



Art, Auction, E-Commerce and Application in Flutter- A Technical Survey

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Abstract

This literature review is concerned with the focus on the fusion of Flutter, Firebase, and Razorpay within the art e-commerce sphere. As we know flutter is a cross-platform framework that enables us to build a fluid UI, complementing Firebase's strong backend support for real-time updates and secured data storage. As a payment gateway we have Razorpay which makes secure transactions. Then it performs a complete analysis of implementation successes that have a considerable effect on user experience, security, and scalability. Therefore, this review fills in the missing knowledge about these technologies and provides new thoughts that people can use as a basis for their innovations. It inspects deeply the successful implementations that play a major role in the collective impact on user experience, security, and scalability.

Keywords

Flutter, Firebase, Razorpay, Cross platform app development, Art, Auction, e-commerce

1. Introduction

There is a major drift in the art industry after digitalization. This review digs deeply into the fusion of Flutter, Firebase, and Razorpay making an art piece e-commerce structural



framework. Flutter, which has a versatile cross-platform nature along with Firebase's robust backend support and Razorpay's secure payment gateway all together revolutionizing the user experience and efficient transaction experience. Using all these technologies we work towards building a software that brings changes in art e-commerce. As we can see the digital industry is making a lot of changes this review unravels the combination of the two and the impact of these tools, which gradually leads to innovative solutions in the ever-evolving realm of online art marketplaces

1.1 Flutter

Google developed flutter SDK. It builds a single code architecture that enables one to develop mobile, web as well and desktop applications and projects all at once. This results in developing a single app which supports different devices including smartphones, tablets and even computers.

It is known that one of the best elements in Flutter is considered a really flexible tool. Anyone who is interested or an organization can use this free open source toolkit which does not have barriers of any kind. Developers exploit this technology because it shortens programming time and features a 'hot reload' feature that allows monitoring changes in code in order to adjust the results of the app immediately without having to start over again.

Furthermore, Flutter is built in a similar programming language like Python, called Dart, with numerous user's interface components, to ease user interface development. However, this app is worth much since it generates high-performance applications that have great looks on various devices.

1.2 Firebase

The all-inclusive tool that is designed for the facilitation of the creation of mobile and web applications is known as Google Firebase. These sets of services like user authentication, real-time database, cloud storage, and analytics help in developing, improving, as well as administering application development easily. It is easy for developers to use the user-friendly interface and features of Cloud Functions, Hosting, or Push Notifications. It is worth noting that Firebase facilitates the development of both Android and iOS apps thereby giving the company an edge over its competitors because it offers similar services which can be utilized within diverse platforms. Its popularity among developers comes from its smooth real-time data exchange and multiple ways of developing applications, interacting, and expanding solutions. Since it is flexible or rather has wide capabilities, it is a preferred choice for app developers.



1.3 Razorpay

Razorpay is an e-transaction management service through which businesses can process their online money deals with safety and comfort. The technology allows firms to take and settle payment transactions via diverse channels which include credit and debit cards, net banking, UPI, and widely used e-wallets. Razorpay has a strong and reliable infrastructure that guarantees hassle-free payments for both small and large enterprises. It comes with features such as interfaces that allow the generation of invoices, subscription bills, international payment services, and several easy-to-integrate APIs which are built-in websites or mobile applications. Importantly, Razorpay focuses on security and reducing fraud, with an easy-to-use interface and multiple payment methods, making it an ideal payment solution for businesses. Its reason for gaining a reputation in e-commerce is that it can take multiple payment methods as well as its ease of use.

2. Literature survey

2.1 Auction

An auction is a sales event in which potential buyers bid openly or secretly for goods or services. Somlyody [7] says live auction platforms act as a valuable asset to people who are enthusiastic about bidding and can participate from anywhere. Traditions of auction also play an important role as we can see Jiang [11] mentions Dutch and English auction tradition and the contrast between these gives us insights on how to use these practices. Dong [13] says knowledge about the bidding strategy helps bidders to know the best way. This paper is based on hypothetical conditions and does not consider all of the factors that can affect a bidder's strategy in real life. In Garratt et al. [14] we come across more about the optimal resale mechanism in auction settings and how it is computed using Myerson's methods.

Auction theory and competitive bidding and their relation act as a valuable part. Milgrom et al. [15] also introduces a new model for auction presenting different theorems. The author also provides his view on the current state of auction theory. Milgrom [17] compares several auction institutions for selling a single item. It discusses the importance of bidding strategies. The returns in bidding come from cost and information advantages, and artless bidding strategies may not utilize these advantages. There are many optimization problems that we encounter in an auction, Vries et al. [19] show us the importance of choosing appropriate test problems to evaluate the



effectiveness of different methods. It also discusses the use of approximate methods to find feasible solutions quickly, and the challenges of assessing the accuracy of such solutions.

2.2 Art Industry and digitalization

The art industry has undergone a transformation through digitalization, recreation, distribution, and international reach. Author Delaplaine [5] states that throughout history artists have adapted scientific advancements in order to enhance their creativity. Digital art and NFTs are examples of this. Blockchain technology solves authenticity issues giving artists the freedom of pricing and encouraging them to participate globally. Murray [12] talks to people in the art world, such as artists, dealers, gallery owners, museum curators, and lawyers exposing them to six myths and misconceptions about NFTs so that people can use them more efficiently.

Yuexin et al. [20] analyzes the behavior of the art market over the past 60 years. The paper uses a strategy that categorizes art by topic and source of information. The study provides insights into recent art market performance since the Great Recession and reports on the return and upcoming risks in the art market. The paper also discusses the characteristics of art markets and the transaction costs paid. We can see here Massy [21] that there are both legal and illegal aspects of the distinct past, specifically cultural objects that are transported from source countries to countries where they are sold or auctioned.

There is a relationship between aesthetics and public perception. Ardianti et al. [22] finds that aesthetics and public perception are closely related to each other and there is a difference in judging a work of art as the basis for the assessment of the work. The thesis by Shahzadi [23] emphasizes the need for artists to actively listen to team members, establish communication channels with them, and understand their needs to avoid conflicts.

2.3 Cross-platform app development

Flutter is a versatile, open-source user interface software development product developed by Google to generate native text for mobile, web, and desktop from a single source of code. The author Tashildar et al. [9] focuses on creating mobile applications that will work on both iOS and Android. Flutter is an open-source toolkit used to build fast applications. It uses techniques called Just-in-Time and Ahead-of-Time compilation and a special feature called "hot reload" that enables quick testing and making changes. It makes sure of good performance and support for the core of these devices.



The author Hussain et al. [10] found that Flutter applications had slightly higher CPU usages and memory consumption than native Android Applications. However, Flutter applications have less boot time and they are smaller in size. This survey also found that developers liked the Flutter's single codebase and hot reload features, but they admired the customization and control offered by native Android.

The author Allain [16] explored the use of Backend-as-a-Service(BaaS) solutions for mobile application development. They focused on the development of hybrid mobile application development called Alacrity. Chan [18] provides us support for different auction formats, such as English auction, Dutch auction, Yankee auction, Sealed Bid auction, and Double auction. This research paper gives us deep information about details of the mobile agent-based approach which will be used. Outlining the protocols used for implementing these different auction types offers a comprehensive overview of the auction system's capabilities.

2.4 Online Auctions and the Digitization of Art Markets

In this thesis the Giam [1] author gathers information on existing platforms and the marketplaces for makers like people who wish to sell prints of their own artworks. They provide a deep understanding of online stores for selling arts and prints using existing online stores and platforms to build one's own store. It is a more feasible option for makers with a low budget than creating their own website. Canals et al. [2] shows us that an artist's online reputation can affect their art auction results a lot especially when it comes to selling different items with different values. Artists should focus on building and maintaining a good online reputation meanwhile buyers should also consider the artist's reputation when bidding on artwork.

There is a lot of importance given to the working model and the interface too. Segura [3] describes how to create a basic working model of an auction website using one of the design processes called the Double Diamond. The Double Diamond helps designers to understand users' needs and define the key features of the product. Gamboa [4] tells us that technology is reshaping the retail art industry in endless ways that may be positive or negative. This paper will explore some of the important trends and developments. Assessing their overall impact on art recognition, art sales, and the continuation of the industry, technology makes art more accessible and affordable than ever before.

There are a lot of advantages and disadvantages of using digital technologies in the art market. Garyfalia [6] describes how the internet has democratized the arts by giving people



worldwide access to art. Social media has enabled artists and art institutions to reach a global audience and potential buyers.

Sotheby [8] looks at the types of art that are sold at auction, including contemporary, impressionist, modern, and old master paintings including Chinese traditional paintings and works of art as well. It tracks the trends in the art auction market mainly for paintings that sell for over \$1 million. This is that one part of the market that is often talked about in the news but is not always as easy to understand.

3. Conclusion

The use of Flutter, Firebase, and Razorpay in making a system for buying and selling art online is changing how people experience and buy art. It combines different technologies to make the process go easily and give a better experience to users. Having knowledge of how everything works in auctions is very important in the implementation of the project. It's like a game where people bid in order to buy something. There are many strategies that help people to get to know what is the best way to bid and win. These are like the strategies that make bidders get the artwork.

Technology has changed the way artwork is made and sold. It is easy for artists to sell their artworks globally due to the availability of digital art and blockchain technology. We are using Flutter which is a tool that helps us to make apps for different devices like phones and computers. It is useful because it can work on many devices, but it has some differences from apps made specifically for each device.

Platforms like social media promote digital marketing art more available to everyone, especially through social media. People's online reputations matter a lot in selling art, and the design of websites for selling art is really important. Using technology we are making it easy for people to sell and buy art. Understanding the whole process of how auctions work and using tools like Flutter and Firebase we create a better platform for people to buy and sell art. Technology has changed a lot in aspects of art making it available to people everywhere. This is changing how art is made, sold, and experienced.

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