to the cart… It would have been nice if it notified me that I've added something."

- Addis Mercato: While smoother overall, there was feedback regarding product recommendations. One respondent noted that the suggested unrelated products caused

her task interruptions, "I don’t like how the product suggestions aren’t related to the product I chose… How is table salt related to perfume? I find that a bit disappointing."

Participants had to readjust their goals several times, mid-task due to layout or functionality inconsistencies.

- Addisber: At first some participants expected to find categories in a specific place, but after they realized that the layout is different, they modified their goal.

> "Where’s the category? I can’t see it here… Oh, okay, it’s down here."

> "This category is nice, but it would have been better if it was at the top."

-Addis Mercato: Although participants found the navigation clearer, and the product descriptions in most products helpful, some expected more detailed product descriptions and reviews, which influenced their goal of trusting the product. One participant remarked, “More product description and reviews would have been nice…Now how will I trust them?”

Despite encountering action problems, most participants were able to eventually complete their tasks. However, they expressed frustration during interactions, especially when elements were not intuitive or feedback was delayed. Common frustrations include:

- Addisber: The site’s aesthetic features, such as "raining snowflakes," were confusing and distracting for users, affecting their focus on task completion.

> "What’s up with the raining snowflakes—Is it Christmas already?"
> "I don’t like the moving snowflakes—they’re a bit distracting and not representative. It also confuses the season with Christmas."
> "What are these things falling down the screen?"

Additionally, slow interactivity "I wanted to ask for help on the popup that appears, but it’s frustrating that it asks for my credentials. I don’t want to do that… It would

have been better if they just answered the question asked. A fast response would have motivated me to return to this website to purchase." and a lack of immediate feedback on cart additions contributed to negative user experiences.

- Addis Mercato: Users noted issues with outdated messages (e.g., “Happy Ethiopian New Year 2015”), which contributed to confusion and gave the site an unpolished feel.

> "I thought we were in 2016, why do they still have the 'Happy Ethiopian New Year 2015' message?"
> "We’re almost done with 2016… why is there still a Happy New Year message for 2015?"

Table 11

Cognitive Walkthrough task analysis excerpt

Respondent	Website	1. Did the user achieve the right outcome?	2. Did the user notice that the correct action is available to the user?	3. Did the user associate the correct action with the outcome the user expected to achieve?	4. If the correct action is performed, did the user see that progress is being made towards the intended outcome?	5. Was the user able to complete the task?
Respondent 1	Addisber	Yes	No	Yes	No	Yes
	Addis Mercato	Yes	Yes	Yes	Yes	No
Respondent 2	Addisber	Yes	No	Yes	No	Yes
	Addis Mercato	Yes	Yes	Yes	Yes	Yes
Respondent 3	Addisber	Yes	No	Yes	No	Yes
	Addis Mercato	Yes	Yes	Yes	Yes	Yes
Respondent 4	Addisber	Yes	No	Yes	Yes	Yes
	Addis Mercato	Yes	Yes	Yes	Yes	Yes
Respondent 5	Addisber	Yes	No	Yes	No	Yes
	Addis Mercato	Yes	Yes	Yes	Yes	Yes
Respondent 6	Addisber	No	No	Yes	No	Yes
	Addis Mercato	Yes	Yes	Yes	Yes	No

Although participants encountered challenges while completing tasks on both e-commerce websites, the overall task completion rate was high. In the case of Addisber,

despite the fact that many users struggled to recognize the availability of the correct actions or associate them with expected outcomes, most were still able to complete the tasks successfully after some trial and error. This suggests that while the interface is not entirely intuitive, users were eventually able to navigate and accomplish their goals.

A notable issue observed was the difficulty in finding specific information, such as additional product details. Four out of six respondents on Addisber had issues identifying whether an item had been successfully added to the cart due to lack of visual feedback or notification. Similarly, only one user was able to find the required information without confusion and was confident in its accuracy. The others either misinterpreted the provided details or had to look elsewhere to verify the information.

This inconsistency in users' ability to interpret feedback and find the necessary information highlights a critical usability gap in Addisber's design. Addis Mercato performed better in this regard, with users reporting fewer issues and smoother navigation flow. These findings suggest that Addisber needs to improve its visibility of system status and feedback mechanisms to enhance user confidence and reduce task completion time, while Addis Mercato could focus on refining the details and improving the consistency of its content presentation.

One of the most common usability problems on Addisber was reported by several users that they were unsure if actions (like adding items to the cart) had been successfully completed. On Addis Mercato, some users noted,
"I don't like how it requires account creation for checkout" suggesting improvements to simplify interactions.

Respondents also found it difficult to locate categories and product details, particularly on Addisber. Users had to scroll down or look through menus that were not immediately obvious.

Both websites were criticized for lacking sufficient product descriptions and reviews, which are important for helping decision-making and building user trust. Several noted that they wanted more details on some products, such as allergy warnings or ingredients, and that reviews were either missing or limited in scope. However, Addis

Mercato generally provided more detailed product descriptions compared to Addisber, offering information that users found useful and trustworthy. This strength in content quality positions Addis Mercato as a more reliable platform for users who prioritize well-informed purchase decisions.

Despite the challenges, participants found several features satisfactory on both websites. Addisber was said to have simple checkout processes. One respondent remarked, "I like the checkout process, it’s easy and not restrictive".

On Addis Mercato, participants appreciated the ability to compare products and their description side by side, by using the view option at the top, although they noted the need for improvement in related product suggestions.

Several respondents praised Addisber for offering a wide range of payment options, which they found convenient and essential for e-commerce for locals. On Addis Mercato, although international payment options like Paypal are observed the local payment options are not as many as Addisber.

Overall, the study demonstrates that while both websites enable users to achieve their goals, Addis Mercato provides a more straightforward experience with fewer interruptions. This insight emphasizes the need for Addisber to focus on refining its interactive elements to ensure a more seamless user experience.

4.3.1 Usability Heuristics and Design Principles

Usability heuristics are both principles for good design and a tool for evaluating usability. Although this study will not contain Heuristic Evaluation, results are briefly compared against 10 Usability Heuristics for User Interface Design by Nielsen (1994) and Transactional Web Applications Heuristics by Quiñones et al. (2014).

Both websites meet most heuristics, e.g., Visibility of System Status and Match Between the System and the Real World. For example, when participants used Addisber, they followed the task list and added products to the cart, but did not receive visual feedback on the final transaction. Participants also commented on the snowflakes running down the screen, describing them as "distracting." This suggests

that Feedback on the Final State of Transaction and Aesthetic and Minimalist Design could be improved on Addisber.

While using the e-commerce website Addis Mercato, participants encountered a 'Happy Ethiopian New Year 2015' message on the homepage, raising concerns about whether the site is regularly updated. Additionally, some participants expressed a preference for Amharic language usage, but although the menus were translated, the product names remained in English after clicking the translation option. Another usability problem occurred when participants clicked on a product to zoom in, but the enlarged image lacked a cancel or 'X' button to close it. A participant also suggested that it would have been more helpful for the users to find the tutorials easily if it was placed more visible and accessible upfront, than it being placed in the About Us tab. These issues suggest improvements in User Control and Freedom, Consistency and Standards, Visibility of System Status and Aesthetic and Minimalist Design for Addis Mercato.

Participants also identified common usability problems across both websites, such as the lack of product reviews and insufficient product descriptions. These issues align with the heuristics for Help and Documentation, Match Between the System and the Real World, Recognition Rather than Recall, and User Control and Freedom. Addressing these concerns would provide essential support for users to make informed decisions, enhance their sense of control, and reduce cognitive load.

Building upon the analysis of the user experience, several patterns emerged when comparing the two websites' performance across various dimensions of the User Experience Questionnaire (UEQ) and Cognitive Walkthrough.

Novelty emerged as one of the lowest-scoring aspects for both Addisber and Addis Mercato, which aligns with the findings of Akram et al. (2017a) and Ozen and Engizek (2013). Their studies emphasize the role of novelty, fun elements, and visual appeal in encouraging impulsive purchases. In the context of these websites, the lack of innovation and creativity likely reduced the potential to trigger impulse buying behaviors. Despite offering a wide variety of products, neither platform was perceived

as particularly engaging or exciting, which could limit their ability to entice users into making spontaneous purchases.

On the other hand, the efficiency and dependability of both platforms were positively rated, reflecting the utilitarian dimensions discussed by Kim (2006) and Subagio (2011). These values, which focus on the practical, functional aspects of the user experience—such as ease of navigation and time-saving features—are critical in fostering user satisfaction. In line with these utilitarian principles, Addis Mercato slightly outperformed Addisber in terms of efficiency, while both websites scored similarly in dependability. This suggests that, despite some shortcomings in other areas, both platforms effectively addressed users' pragmatic needs, allowing them to complete their tasks with relative ease.

Additionally, Childers et al. (2001) introduce the concept of "webmospherics", highlighting the influence of website design elements like pop-up notifications, layout, and visual features on user decisions. In this study, the lack of a pop-up notification in Addisber when users added items to the cart led to confusion, supporting Childers et al.'s theory. Users expressed dissatisfaction during the Cognitive Walkthrough, as they were not informed of their actions in real time. This feedback suggests that real-time notifications, like pop-up messages, could improve users' understanding of their actions and enhance their overall experience on the platform.

Finally, Forsstrom's (2019) work on usability highlights that complex interfaces or slow responsiveness can lead to user abandonment. Although both websites had relatively simple interfaces, the slow loading times and extended checkout process on Addis Mercato led to frustration among some participants. As a result, several users abandoned their tasks before completing the checkout process, confirming Forsstrom's assertion that even moderate usability issues can have a significant impact on user retention. This finding underscores the importance of improving the responsiveness and efficiency of the checkout process on Addis Mercato to prevent task abandonment and enhance the overall user experience.

In summary, the findings reveal a contrast between the two websites in terms of their pragmatic and hedonic qualities. While both platforms performed well in terms of efficiency and dependability, Addisber and Addis Mercato fell short in delivering a

novel and stimulating experience. The lack of engaging and innovative features, particularly the absence of real-time feedback mechanisms, detracted from the overall user experience. Addressing these challenges, particularly through design enhancements and more engaging features, will be critical to improving user satisfaction, conversion rates, and customer retention for both platforms.

5 CHAPTER FIVE:

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter concludes the study by summarizing the key findings and discussing their implications. It also outlines specific recommendations for improving the UX of these platforms. Lastly, future research directions are suggested.

5.1 Summary of Major Findings

The objective of this study was to evaluate the User Experience (UX) of two selected Ethiopian e-commerce websites, Addisber and Addis Mercato, to understand their effectiveness in delivering a positive customer experience. The research combined both quantitative and qualitative methods, using the User Experience Questionnaire (UEQ) and Cognitive Walkthrough techniques to analyze the overall attractiveness, pragmatic qualities, and hedonic qualities of both websites. This approach provided insights into how users perceive the websites' usability and highlighted areas for improvement.

The findings revealed significant differences between the two platforms, each with its own strengths and weaknesses. Addisber emerged as the preferred platform in several categories, scoring higher on Attractiveness, Ease of Understanding, and Efficiency. Meanwhile, Addis Mercato performed better in terms of Excitement and Motivation, providing a more engaging experience for users. Despite Addisber's higher scores in most UX dimensions, user preferences were evenly split between the two platforms, suggesting that factors beyond UX may influence overall user choices.

5.2 Conclusion

The results indicate that Addisber was perceived as more visually appealing and intuitive compared to Addis Mercato. Although there were initial concerns about Addisber’s first appearance, participants appreciated the consistent product background and organized layout, which contributed to a positive impression. In contrast, Addis Mercato received lower attractiveness scores due to a mix of colors that were perceived as cluttered and hard on the eyes, and the presence of an outdated welcome message that detracted from its appeal. This suggests

that Addisber's better visual design played a significant role in creating a favorable first impression.

Both websites performed reasonably well in terms of pragmatic quality, with users finding them efficient and dependable for accomplishing basic tasks. However, Addisber had a slight advantage due to its smoother checkout process. While participants initially reported some difficulty locating categories on Addisber, they eventually found it easier to navigate product listings and encountered fewer errors compared to Addis Mercato, where slow responsiveness disrupted the user flow. This demonstrates that Addisber's pragmatic qualities contributed to a more predictable user experience.

Neither website excelled in hedonic quality, as both scored lower on stimulation and novelty. Addis Mercato received slightly more positive feedback on excitement and motivation due to its engaging features, such as adding items to the cart. Both websites would benefit from incorporating more engaging and stimulating features to enhance the overall user experience, particularly for younger users who value creativity and innovation in their interactions.

Interestingly, despite Addisber scoring higher in most UX dimensions, the study revealed that participants' overall preferences were evenly split between Addisber and Addis Mercato. This suggests that user experience metrics alone do not fully determine user preference and that external factors, such as product variety, SEO performance, and brand familiarity, play a significant role in shaping user choices.

Furthermore, some participants had difficulties finding both websites through search engines, underscoring the importance of visibility and accessibility in driving user traffic. Addisber's lower organic traffic (approximately 1,050) compared to Addis Mercato (approximately 1,600) suggests that SEO performance, product variety, and marketing efforts might influence user choices, even when Addisber scored higher on UX metrics. Additionally, Addis Mercato's more detailed product descriptions provided better content quality, positively influencing user trust and decision-making, which may explain why it remained equally preferred despite its lower scores in other UX dimensions.

5.3 Recommendations

Based on the findings, several recommendations can be made to improve the overall user experience and market positioning of both platforms.

For Addisber, it is essential to improve its SEO performance to increase visibility and attract more organic user traffic. Additionally, enhancing product descriptions and encouraging more product reviews will help users make informed decisions and increase the website's credibility. It is also recommended that Addisber improves its feedback mechanisms for a more interactive and engaging user experience, particularly in areas like stimulation and novelty. Maintaining its strong visual appeal is crucial, but confusing and distracting elements, such as the falling snowflakes, should be removed to further enhance the site's usability. Furthermore, incorporating AI-powered product suggestions could help Addisber personalize its services and make product recommendations more relevant to individual users.

For Addis Mercato, the focus should be on enhancing its hedonic qualities by incorporating features such as limited-time offers, promotional banners, and more personalized user interactions. Regularly updating and localizing content, especially when it comes to ensuring consistency between Amharic and English language options, is necessary to maintain user engagement and relevance. Expanding payment options and offering checkout flexibility, including allowing users to proceed as guests, would also reduce barriers to purchase. Like Addisber, incorporating AI-powered product suggestions could improve the relevance of product recommendations and personalize the user experience more effectively.

5.4 Future Research Directions

This study provides valuable insights into the user experience of Ethiopian e-commerce websites while also revealing areas that require further research. Most respondents in this study believe that their experience using these e-commerce websites significantly affects their purchase decisions. This finding underscores the importance of catering to a broader user base and optimizing conversion rates through UX improvements.

Future research could explore external factors influencing user preferences, such as brand perception, product variety, and pricing, to gain a more comprehensive understanding of user behavior. Another area for further investigation is long-term user engagement, which could be

assessed through a longitudinal study that tracks changes in user behavior and preferences over time, particularly in response to UX improvements. Additionally, conducting a comparative analysis of conversion rates would be beneficial for evaluating the direct impact of UX changes on sales and establishing a clearer link between UX enhancements and business outcomes. Such studies would provide deeper insights into how user experience can influence not only user satisfaction but also the overall success of e-commerce websites in the Ethiopian market.

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7 APPENDIX 1

Cognitive Walkthrough Task List

English version:

Thank you for participating in this website usability test. Here, you will be given instructions (task list below) on what to do on the website. Please perform the following tasks next. At any point, you can ask questions and think aloud if something is puzzling you. After this, you will out a short interview of your experience.

MAIN TASK: FIND A PRODUCT YOU WISH TO BUY
TASK 1: Go to the brand website
Enter the homepage
Navigate to product listing pages
Examine the product offering
TASK 2: Evaluate product attributes
Compare products
Settle for one you wish to buy
TASK 3: Add product to shopping cart
Click the ‘add to cart’ button
Go to shopping cart
TASK 4: Proceed to checkout
Follow the steps of placing an order
Cancel the transaction when required to provide personal/financial information
TASK 5: Complete exit interview
Answer the questions

8 APPENDIX 2

Exit Questionnaire

Usability Test Questionnaire

Thank you for agreeing to participate in this e-commerce website usability study. These following questions about you as a consumer and about your experience with the website help me in analyzing the results better. All information you give today is treated with confidentiality, and no individual respondent can be identified.

The focus of this study is User Experience: how the various website features contribute to usability and what users think of them. When answering the questions, please think of YOUR experience of the website you just used.

Background questions.

1. Age
   ☐ < 20
   ☐ 20-25
   ☐ 26-35
   ☐ >35

2. Education
   ☐ Secondary
   ☐ Bachelor's
   ☐ Master's
   ☐ Doctorate
   ☐ Other, please specify

3. Internet experience (in years)

   ☐ 1 - 5

   ☐ 6 – 10

   ☐ >10
4. What language do you prefer while using websites?
   ☐ English
   ☐ Amharic

5. Online shopping experience (in years)

   ☐ None

   ☐ 1 - 5

   ☐ 6 – 10

   ☐ >10

6. How often do you buy online?
   ☐ Weekly
   ☐ Monthly
   ☐ Several times a year
   ☐ About once a year
   ☐ Less than yearly

7. Have you ever used Addisber e-commerce site before?
   ☐ Yes
   ☐ No

8. Have you ever used Addis Mercato e-commerce site before?
   ☐ Yes
   ☐ No

9. When you buy items from a website, how would you describe yourself as a decision-maker?
   ☐ Yes
   ☐ No

For the assessment of the website, here are some pairs of contrasting attributes that may apply to the website. You can express what most closely reflects your impression. Please decide spontaneously to make sure you convey your original impression.

Sometimes you may find that the attribute does not apply completely to the website. Nevertheless, please tick a circle in every line. It is your personal opinion that counts: there is no wrong or right answer!

Website Task List Instructions:

Now that you have answered the background questions, please open your web browser and navigate to the following URLs to begin the task list. Perform the tasks on each website as instructed below:

Addisber E-commerce Site:

URL: www.addisber.com

Task List:

1. Go to the Addisber website's homepage.

2. Navigate to the product listing pages.

3. Examine the product offerings and choose a product you wish to buy.

4. Evaluate the product attributes and compare products.

5. Add the chosen product to the shopping cart.

6. Proceed to the checkout process and cancel the transaction when required to provide personal/financial information.

7. Once you have completed these tasks, return to this questionnaire to complete.
Please assess the website now by ticking one circle per line based on your impression:

- For each attribute pair, the numbers 1, 2, and 3 indicate preference toward the attribute on the left, where 1 shows strong agreement and 3 shows slight agreement.
- The number 4 indicates a neutral preference or balance between the two attributes.
- The numbers 5, 6, and 7 indicate preference toward the attribute on the right, where 5 shows slight agreement and 7 shows strong agreement.

		1	2	3	4	5	6	7		
Attractiveness	*annoying*	☐	☐	☐	☐	☐	☐	☐	*Enjoyable*	*1.*
	Attractive	☐	☐	☐	☐	☐	☐	☐	*Unattractive*	*2.*
	Good	☐	☐	☐	☐	☐	☐	☐	*Bad*	*3.*
	Unpleasant	☐	☐	☐	☐	☐	☐	☐	*Pleasant*	*4.*
	Friendly	☐	☐	☐	☐	☐	☐	☐	*Unfriendly*	*5.*
	Unlikable	☐	☐	☐	☐	☐	☐	☐	*Pleasing*	*6.*
Perspicuity	*Not understandable*	☐	☐	☐	☐	☐	☐	☐	*Understandable*	*7.*
	Clear	☐	☐	☐	☐	☐	☐	☐	*Confusing*	*8.*
	Complicated	☐	☐	☐	☐	☐	☐	☐	*Easy*	*9.*
	Easy to learn	☐	☐	☐	☐	☐	☐	☐	*Difficult to learn*	*10.*
Efficiency	*Fast*	☐	☐	☐	☐	☐	☐	☐	*Slow*	*11.*
	Inefficient	☐	☐	☐	☐	☐	☐	☐	*Efficient*	*12.*
	Impractical	☐	☐	☐	☐	☐	☐	☐	*Practical*	*13.*
	Organized	☐	☐	☐	☐	☐	☐	☐	*Cluttered*	*14.*
Dependability	*Boring*	☐	☐	☐	☐	☐	☐	☐	*Exciting*	*15.*
	Not interesting	☐	☐	☐	☐	☐	☐	☐	*Interesting*	*16.*
	Motivating	☐	☐	☐	☐	☐	☐	☐	*Demotivating*	*17.*
	Obstructive	☐	☐	☐	☐	☐	☐	☐	*Supportive*	*19.*
Stimulation	*Valuable*	☐	☐	☐	☐	☐	☐	☐	*Inferior*	*20.*
	Secure	☐	☐	☐	☐	☐	☐	☐	*Not secure*	*21.*
	Meets Expectations	☐	☐	☐	☐	☐	☐	☐	*Does not meet expectations*	*22.*
	Unpredictable	☐	☐	☐	☐	☐	☐	☐	*Predictable*	*23.*
Novelty	*Creative*	☐	☐	☐	☐	☐	☐	☐	*Dull*	*24.*
	Incentive	☐	☐	☐	☐	☐	☐	☐	*Conventional*	*25.*
	Usual	☐	☐	☐	☐	☐	☐	☐	*Leading Edge*	*26.*
	Conservative	☐	☐	☐	☐	☐	☐	☐	*Innovative*	*27.*

- Would you return to this site to make a purchase?

☐ Yes
☐ No

Addis Mercato E-commerce Site:

URL: www.addismercato.com

Task List:

1. Go to the Addis Mercato website's homepage.

2. Navigate to the product listing pages.

3. Examine the product offerings and choose a product you wish to buy.

4. Evaluate the product attributes and compare products.

5. Add the chosen product to the shopping cart.

6. Proceed to the checkout process and cancel the transaction when required to provide personal/financial information.

7. Once you have completed these tasks, return to this questionnaire to complete.
Please assess the website now by ticking one circle per line based on your impression:

- For each attribute pair, the numbers 1, 2, and 3 indicate preference toward the attribute on the left, where 1 shows strong agreement and 3 shows slight agreement.
- The number 4 indicates a neutral preference or balance between the two attributes.
- The numbers 5, 6, and 7 indicate preference toward the attribute on the right, where 5 shows slight agreement and 7 shows strong agreement.

		1	*2*	*3*	*4*	*5*	*6*	*7*		
Attractiveness	*annoying*	☐	☐	☐	☐	☐	☐	☐	*Enjoyable*	*28.*
	Attractive	☐	☐	☐	☐	☐	☐	☐	*Unattractive*	*29.*
	Good	☐	☐	☐	☐	☐	☐	☐	*Bad*	*30.*
	Unpleasant	☐	☐	☐	☐	☐	☐	☐	*Pleasant*	*31.*
	Friendly	☐	☐	☐	☐	☐	☐	☐	*Unfriendly*	*32.*
	Unlikable	☐	☐	☐	☐	☐	☐	☐	*Pleasing*	*33.*
Perspicuity	*Not understandable*	☐	☐	☐	☐	☐	☐	☐	*Understandable*	*34.*
	Clear	☐	☐	☐	☐	☐	☐	☐	*Confusing*	*35.*
	Complicated	☐	☐	☐	☐	☐	☐	☐	*Easy*	*36.*
	Easy to learn	☐	☐	☐	☐	☐	☐	☐	*Difficult to learn*	*37.*
Efficiency	*Fast*	☐	☐	☐	☐	☐	☐	☐	*Slow*	*38.*
	Inefficient	☐	☐	☐	☐	☐	☐	☐	*Efficient*	*39.*
	Impractical	☐	☐	☐	☐	☐	☐	☐	*Practical*	*40.*
	Organized	☐	☐	☐	☐	☐	☐	☐	*Cluttered*	*41.*
Dependability	*Boring*	☐	☐	☐	☐	☐	☐	☐	*Exciting*	*42.*
	Not interesting	☐	☐	☐	☐	☐	☐	☐	*Interesting*	*43.*
	Motivating	☐	☐	☐	☐	☐	☐	☐	*Demotivating*	*44.*

	Obstructive	☐	☐	☐	☐	☐	☐	☐	*Supportive*	*45.*
Stimulation	*Valuable*	☐	☐	☐	☐	☐	☐	☐	*Inferior*	*46.*
	Secure	☐	☐	☐	☐	☐	☐	☐	*Not secure*	*47.*
	Meets Expectations	☐	☐	☐	☐	☐	☐	☐	*Does not meet expectations*	*48.*
	Unpredictable	☐	☐	☐	☐	☐	☐	☐	*Predictable*	*49.*
Novelty	*Creative*	☐	☐	☐	☐	☐	☐	☐	*Dull*	*50.*
	Incentive	☐	☐	☐	☐	☐	☐	☐	*Conventional*	*51.*
	Usual	☐	☐	☐	☐	☐	☐	☐	*Leading Edge*	*52.*
	Conservative	☐	☐	☐	☐	☐	☐	☐	*Innovative*	*53.*

- Would you return to this site to make a purchase?

☐ Yes
☐ No

- Was language a barrier while using any of the e-commerce sites?

☐ Yes
☐ No

- Which e-commerce site did you prefer to use?

☐ Addisber
☐ Addis Mercato

- Why did you prefer Addisber/Addis Mercato? (Based on the above answer)

☐ Because it is more attractive?
☐ Because it is easier to understand?
☐ Because it is more efficient?
☐ Because it is more dependable/predictable in interaction?
☐ Because it is more exciting/motivating?
☐ Because it is more innovative/creative?

- Do you think your experience using these e-commerce websites would affect your purchase decision?

☐ It would highly affect it
☐ Yes, it affects it
☐ Maybe
☐ It might not affect it much
☐ No, it doesn't affect it at all

Finally, if you wish to give some feedback about the websites used in this study, and your experience of interacting with it, you can leave a comment below.

THANK YOU FOR PARTICIPATING IN THIS STUDY!

9 APPENDIX 3

Cognitive Walkthrough Participants Demographics

		n=6
Age	<20	-
	20-25	2
	26-35	3
	>35	1
Gender	Female	3
	Male	3
Education	Secondary	-
	Bachelor's	3
	Master's	2
	Doctorate	1
	Other	-
Internet Experience (in years)	1-5	-
	6-10	2
	>10	4
Online Shopping Experience (in years)	1-5	2
	6-10	3
	>10	1
How often buys online	Weekly	-
	Monthly	2
	Several times a year	4
	About once a year	-

10 APPENDIX 4

Cognitive Walkthrough Task Analysis

Respondent 1 - A frequent e-commerce user

Addisber's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	No	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	No	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Commented on the zoom-in effect for product images: "It's nice how the items zoom in when I hover on them."
- Expressed frustration about sub-categories placement: "I thought I would find it in the usual place."
- Noted slowness in interactions: "I'm clicking on options, but it's not working… Oh, it's just slow."
- Difficulty identifying added items to the cart: "I just noticed they've been adding all along when I click the bag icon."

- Criticized the popup help functionality: "It's frustrating that it asks for credentials instead of answering my question."

Addis Mercato's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Praised the smooth task completion: "Addis Mercato led me to the end of the task without distraction."
- Criticized the tutorial placement: "It would be better if tutorials were more visible and not in the 'About Us' tab."

Respondent 2 - A web designer

Addisber's Task analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	No	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	No	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	No	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Commented on a seasonal design choice as they were perceived distracting: " The raining snowflakes, is it Christmas already?"
- Difficulty navigating the menu: "I couldn't find categories in the hamburger menu."
- Mentioned inadequate product descriptions for perfumes: "I'd like to know more, like allergy reactions and ingredients."
- Positive checkout process: "Smooth and effective—easy to check out."

Addis Mercato's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	No	No	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Noted outdated seasonal messaging: "Why do they still have 'Happy Ethiopian New Year 2015'?"
- Liked immediate category visibility: "I found the categories right in front of me."
- Criticized unrelated product suggestions: "How is table salt related to perfume?"

Respondent 3 - A UX researcher

Addisber's Task analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	No	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	No	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	No
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Mentioned the need for external SEO: "The site didn't appear on my search engine when I searched it"
- Appreciated breadcrumb navigation: "I like that there are breadcrumb trails so I won't get lost."
- Suggested need for internal SEO: "The website needs internal SEO for searching products."
- Liked the variety of payment options: "It's very convenient."

Addis Mercato's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Highlighted SEO challenges: "It appeared third on the list but atleast I found it"
- Appreciated visual comparison tools: "Viewing options make it easier to compare products."
- Positive feedback on "Add to Cart" notifications: "It's obvious and hard to miss."

Respondent 4 - E-commerce expert

Addisber's Task analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	No	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	No	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	No	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					

Walkthrough summary:

- Critiqued falling elements on the screen: "What are these things falling down the screen?"
- Suggested more product information options: "It would help to have an option to ask questions easily."

Addis Mercato's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	No	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	No	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Noted translation inconsistency: "Product names remain in English despite using the Amharic option."
- Requested reviews for trust-building: "More product descriptions and reviews would help."

Respondent 5 - Software engineer

Addisber's Task analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	No	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Found adding items to the cart unclear: "I had trouble figuring out if items were added."
- Praised the checkout process: "It didn't require unnecessary steps, making it quick."

Addis Mercato's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Critiqued color usage: "The mix of colors made it hard on the eyes."
- Appreciated the product comparison feature: "It helped me make better decisions."

Respondent 6 - Software engineer

Addisber's Task analysis:

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	No	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	No	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	Yes
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Mentioned UI lag: "Certain pages had a lag, making the process feel slower."
- Liked local payment options: "Convenient for people relying on mobile money."

Addis Mercato's Task Analysis

Four Questions for Cognitive Walkthrough (IxDF, 2018)	Did the user try to achieve the right outcome?	Did the user notice that the correct action is available to them?	Did the user associate the correct action with the outcome he/she expect to achieve?	If the correct action is performed, did the user see that progress was being made towards the intended outcome?	Was the user able to complete the task? (Dalrymple, 2018)
TASK 1. Go to the brand website					
Enter the homepage	Yes	Yes	Yes	Yes	Yes
Navigate to product listing pages	Yes	Yes	Yes	Yes	Yes
Examine the product offering	Yes	Yes	Yes	Yes	Yes
TASK 2. Evaluate product attributes					
Compare products	Yes	Yes	Yes	Yes	Yes
Settle for one you wish to buy	Yes	Yes	Yes	Yes	Yes
TASK 3. Add product to shopping cart					
Click the 'add to cart button'	Yes	Yes	Yes	Yes	Yes
Go to shopping cart	Yes	Yes	Yes	Yes	Yes
TASK 4. Proceed to checkout					
Follow the steps of placing an order	Yes	Yes	Yes	Yes	No
Cancel the transaction when required to provide personal/financial information	Yes	Yes	Yes	Yes	Yes
TASK 5. Sign up for newsletter					
Find where to sign up for newsletter	Yes	No	Yes	No	No
Click subscription field (no need to enter email)	Yes	No	Yes	No	No
TASK 6. Complete exit interview					
Answer the questions	Yes	Yes	Yes	Yes	Yes

Walkthrough summary:

- Critiqued limited payment options: "Needs more local payment options like Addisber."