

RESEARCH ON THE USE OF ADTECH IN FINTECH COMPANIES

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Abstract. The FinTech sector is booming with record funding and investment every year. It is no surprise that the industry is becoming remarkably attractive to new business players and, as a result, increasingly competitive. To cut through the noise and lead, it is important to promote the service or product most effectively and accurately. The FinTech advertising and marketing literature analyses well-known approaches such as social media or even traditional advertising; however, the usage of AdTech in the FinTech sector is barely discussed and analyzed. This article aims to fill the gap and research the usage of AdTech in the FinTech sector, analyzing the relevance, efficiency, and value of AdTech tools in FinTech companies. This research methodology includes an experts' survey, Kendall's coefficient of concordance (W), TOPSIS, and AHP methods that help determine the factors of the use of AdTech in the FinTech sector.

Keywords: FinTech, AdTech, advertising, competition, programmatic advertising, customer.

JEL Classification: G21, M31, O16.

Introduction

As the evolution of technology and innovations disrupted every industry, their adoption became crucial for every enterprise. Financial technology (FinTech) was one of the sectors that technologically revolutionized traditional ways of banking, payment, and other fields. In 2016, 81% of bank CEOs were concerned about the speed of technological change, more than any other industry sector (PwC, 2016a). Additionally, the same Global FinTech Survey revealed the view on FinTech by other businesses: a quarter of the respondents' businesses could be at risk of being lost to FinTech companies within 5 years. Today, perception has changed. Technology and innovations have broadened the possibilities for every business and induced the exponential growth of industries. As the number of financial technology companies is growing at a great pace, the industry becomes increasingly competitive. In 2021, the FinTech sector reached \$91.5 billion in global funding and doubled the investments of the last year (CB Insights, 2021). To operate and cut through the noise in such an environment, FinTech companies need innovative advertising approaches that improve and automate the process of targeting and

engaging today's consumers. The emergence of advertising technology (AdTech) delivered new ways of tracking, targeting, and using consumer data. With the solutions of AdTech, the advertising becomes accurately tailored for the targeted consumers and is displayed through various relevant channels. With the many opportunities and solutions that AdTech offers, FinTech companies are now able to reach potential customers most effectively. Today, successful, and effective advertising is no longer possible without technology. Businesses are increasingly adapting advertising technologies to create user-relevant content and increase the reach of consumers. Despite the increasing usage and inevitable application of AdTech, there is very little research or study on AdTech usage in FinTech companies. This article aims to fill the gap and research the use of AdTech in the FinTech sector, and analyze the relevance, efficiency, and value of AdTech tools in FinTech companies. Additionally, the article includes a literature analysis together with an experts' survey on AdTech factors, Kendall's coefficient of concordance calculation, TOPSIS, and AHP techniques that help determine the factors of AdTech usage in the FinTech sector.

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1. Theoretical background of financial and advertising technologies

1.1. Financial Technologies (FinTech)

Technologies have accelerated innovation in all industries along with entirely changing business models, approaches, and goals. The finance field is not an exception, on the contrary, it has adopted technologies so fast that it changed the traditional ways of the field. The Global FinTech Survey that was conducted in 2016 by “PwC” (PwC, 2016b) stated that a quarter of the respondents’ businesses could be at risk of being lost to FinTech companies within five years. Another survey by “PwC” in 2016 revealed that 81% of banking CEOs are concerned about the speed of technological change, more than any other industry sector (PwC, 2016a). Only a few years ago, businesses were afraid of technological impacts and considered innovation more as a risk and threats than new opportunity. However, the prompt transformation changed the perception. Today, the question is no longer whether technologies will change financial services, but which companies will adopt them best, meet consumer needs, and revolutionize traditional ways.

The complexity of the FinTech concept has many descriptions in the literature. Simply put, FinTech is defined as a “cross-disciplinary subject that combines finance, technology management, and innovation management” (Leong & Sung, 2018) or is also described as “technology-enabled innovation in the financial sector” (Kuzmanova, 2020). A more profound explanation of financial technology states that “FinTech is one of the driving disruptive innovations in the area of finance. In general, it seeks to redefine financial services, industry structures, provisions, and capture demand” (Lee et al., 2018). While analyzing the different views on FinTech, Gimpel et al. (2018) characterized FinTech as a digital technology usage (Internet, mobile computing, data analytics) to enable, innovate, or disrupt financial services.

The FinTech ecosystem helps to understand the competitive and collaborative dynamics of the sector. The main five elements: (1) FinTech startups, (2) government, (3) traditional financial institutions, (4) financial customers, and (5) technology developers symbiotically contribute to innovation, stimulate the economy, facilitate collaboration and competition in the financial industry, and ultimately benefit consumers in the financial industry (Lee & Shin, 2018).

The development and innovations created by FinTech provided the society with an extraordinary level of choice. The abundance of FinTech companies has greatly increased competition in the financial sector and it has become more important than ever to stand out and attract/win new customers. With the growing need to stand out and gain a competitive advantage, the importance and significance of advertising also increased.

1.2. Advertising Technologies (AdTech)

“Advertising technology (i.e. AdTech) is the term that commonly refers to all technologies, software, and services used to deliver and target online advertisements” (Worledge et al., 2019). With technological innovations, AdTech provides cutting-edge technologies that automate advertising processes, use the power of data, and reach global audiences. AdTech also eliminated the human factor from the advertising process and increased efficiency while reducing time and effort. Due to such benefits, AdTech has become a crucial component of the global economy (Bureau, 2018).

With digitalization and advertising technology, advertising shifted its focus from branding to targeting (Watkins, 2019). As the goal of advertising has become to target the right audience with a persuasive and relevant message rather than branding, AdTech has become a solution that effectively automates targeting and ad buying. The emergence of this AdTech targeting capability was enabled by the development of computer cookies (a technology that gathers information about website visitors) in 1993 (Kesan & Shah, 2004). This led AdTech to collect and aggregate consumer data on a large scale and its use in targeting that influences consumer behavior and attitudes.

All the mentioned technologies influenced the emergence of advertising solutions like programmatic advertising, CTV (connected television), mobile video advertising, in-app advertising and more. Cutting-edge technologies offered advantages and solutions that were previously unimaginable.

1.2.1. Programmatic advertising

One of the main and biggest parts of AdTech is programmatic advertising. Programmatic advertising has become a key element in most digital ad budgets due to its scale and efficiency in targeting and placing digital advertising (The Interactive Advertising Bureau, 2020). In 2019, more than 80% of Europe’s digital advertising spend was programmatic (IAB Europe, 2020). In 2020, programmatic ad revenues have increased by \$14.2 billion with an increase of 24.9% (PwC, 2021).

“Programmatic advertising is a nascent and rapidly growing phenomenon of information technology that reacts to and impacts consumers and their behavior” (Samuel et al., 2021). “It is a novel technique and a format of big data-driven online advertising. Programmatic advertising enables precise audience targeting and dynamic allocation of ad resources in real-time. In this way, programmatic advertising can guarantee that the right audience goes to the best-matched advertisers and improve the promotion performance of advertisers and market efficiency” (Li et al., 2017). Automating the advertising process and targeting precisely makes programmatic advertising the disruptor of the digital advertising field and shapes the AdTech landscape.

Uday Kiran and Thangaraja Arumugam noted that the definition of programmatic advertising is more

complex in nature due to the lack of applied scientific research studies (Uday Kiran & Arumugam, 2021). Programmatic advertising includes various AdTech tools (such as the supply-side platform (SSP), a demand-side platform (DSP), etc.) and data sets (such as the data management platform (DMP)) that all play a specific role in the automated buying and selling process. The complexity of programmatic advertising is the foundation for its effectiveness and accuracy. Based on data and algorithms, programmatic advertising offers precision in targeting, allows users to reach users across the full range of the Internet, determines the most effective ad placements, and enables real-time data-based optimization (Atkins, 2021).

1.3. FinTech advertising and the impact of AdTech

The advertising of financial companies has specific needs due to the highly volatile and competitive environment (Finance Magnates, 2020). Furthermore, changing customer behavior does not make advertising for FinTech companies easier. As users become more connected through social media, they have wide access to product/service reviews, opinions, and referrals, and they look for opportunities to improve their financial decisions. This makes today's consumers more demanding and less loyal (PwC, 2020).

Many advertising and marketing agencies already offer specific services for the FinTech sector. It just shows what a significantly challenging and competitive sector it is and how it increases the demand and need for effective FinTech advertising. Traditional advertising channels such as TV, radio, or any published advertisement do not satisfy the needs of FinTech companies. Even mass communication is believed to lose prominence. Sharma (2021) believes that "although the world of mass communication is still strong, it could face some critical difficulties in the future. With social media delivering viable solutions to virtually touching the end consumer, the relevance of mass communication as a one-size-fits-all will not work in the future." Therefore, AdTech gives the advertiser an option to choose the channels, format, and inventory that fulfill their exact needs, reaches their targeted audience, and ignore everyone else (Sharma, 2021).

It is already noticeable that FinTech companies are spending more on AdTech solutions that give access to a wide range of Internet users and offer hyper-personalized targeting. To keep up in the race for consumers, the financial sector has nearly tripled digital ad spending over the past 5 years (Insider, 2021). As the largest part of digital ads are purchased programmatically, financial companies also increase their spending on programmatic advertising (Naspe, 2016). In 2020, the share of the programmatic market increased only in a few industries and the financial sector was among them (Media Radar, 2021).

A great example of increasing programmatic ad spending in the FinTech sector is the investment app Robinhood. In 2021, Robinhood was listed as the sixth largest FinTech in the USA by Forbes (Haverstock, 2021). In 2020, Robinhood's programmatic spending was barely noticeable and

represented less than 1% of the total programmatic spending in the investment category. However, this year, Robinhood's programmatic spend is 19% of the total spend and is the top spending advertiser in its category.

The advent of programmatic advertising – the automation of the buying and selling of digital media – has created massive opportunities for increased efficiency and relevancy at every stage of the finance customer's journey (Quantcast, 2016). Its application on a wide range of digital channels including display, video, social and mobile (Rask, 2021), removes the limits on how potential customers are reached and engaged. Moreover, in a recent study, Uday Kiran and Arumugam (2021) highlighted how AdTech can play an essential role in effective advertising and listed the main aspects:

- Enhanced performance,
- Actionable data,
- Increased brand awareness,
- Relevant creative,
- Connected customer experience,
- Transparent system,
- Measuring true value (Uday Kiran & Arumugam, 2021).

AdTech is increasing its role with the booming use and improvement of smartphones. Statista's Digital Market Outlook predicts that by 2022, mobile advertising will account for more than 50% of ad spending and surpass desktop advertising (Statista, 2019). And while FinTech is mainly offering its services and products via mobile applications, AdTech benefits the industry significantly. Mobile accounted for nearly 70% of the total financial services ad spent in 2019. Compared to other industries, financial services over indexes on mobile spending and is second only to retail in terms of overall mobile spending. Mobile becomes the main channel for FinTech companies to reach potential consumers, specifically younger users.

Millennials are more digitally focused than previous generations. Identifying a meaningful and relevant way to connect with them through products they find interesting is a priority for financial companies. It is crucial to connect with users where they access, research, and use financial products (Mindstream Media Group, 2020). And as programmatic advertising gives the ability to use hyper-personalized targeting, the connectivity is much more accurate and effective.

The competitive environment of the FinTech sector requires knowledge and understanding of the FinTech customer profile which helps to understand expectations to satisfy the needs. This knowledge empowers FinTech businesses and together AdTech solutions. The overall combination in effective and accurate FinTech ad campaigns for a FinTech customers.

1.3.1. Customer-centricity in AdTech and FinTech

Customer-centricity has already become of prime importance, and the audience – is the king (Sharma, 2021). It is the accelerator for AdTech and an opportunity for FinTech.

With digitalization and advertising technology, advertising shifted its focus from branding to targeting (Watkins, 2019). As the goal of advertising has become to target the right audience with a persuasive and relevant message rather than branding, AdTech has become a solution that effectively automates targeting and ad buying.

Today, data on customer needs are described as one of the main priorities of FinTech (PwC, 2020). With technological innovations, businesses have access to information on the behavior of their consumers, which allows them to offer things that their audience needs and wants. This is why FinTech companies are encouraged to “build technology capabilities to become more intelligent about customer needs”. The collected information can be used to create new products, services, and features, can influence improvements in existing products and services, or can help to tailor accurate and customer behavior-based advertising.

The access to various information sources, social networks, and digital devices gave great power to the consumers; they became well equipped to search and receive satisfaction for all of their needs. This led to consumers becoming more demanding, expecting, and harder to satisfy.

Today, the customer appears in the spotlight and becomes the objective and driver of FinTech businesses. From an AdTech perspective, the customer is the main data source, which is the essence of advertising technology and its capabilities.

2. Methodology

This article aims to analyze the use of AdTech in FinTech companies in more depth and determine the main factors of AdTech usage and what are the effects on the advertising and overall performance of the FinTech company. In this research, three methods are included to determine the importance of the criteria of AdTech usage in FinTech companies. The experts’ survey, Analytic Hierarchy Process (AHP) and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) is used for evaluating and ranking the factors of AdTech that have the biggest influence on FinTech company’s advertising. Additionally, Kendall’s coefficient of concordance is calculated to measure the agreement between experts’ opinions/evaluations of AdTech factors.

Experts’ survey

A survey of experts approaches the specialized group of people in specific fields and asks them to provide an opinion on the research matter. The experts’ survey helps to identify, summarize, and analyze the evaluation of experts on a specific research object.

Kendall’s coefficient of concordance (W)

The coefficient of concordance by Kendall or Kendall’s *W* is a method for measuring an agreement among experts’ evaluations/rankings.

Kendall’s *W* is calculated by:

$$W = \frac{12S}{m^2(n^3 - n)}, \tag{1}$$

where

$$S = \sum_{i=1}^n (R_i - \bar{R})^2. \tag{2}$$

Kendall’s *W* can vary from 0 to 1, where 0 means no agreement and 1 complete agreement (Kendall, 1975).

Analytic Hierarchy Process (AHP)

The AHP method is a multicriteria method of analysis experts’ to systematically rank different options against each other based on importance (Saaty, 1987). “The method was developed in the 1970s by Saaty and became widely used in decision making for complex scenarios, where people work together to make decisions when human perceptions, judgments, and consequences have long-term repercussions” (Bhushan & Rai, 2004).

Firstly, the AHP method decomposes the problem into a hierarchy of criteria. Then, pairwise comparisons for all criteria are made to systematically assess the alternatives. The comparison can be based on concrete data from alternative sources or human judgments (Saaty, 2008).

The structure of the AHP method includes the following:

1. Identification of the decision, options, and criteria.
2. Conduction of pairwise comparisons.
3. Calculation of the importance weight of each criterion.
4. Verification of the consistency of judgments by determining the Consistency Index (CI) and the Consistency Ratio (CR), which can be calculated by Equation (3).

$$CI = \frac{\lambda - n}{n - 1}, \text{ where } \lambda = \frac{Cv_{ij}}{W_{ij}}. \tag{3}$$

Consistency ratio (CR) is defined by Equation (4):

$$CR = \frac{CI}{RI}, \tag{4}$$

where, (RI) is a random consistency index defined in Table 1.

Table 1. Random consistency index

<i>n</i>	<i>RI</i>
1	0
2	0
3	0.58
4	0.90
5	1.12
6	1.24
7	1.34
8	1.41
9	1.45
10	1.49

A value of CR less than 0.10 is generally acceptable; otherwise, the pair-wise comparisons should be revised to reduce incoherence.

Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS)

TOPSIS is a multiple-criterion decision-making method that was first introduced by Yoon and Hwang in 1992. The basis of TOPSIS is that “the chosen alternative should have the shortest distance from the ideal solution that maximizes the benefit and minimizes the total cost” (Sun, 2010).

The TOPSIS method is used and is based on the following steps (Rahim et al., 2018):

1. Making a normalized decision matrix (n_{ij}):

$$n_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}}. \quad (5)$$

2. Calculating the weighted normalized decision matrix (v_{ij}):

$$v_{ij} = w_j n_{ij} \text{ for } i = 1, \dots, m; j = 1, \dots, n. \quad (6)$$

3. Determining the ideal solution matrix of positive (V^+) and negative (V^-) ideal solutions:

$$V^+ = (v_1^+, v_2^+, \dots, v_n^+) = \left(\left(\max_i v_{ij} \mid j \in I \right), \left(\min_i v_{ij} \mid j \in J \right) \right); \quad (7)$$

$$V^- = (v_1^-, v_2^-, \dots, v_n^-) = \left(\left(\min_i v_{ij} \mid j \in I \right), \left(\max_i v_{ij} \mid j \in J \right) \right). \quad (8)$$

4. Calculating the distance to ideal positive (S_i^+) and negative (S_i^-) solutions:

$$S_i^+ = \sqrt{\sum_{j=1}^n (v_{ij} - v_i^+)^2}, \quad i = 1, 2, \dots, m, \quad (9)$$

$$S_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - v_i^-)^2}, \quad i = 1, 2, \dots, m. \quad (10)$$

5. Calculating the positive ideal solution (P_i).

$$P_i = \frac{S_i^-}{S_i^- + S_i^+}. \quad (11)$$

6. Ranking the alternative.

The mentioned methods will help to determine which factors of AdTech usage have the most influence on the FinTech companies. The final ranking provided by the TOPSIS method of the factors will be the result of this research.

3. Research results

In this research eight factors have been analyzed based on the literature and experts evaluations, to determine which factor has the biggest influence on AdTech usage in FinTech companies. The evaluations were collected via a questionnaire on the internet where every expert had to evaluate each factor by importance (8 as most important and 1 as least important).

The factors in the experts' survey for the evaluation included:

1. Targeting possibilities – the ability to define the audience for effective and smart ad targeting based on various criteria such as location, gender, behavior, interest, and more.
2. Actionable data (reporting & insights) – the information of the users and performance that can be used at strategic level. Actionable data provide data-informed decisions and help to determine what actions need to be taken.
3. Enhanced performance – the increased efficiency or profitability of an investment in AdTech which in this case is calculated by the return on investment (ROI).
4. Transparency – open access to promotional activities and various data for building the credibility and trustworthiness of AdTech.
5. Cost-efficiency & pricing – the ratio of AdTech usage results to total money spent on reaching those results.
6. Increased brand awareness – increased brand recognition by the users.
7. User acquisition – the process of gaining new customers and expanding the user base.
8. In-app advertising – the ability to monetize app inventory and display ads in it.

Five experts were chosen for this research – advertising/marketing specialists in FinTech companies. All experts are working in the biggest FinTech companies in Lithuania and are heads of advertising/marketing departments (CMOs). Two questioned experts were from consumer banking, the other two from lending type of FinTech companies, and one from the blockchain, cryptocurrency type of company. All experts were asked to specify their experience in advertising and FinTech fields: the experience in advertising field varies from 4 to 15 years and in FinTech from 3 to 8 years. The indicated experience and positions verify the competence of all experts.

After analyzing the competence of all 5 experts, the Kendall's coefficient of concordance (W) was calculated. The final value of W was 0.30 which means that there is a fair agreement across all experts.

Second, the AHP method was conducted to determine the weight of each factor. For the AHP method, the average evaluation from all experts was taken, meaning that all 5 experts had to evaluate which factor is more superior to another, 1 meaning that both factors are equally important, and 9 meaning that one factor is strongly superior over another.

The further results from the conducted AHP method revealed that actionable data (reporting & insights) had the highest weight of 0.22 while in-app advertising had the lowest weight of 0.04 (Table 2).

Table 2. Weights of the factors

Factor	Weight
Targeting possibilities	0.16
Actionable data (reporting & insights)	0.22
Enhanced performance (ROI)	0.13
Transparency	0.09
Cost-efficiency & pricing	0.12
Increased brand awareness	0.14
User acquisition	0.12
In-app advertising	0.04

The consistency ratio was also calculated to check if the calculated weights can be used. The value of the calculated consistency ratio was 0.04, which is lower than 0.10, and that means that the weights can be used for further calculations.

With the help of the TOPSIS method, the P_i value for each factor was calculated. The P_i value shows the relative closeness to the positive ideal solution: the lower the P_i value, the lower the rank. As results from Table 3 show, actionable data (reporting & insights) is ranked 1st which means that this factor has the most influence when choosing AdTech in FinTech companies.

Table 3. Rankings of the factors

Factor	P_i	Rank
Targeting possibilities	0.495	5
Actionable Data (reporting & insights)	0.925	1
Enhanced Performance	0.636	2
Transparency	0.331	8
Cost-efficiency & pricing	0.537	3
Increased Brand Awareness	0.525	4
User acquisition	0.445	6
In-app advertising	0.420	7

Based on the results, the most important factors influencing the AdTech usage in FinTech companies are:

1. Actionable Data (reporting & insights)
2. Enhanced Performance
3. Cost-efficiency & pricing

The results confirm that AdTech usage in FinTech companies brings valuable insights, enhances performance, and is easily used because of its pricing efficiency.

The results of this article benefit further analysis of AdTech usage, its efficiency, and its influence on FinTech companies by giving the basis the most important AdTech factors that have the highest influence on FinTech advertising processes.

Conclusions

FinTech is described as a cross-disciplinary industry that covers disruptive and technology-enabled innovations in the financial sector in the literature on financial technology. While transforming the traditional ways of the financial field, FinTech also created new financial solutions. Alongside, FinTech builds an ecosystem of a competitive and collaborative environment that ultimately benefits consumers in the financial industry. While consumers are the source of revenue in this ecosystem, it is important to learn about their needs and behavior to offer the relevant product or service.

Advertising technology disrupted the advertising industry with technologies that automated targeting and ad buying. The main solution of AdTech – programmatic advertising – introduced personalized, data-based advertising. Programmatic advertising became the main form of advertising buying with increased effectiveness and precision.

The advertising of financial companies has specific needs due to the highly volatile and competitive environment. With this environment and demanding consumers, FinTech companies started to invest more in AdTech. It gives access to a wide range of Internet users and offers hyper-personalized targeting which helps to keep up in the race for consumers. While the mobile environment is becoming the main channel for FinTech companies to reach their users, programmatic advertising is the main form of ad buying.

Customer-centricity already become of prime importance and the audience is now the king. From an AdTech perspective, the customer is the main data source, which is the essence of advertising technology and its capabilities.

The methodology of the article analyzed the usage of AdTech in the FinTech sector in depth. The experts' survey, TOPSIS and AHP techniques evaluated and determined the factors of AdTech use in the FinTech sector and the effect on advertising performance.

The research results showed that the most important factors influencing AdTech usage in FinTech companies are actionable data (reporting & insights), enhanced performance and cost efficiency & pricing, while transparency is least important factor.

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