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Electronic Sales Partnership Network Management Information System Model In Multi-Level Marketing

Zafer AYAZ[1] Tolga GÜYER[2]

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Abstract

Advertising is a commercial activity that has found its place in our lives since the earliest known periods of trade. The impact of developing technologies has led to changes in advertising techniques and media. An essential part of trade has recently moved online. Similarly, advertising activities have also moved online. Advertising activities to be carried out online have superior and weak sides. One of the marketing methods adopted and accepted by businesses today is multi-level marketing. Another working method adopted by companies is the sales revenue partnership system. Within the scope of our research, we have put forward a working model that brings together the superior aspects of multi-level marketing and sales revenue partnership system organization. On the one hand, it aims to create a management information system model that accepts the advertising campaigns organized by advertisers and acts as an affiliate system. On the other hand, it aims to create a management information system model for promoting these campaigns quickly and reliably on the internet through publishers who have come together with multi-level marketing organizations. The question "How can a management information system be designed for this type of working model?" was adopted as the research's main problem, and a literature review was conducted in this direction. Leading global and local companies adopting both working models were analyzed in terms of structure and terms used. With the information gathered, an application software based on the theoretical model was developed and tested for all stakeholders and workflows. In cases where the objectives of the theoretical model could not be achieved, the model was revised, and workflow problems were eliminated. After the successful operation of the application software, concrete results were presented on how this new working model should be managed as a management information system. Suggestions are given for the superior aspects of the new model and the points that may create vulnerabilities.

Keywords: Multi-Level Marketing, Affiliate Marketing, Management Information System Model

Çok Katlı Pazarlamada Elektronik Satış Ortaklığı Ağı Yönetim Bilgi Sistemi Modeli

Öz

Reklamcılık, ticaretin bilinen en eski dönemlerinden bu yana hayatımızda kendine yer bulan bir ticari faaliyettir. Gelişen teknolojilerin etkisi reklamcılık teknikleri ve mecraları değişimine neden olmuştur. Ticarette önemli bir kısım yakın tarihte çevrimiçi ortama taşınmıştır. Benzer şekilde reklamcılık faaliyetleri de çevrimiçi ortama taşınmıştır. Çevrimiçi ortamda yapılacak reklamcılık faaliyetlerinin üstün ve zayıf yanları bulunmaktadır. Günümüzde işletmelerce benimsenmiş ve kabul görmüş pazarlama yöntemlerinden birisi de çok katlı pazarlamadır. İşletmelerin benimsediği başka bir çalışma yöntemi de satış geliri ortaklığı sistemidir. Araştırmamız kapsamında çok katlı pazarlama ve satış geliri ortaklığı sistemi örgütlenmesinin üstün yanlarını bir araya getiren bir çalışma modelinin ortaya konulması için çalışılmıştır. Bir taraftan reklam verenlerin düzenledikleri reklam kampanyalarını kabul eden ve satış geliri ortaklığı sistemi gibi davranan, diğer taraftan çok katlı pazarlama örgütlenmesiyle bir araya gelmiş yayıncılar aracılığıyla bu kampanyaların hızlı ve güvenilir şekilde internet üzerinden tanıtılması için bir yönetim bilgi sistemi modeli oluşturması hedeflenmiştir. "Bu tür çalışma modeline yönelik bir yönetim bilgi sistemi nasıl kurgulanır?" sorusu araştırmanın ana problemi olarak benimsenmiş olup bu yönde alan yazın taraması yapılmıştır. Her iki çalışma modelini benimseyen küresel ve yerel ölçekli sektöründe önde gelen firmalar yapılanma ve kullanılan terimler yönünden incelenmiştir. Derlenen bilgilerle öngörülen teorik modele dayalı bir uygulama yazılımı geliştirilmiş, tüm paydaşlar ve iş akışları yönünden test edilmiştir. Teorik model ile hedeflenen amaçlara ulaşılamayan durumlarda model üzerinde revizyon yapılarak iş akışı sorunları giderilmiştir. Uygulama yazılımının başarıyla çalıştırılmasının ardından bu yeni çalışma modelinin yönetim bilgi sistemi olarak nasıl yönetilmesi gerektiğine dair somut sonuçlar ortaya konulmuştur. Yeni modelin üstün yanları, ayrıca zafiyet oluşturabilecek noktaları için öneriler sunulmuştur.

Anahtar Kelimeler: Çok katlı pazarlama, satış ortaklığı pazarlaması, yönetim bilgi sistemi modeli

[1] Asst.Prof., Gazi University, Faculty of Applied Sciences, Department of Management Information Systems, Ankara/Turkey, zafer@gazi.edu.tr, ORCID: 0000-0001-7667-7921
[2] Prof.Dr., Gazi University, Gazi Faculty of Education, Departments of Computer and Instructional Technologies Education, Ankara/Turkey, guyer@gazi.edu.tr, ORCID: 0000-0001-9175-5043

INTRODUCTION

One of the main problems that any company should solve to implement its advertising strategy is finding an optimal distribution of advertising costs over the planning period under a limited advertising budget (Lutoshkin & Yamaltdinova, 2018).

It has been observed throughout history that developing technology has also changed mass communication environments. The earliest examples of advertising activity were found in a flyer printed on papyrus 3000 years ago. Guttenberg's invention of the first printing press in the 14th century gave a great impetus to the development of modern print advertising. With the invention of radio and television in the 19th century, there was a transition to audio and visual advertising. As the last example, the internet, which started in 2000, took place in our lives as a new medium after television and reached 400 million users in a short time (William et al., 2009).

The main challenge in e-commerce is reaching the right audience with the right messages in a vast online environment. Many businesses struggle with this issue as the internet expands, with billions of websites and users. In order to overcome this challenge, some companies opt for a Multi-Level Marketing approach, a more advanced form of direct marketing. They create a marketing team composed of individuals who are not directly employed by the company but are consumers of the products or services. This allows the company to sell its offerings to potential customers while avoiding the costs of hiring additional staff. Another approach is Affiliate Marketing, where businesses outsource their promotional efforts to affiliates who are incentivized with a commission or fixed income. The affiliate takes on the risk and finances the necessary expenses for promotional activities, receiving the agreed-upon commission when successful. This allows the company to minimize expenditure risks (Jurisova, 2013).

Within the scope of our research, we tried to use the best aspects of both systems by carrying out multi-level marketing and affiliate marketing operations together. In this context, a capable management information system (MIS) model was put forward, and the necessary improvements were made by observing the operation of this model in the test environment. The strengths and weaknesses of the information system model obtained were revealed.

1. MATERIAL AND METHOD

Within the scope of our research, the following issues have been identified as the primary research concepts.

Just as the affiliate marketing system has advantages, multi-level marketing has advantages and weaknesses. With the management information system model put forward at the end of our research, including internet advertising to be evaluated within the Promotion activity group, which is one of the "4P" elements of the marketing mix;

- Revealing the model of the Management Information System as a marketing network that can combine the advantages of affiliate marketing and multi-level marketing working methods,
- Determining the stakeholders of the system, revealing their powers and limits,
- Predicting and designing business process analysis,
- Designing a software model,
- It aims to make the designed software model work by coding it with a web-based software language, documenting the entire development phase, and sharing the results and predictions obtained.

On the one hand, what should be the "Management Information System (MIS)" model that can accept internet advertising offers for goods and services to be promoted for a specific commission/fee with the affiliate marketing system? and on the other hand, it can bring together a qualified marketing team organized with a multi-level marketing structure that comes together to promote these offers? The question has been determined as the main problem to be solved in our research.

The sub-problems in our research are:

- How can affiliate agreements be accepted and implemented online (electronic)?
- How can work and transactions between multi-level marketing team members organized under a specific compensation plan be managed online?
- What should be the follow-up of the remuneration earned from the work done after the affiliate offers accepted into the system are transferred to the marketing team?
- What should an online management information system look like to handle both stakeholders and their relationships?

- What should be the ethical and legal restrictions in commercial activities?
- Will there be legal gaps in the implementation of the working model put forward? What are the uncontrolled points that stakeholders can exploit? How can the problems of abuse in these matters be resolved?

Has been determined.

In our research, studies were carried out within three main phases. In the first phase of the study, academic studies related to the subject were compiled with a literature review, leading enterprises, sectoral reports, and legal regulations were examined, and critical issues that will be the basis of the model to be proposed were determined.

In the second phase of the study, the theoretical software model, which was predicted by using the information obtained from the first phase of research, was turned into a working application by following the Waterfall Software Development Process, which is one of the modern software development processes management.

In the third and last phase, practical tests of each workflow were carried out on the application that was made operational according to affiliate marketing and multi-level marketing business processes. The working version of the developed software was examined, and the test results obtained were reported.

Our research is considered important for the following reasons:

1. The model to be put forward with our research is the first Turkish academic study in its field, with the proposal of a new-generation network marketing model based on internet advertising, which is the synthesis of affiliate marketing and multi-level marketing techniques.
2. Since advertising expenses are a factor that directly affects net profit negatively, the medium of the advertisement should be preferred and the cost dimension of the campaign to be carried out while marketing goods/services are an expenditure item that should be kept under absolute control. In the management information system model working system revealed by our research, an advertising campaign's net cost and effectiveness are known in advance, and complete control over the process can be achieved by instant publication or withdrawal.

3. With the model and application obtained at the end of the study, our research has become a detailed reference source for entrepreneurs who want to invest in this field, in which every element related to the subject is meticulously handled in a way that answers all questions from the beginning to the end of the process.
4. Open-source software was used to adapt the model to the software. For this reason, when entrepreneurs want to implement this model, they can achieve their goals without incurring any extra licenses and similar fees.
5. In parallel with the developments in internet technology, the legal negativities that may occur in the future in advertising and electronic commerce activities that have become widespread on the internet have been identified and presented together with solution suggestions.

2. RELATED LITERATURE

In the literature review conducted in our research, we started with marketing and advertising, which are the most inclusive concepts. Information about internet advertising, sales revenue, affiliate marketing, and multi-level marketing techniques, which are sub-heading topics, were compiled. With the help of the information compiled, the design and coding process was designed in the second stage of the research, and the findings were reported.

2.1. Advertising

The term advertising originates from Latin and derives from the verb "clâmere" meaning "to call". Advertising is an activity that helps create new needs by pleasingly promoting goods and services (Babacan, 2005). Advertising is a type of persuasive communication carried out by sponsors in various media whose costs are covered by the sponsors (William & Weigold, 2009). Advertising can be defined as a tool that is generally realized through broadcast media and directs viewers to purchase (Quadir & Akaroğlu, 2009).

An enterprise needs to advertise in order to find a presence in the market. The benefits of advertising include ease of entry into the market, productivity sustainability, capital and investment evaluation, and venture support (Karaçor, 2007). Individuals' attitudes towards advertising are also important because this influences outcomes that impact the advertising industry (Öztürk, 2014). Advertisers start their business by sending messages and creating incentives to consumers, and if consumers like it, they repeat the business. However, if consumers do not accept and like them, they try more innovative, attention-grabbing, and

acceptable approaches. Advertising is part of marketing strategies and, when used successfully, can help businesses grow (Schultz, 2016).

The goals of the ads can be generally considered under three headings. These; "Informative Advertisement", "Persuasive Advertisement" and "Reminder Advertisement". Informational advertising provides information about a new product or service, suggests new use cases, informs about price changes, explains products, provides information about service opportunities, corrects false impressions, reduces consumer fears, and builds corporate/brand image. In contrast, persuasive advertising creates brand preference, ensures brand usage, changes consumer attitudes, and persuades consumers to make immediate purchases or sales calls. Reminder advertising, on the other hand, aims to maintain a high level of awareness by reminding consumers that the product may be needed shortly, reminding them where it can be purchased, or providing memorability about the brand's products even in the off-season (Kotler & Armstrong, 2006).

All kinds of advertising and activities can directly or indirectly serve a commercial purpose. Within the borders of Turkey, 54 and 63 are specified as the Fourth Part in the Turkish Commercial Code No. 6102 regarding this issue. It is regulated under the title of Unfair Competition between articles and is legally binding. Articles 54-63 of Law No. 6102 regulate which works and transactions put forward within the scope of a commercial activity to be carried out will be considered unfair competition and what the penalties and sanctions will be (T.C. Law No. 6102, 2019).

2.2. Internet Advertising

The Internet is a vast network connecting many computer networks worldwide. This allows people to communicate without distance limitations (Vural & Öz, 2007). The Internet can be used like traditional media, such as broadband broadcasts, radio, and newspapers (Cho & Cheon, 2004). Compared to television and radio, the spread of the Internet has been faster (Çakır, 2004). Internet advertising has also become an essential part of today's marketing communication. Internet and traditional media advertisements are used in marketing communication (Vural & Öz, 2007).

Since 1994, banner ads have become the Internet's most common form of advertising. The Internet merged with other mass media to become a hybrid (Aktaş, 2010). The Internet

advertising industry has experienced tremendous growth. According to the Interactive Advertising Bureau, 2003 was the most successful year in the association's history, with full-year revenue reaching $7.3 billion (Robinson et al., 2007). In the United States, more than 1 trillion internet ads are shown each quarter by nearly 300 different advertisers. The advertising market has grown from $17.7 billion in 2013 to $33.4 billion in 2017 and is expected to increase by 53%. The Internet has significantly impacted direct marketing by enabling electronic commerce using communication and information technology components (Tosun, 2004).

Internet advertising involves more than just placing a website on the Internet. Advertising aims to attract potential customers to the website and is an essential source of revenue for content providers (Norouzi, 2017). CPM and CPA are two different pricing strategies. In CPM, the website owner is comfortable because there is no risk of clicks, but in CPA, all the risk is on the website owner. For this reason, hybrid pricing models have been developed, and a pricing system that combines optimal performance action and impression time has been introduced. In this way, the risk of the advertising campaign is shared by both the advertiser and the publisher's website owner (Kumar, 2016).

2.3. Affiliate Marketing

Affiliate marketing is emerging as a significant avenue for enhancing customer acquisition. Merchants can establish affiliate networks to direct customers to their websites, covering areas like products, customer loyalty, and consulting. This approach combines personal selling with electronic marketing technology, adopting a performance-based model where advertisers only pay for realized sales. According to The Economist, live online tracking minimizes risks associated with affiliate-driven sales, earning affiliate marketing the moniker of "the holy grail of online advertising" (Edelman & Brandi, 2015).

In addition, internet users can also leverage affiliate marketing to create networks for customers they refer to their websites, earning commissions from merchants for each successful referral. Different payment structures, such as pay-per-conversion and lead generation, provide alternatives to performance-based payments, reducing commission payments and mitigating the risk of compensating non-buying members (Libai et al., 2003).

Companies, known as "Merchants," utilize online advertising in the affiliate marketing system to sell products. Affiliates or publishers serve as intermediaries, promoting campaign

links to website visitors. Diverse network structures, such as "merchant-merchant" and "affiliate/publisher-publisher/distributor," facilitate interactions. Major platforms like Amazon.com, eBay, and Apple operate within these structures. Merchants may select specific network structures to tailor their approach and reach target markets more effectively. Traditionally grappling with uncertainties in traditional advertising campaigns, marketers find relief in the performance-based affiliate marketing model, where payments are made only upon completed sales. Live online tracking further ensures transparency and reduces risks for advertisers, resonating with The Economist's depiction of affiliate marketing as "the holy door of online advertising" (Edelman & Brandi, 2015).

Tools tracking redirected visitors commonly use cookies to store information on the visitor's computer. However, specific internet browsers may block cookie recording for security reasons, potentially impacting affiliate revenue. Alternative measurement methods must be employed when cookies are not feasible (Bandyopadhyay et al., 2009).

Merchants enter affiliate networks to enhance profit rates and reach internet users cost-effectively. They offer goods and services; affiliates earn commissions through the affiliate program. Affiliates, also known as publishers, can sign up for specific programs and promote products online using various formats like banners and text ads. Each affiliate program has a unique tracking link for registration and monitoring purposes (Jurisova, 2013).

Affiliates, or publishers, refer to individuals or websites that share links with their visitors. For instance, a blog might feature a book link to Amazon, and a travel guide site may provide a link to Trivago for hotel options. In the best-case scenario, these affiliate links contribute to the content's usefulness, and the affiliate earns a commission from the merchant (Norouzi, 2017).

"***Affiliate Network***" refers to a web server and infrastructure facilitating transactions related to affiliate programs. This network involves merchants and affiliates, and its value is determined by the active participation of affiliates rather than the sheer number of affiliate programs. The effectiveness of the network lies in its ability to work actively, emphasizing quality over quantity (Jurisova, 2013).

Many significant network structures and small and standard-scale initiatives exist in network marketing. LinkShare, Commission Junction, and Performics are the top three

companies. Another player expected to take fourth place, Be Free, was recently acquired by Commission Junction. These first three major network structures have many permanent and famous advertisers. Examples include Target, Macy's, Wal-Mart, Jos A. Bank, Sierra Trading Post, Orvis, The Sharper Image, KB Toys, Tweeter, Circuit City, Best Buy, Brookstone, and Linens 'n' Things (Duffy, 2005).

Networks establish connections between the merchant and affiliated companies. Many merchants rely on these network administrations for monitoring, management, and accounting purposes. Networks also offer adequate consolidated payments to various revenue partner organizations every month (Norouzi, 2017).

Payments made to contributions made by content providers in an affiliate system are evaluated under three main headings. These:

Pay Per Sale (PPS) is the commission amount stipulated for each visitor's purchase action. The definition of Cost Per Sale (CPS) is also used for this process. It is a low-risk, high-revenue revenue-sharing model that can be used to attract new customers. One of the reasons why marketers highly prefer the CPS model is that commission payments are made only if the sale is made (Jurisova, 2013).

Pay-Per-Lead (PPL) is the commission paid for each particular non-sales action the visitor performs (for example, subscribing to a newsletter, participating in a survey, etc.). The definition of pay-per-action (PPA) is also preferred for trading. Because content providers have the most profound knowledge of their customers and know which ads are most effective, this is an easy way to address banner blindness. In this method, the affiliate's visitors are expected to complete the designated action, and commission payment is made. A low and fixed fee is usually paid. If the customer makes a purchase afterward, the customer is acquired at a lower cost than the CPS model (Jurisova, 2013).

Pay-per-click (PPC) is the fixed commission paid for each visitor's referral to the advertiser's website by clicking on the links provided by the content provider (Jurisova, 2013).

2.4. Multi-Level Marketing

Multi-level marketing enables participants to generate retail income by selling goods and services, creating a sales organization, and receiving commissions from the sales of

registered members. This marketing method is an improved form of direct selling and reaches customers directly using face-to-face communication and word-of-mouth marketing. Customers communicate with people around them to share their thoughts about products or services and use a technique called referral marketing. In multi-level marketing, salespeople may be present in places not considered retail outlets to promote, recommend, and broker sales of goods and services. This method can be practiced at home, in the workplace, on the street, or in social settings. In addition, multi-level marketing encompasses direct marketing, also called store-free retailing (Taşoğlu, 2012).

Distributors perform all the functions that retailers perform in traditional marketing processes. Distributors are not company employees, nor do they have bosses or subordinates. Distributors in multi-level marketing systems manage their businesses like independent business owners. When a distributor creates a ***sub-team***, they recruit new distributors and provide them with training guidance. This way, distributors can build a sales organization or group, generating incremental revenue. However, generating revenue by recruiting distributors into the system is impossible in multilevel marketing. In order to make a profit, other distributors in the distributors' downlines need to sell and generate revenue from the system. This type of marketing is not sustainable because it is not ethical and production-oriented (Taşoğlu, 2012).

Top Line-Sponsor is the name given to a distributor who brings a distributor into the system and another distributor who has been in the system before. These people are more experienced than the new members because they have been in the system before. Sub-team members can mentor, train, assist, motivate, and engage recruits in activities to keep them working (Taşoğlu, 2012).

According to the ***earning plan***, downline members can receive a share of the commissions of the members they bring into the system. Multi-level marketing allows distributors to earn "multiple incomes". This is a system of increasing revenues, where economic value grows exponentially instead of fixed revenues. In this system, distributors can earn royalty income (Taşoğlu, 2012). Multi-level marketing allows publishers/distributors (distributors) to generate "multi-revenue". Instead of arithmetically making one person work harder, distributors can create exponential value and earn profit by teaching others what they do, organizing sales, and establishing a sales network. While a person can work an average of

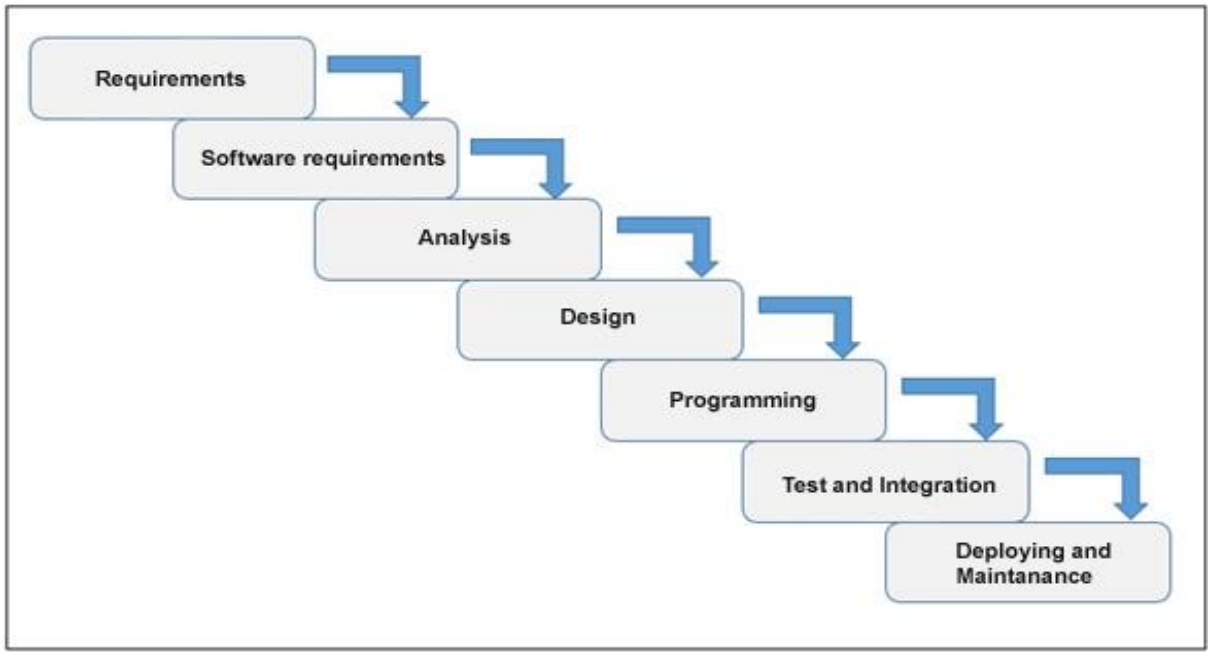
8-10 hours a day, the multi-level marketing distributor will work 104 to 130 hours a day if the three distributors he recruits have three distributors each. Over time, these structures have matured and have been accepted as four valid structures today. These are grouped as Unilevel, Forced matrix, Binary, and StairStep breakaway. It is a form of structuring that regulates the amount of commission that a distributor can earn if he takes the action expected by the campaign organizer (a sale, a lead, customer acquisition, etc.), as well as how much of this commission will be given to the upstream distributors who bring this distributor into the system. The earning plan is called single level, forced matrix, dual system, break system, etc. In a single-level system, a distributor can create his sub-team from one level and an unlimited number of members laterally. In a binary system, each distributor can set up a team of up to two sub-distributors at a sub-level. In the forcing matrix system, vertical and horizontal boundaries can be determined. For example, in the 2x3 matrix system, a structure is envisaged in which two levels and a maximum of 3 members are allowed at each level (Taşoğlu, 2008).

The MIS model proposed within the scope of our research is designed to support the earning plans given above. The system stakeholder, equipped with managerial powers, can define the earning plan on which the MIS will work at the initial setup. Thanks to this flexibility, it can be ensured that MIS works with a sector-specific benefit plan to be used during the installation phase.

3. DESIGN AND DEVELOPING MIS MODEL

In the design and development phase of the MIS model, which was put forward as a result of our research, the Waterfall (Çağlayan) Software Development process, which is one of the traditional software development processes, was followed. The Waterfall Model is the oldest and most fundamental model of software engineering. In the early days, when the code-fix type approach was used, direct requirements-oriented work was done without planning and design phases. However, it was realized that these approaches were inadequate for complex and large-scale software, and steps were taken to define the software engineering concept and standards at the Software Engineering Congress held in Germany in 1968. Dr. Winston Royce published a paper describing the Waterfall Model shortly after this congress. The waterfall model presents a workflow that describes activities in successive stages. The workflow explaining the execution of activities in successive phases in the waterfall model is presented in Figure 1 (Gencer & Kayacan, 2017).

Figure 1. Phases applied in the Cascade (Waterfall) model



In this process, the original, respectively;

- Requirements
- Analysis
- Design
- Work flow charts
- Coding (Implementation)
- Testing and Integration
- Deployment, Maintenance, and Maintenance

A study was carried out under the main headings.

3.1. Requirements

This heading discusses system and software requirements as the first stage of the cascade-waterfall model process to turn the MIS model into software.

One of the aims of our study is to design the MIS model and to turn this model into a working web software example. The general requirements expected from the MIS model and software application proposed in this study are listed below:

1. Putting forward the MIS model and implementing a web-based application software that works with all its features through this model,
2. Using MySQL infrastructure, which is an open source and relational database environment, for the database design that will be needed during the application software preparation phase,
3. Using the open-source code PHP web programming language as the software development environment needed during the coding phase,
4. Using PHP Data Objects – PDO for the database abstraction infrastructure that will provide ease of transition in case the PHP software language needs to switch to another database from MySQL in the future for database access,
5. Overcoming standardization and compatibility problems during the HTML creation phase, making use of javascript and CSS libraries to facilitate some repetitive processes,
6. Preferring Turkish definitions in all fixed and variable names that will be needed in the design and implementation processes of software development,
7. Making appropriate interface and authorization definitions for all stakeholders (administrator and user roles) who will use MIS software,
8. In the implementation of the MIS model to be created, planning the web software based on 24/7 operability, planning it in a way that requires minor maintenance in terms of operation and maintenance, planning for the possible access devices in terms of efficiency (desktop computer, tablet pc, smartphone, etc.), ensuring that all necessary maintenance, backup, backup, and backup features can be made through the web software,
9. At the end of the software development process, testing the operability of all parts of the information system and evaluating the usability status,
10. As a result of this analysis, if any, the deficiencies are eliminated and made ready for distribution,
11. To make the documentation process clear and concise in all processes and to make it a reference source in Turkish.

In addition to all these listed requirements, the following sub-requirements are needed:

Url - It is the internet access address of the MIS system. It starts with the word www, a DNS – Domain Name System address to be purchased by paying an annual fee to DNS service

providers by the work to be done and the field of activity. The address taken for this study is the URL address preferred, www.katiltanitkazan.com, for the application of our MIS model, which is derived from the words KATIL-TANIT-KAZAN (JOIN-PROMOTE-WIN)

Hosting **-** Hosting is a hosting server that allows the database and web interface programs to work together and is suitable for the programming language used for the interface. It is an infrastructure suitable for running PHP and MySQL, the database of choice used in our research. It should have database management interfaces that allow the first installation of the database, emergency interventions that may occur when necessary, and changing the table and data structures in case of future changes in the database system.

Database- It is a data storage system that ensures that the system stores the data at the bottom of the MIS. Within the scope of our study, MySQL, a source relational database system, was preferred. However, since the database design will use the most basic and standard SQL (Structured Query Language) structure, another relational database system can be used if preferred.

Database abstraction- It is foreseen that it will be beneficial to use the PDO (PHP Database Objects) infrastructure used in database abstraction as a feature of the PHP programming language while making a database connection through the PHP programming environment. When a database connection is made with PDO and the standards are followed using database query commands, the transition to any database other than MySQL can be achieved by changing only one parameter in the connection settings. Thanks to this flexibility, entrepreneurs who benefit from our research can use any PDO-supported relational database instead of MySQL at any time with a straightforward process without being tied to a single database.

The needs of MIS on the software side are foreseen as follows:

- MIS should be fully accessible on the web and accessible via the internet on a desktop computer or any mobile device with an internet browser feature.
- Users should be able to access the system through interfaces specially prepared for roles and with the user code and passwords allocated to them.

- Due to the life cycle of the software, in cases where other software developers require plug-ins in the future, code snippets should be grouped functionally separately and structured as php files in a way that allows easy intervention to be found.
- When naming PHP files, the design should use the coding system as module-function.php.
- It should be coded as common-function.php for standard functions and as common-definitions.php for common definitions.
- When creating sub-functions at each stage in programming, short but descriptive names will be preferred in a way that makes sense and explains at a glance what the function does. The first word of each function should be encoded with a lowercase letter, the first letter of the following words should be encoded with a lowercase letter, and the others should be lowercase.
- Within the software modules, easy-to-use and informative reporting systems should be established for the relevant stakeholders.

In each function and at the beginning of the other code snippets, a brief description of the code fragment should be defined as a description of the inputs and outputs.

3.2. Analysis

A wide range of resources were reviewed while developing an MIS model, constituting the research's essence and primary purpose. The operations to be carried out in the MIS model are fundamentally related to the concept of advertising and advertising, as it is a promotional activity within the scope of Promotion, which is one of the components of the marketing mix accepted as 4P in academic sources. For this reason, in the first part of the research, the sources related to advertising and advertising were scanned and examined in all aspects. In the second part of the research, the concept of internet advertising has been examined in all aspects to form the basis of internet advertising operations planned to be used on MIS by going into a little more detail.

The concept of multi-level marketing is examined in the next part, and foreign and domestic sample companies that adopt this method are examined. These sample business structures, the terms used, the policies and rules applied were investigated, and the items used in our study were determined.

Affiliate marketing, the last stage of academic resource scanning, has also been examined in detail, and exemplary foreign and domestic businesses working by adopting this method have been discussed. The organizational forms, working methods, and concepts these enterprises use have also been examined.

The MIS model, which can bring together multi-level and affiliate marketing, was created in light of all the findings. Then, this model was adapted to the software and turned into a testable application.

While realizing the objectives and philosophy of the proposed MIS model, all the software needed was preferred to be open source, except for the coding activity we prepared. In this context, in the selection of the software needed, awareness and popularity on a global scale, continuity, open source, and the competence of the development groups behind it, according to the current version status that coincides with the period in which our research was prepared;

- LiteSpeed v7.5 (or Apache 2.x series) version as web server software,
- PHP 5.6.40 as application and software development language,
- Version 2.1.4 of the open source JQuery javascript library for use in the front-end of dynamic HTML pages created using the PHP development language,
- Version 3.3.6 of the open source Bootstrap CSS and Javascript library to ensure that dynamic pages work with the same performance on mobile or desktop devices in order to make standard presentation and visual improvements when creating HTML pages,
- Version 4.2.0 of the open source FontAwesome icon library to facilitate icon drawings required for the presentation of HTML dynamic and static pages,
- Open source SummerNote online HTML editor as HTML editor required in data entry parts of admin modules,
- MySQL version 5.6.46 as database software,
- A hosting package has been rented through TurHost, which is one of the companies that can provide hosting-hosting services that allow 1 GB disk space, 1 MySQL database module, PHP software, and LiteSpeed v7.5 server software to run on Linux open source operating system, including all these features. PHP 5.6.38 software development language, Apache 2.3.34, and MySQL 5.0.11 database software were used for the Xampp package program on the local computer during the development phase. After it

was finalized, the software coded and tested on the local computer was transferred to the rented hosting-hosting server.

As a result of the literature review and the examination of the leading domestic and foreign multi-level marketing and sales partnership companies in their sectors, the terms preferred to be used within the scope of our research are given in Table 1 comparatively.

Job Description	Multilevel Marketing	Affiliate Marketing	Preferred Term for MIS
Natural or legal entities that want the campaign to be organized.	Companies that own the brand of the product and are direct manufacturers.	Mostly, the terms merchant and advertiser are preferred. Such people may not be in the position of direct producers of the products; they increase the sales success by promoting the products and earning commission income from the sales.	Since it can be designed in many non-sales campaigns, such as participation in social responsibility projects and surveys on MIS, **the term "Advertiser"** was preferred instead of merchant.
Vendor Delegate Entrepreneur Introducer, Distributor	Members, representatives, independent entrepreneurs, and independent distributors, who are also kind of consumers and customers, are real	A person or legal entity that is not in the position of a direct product consumer, who can only promote and recommend the product with individual initiatives,	**The term publisher/introducer** will be used for this stakeholder. It has been designed so only sales campaigns can be organized on MIS. Therefore, since terms such as entrepreneur

	people who do not receive their salary from the company, who try to make a profit by selling the discounted products they buy by recommending products to their environment at the list price.	who can lead the customer to the point of sale of the product, and who expects the promised commission amount from the sales or recognition activity.	and distributor cannot fully meet these activities, using the terms publisher and introducer would be more appropriate.

Table 1. Comparative terms found in the research

In light of the findings obtained within the scope of our research, our recommended MIS stakeholders are managers, advertisers, and publishers. Accordingly, since managers are fixed components of the initiative, it was necessary to develop a module to carry out the membership process for all stakeholders participating in the system. Because the expectations of the advertiser and publisher stakeholders are separate and their effect on the requested information, it has become necessary to plan the membership system separately for each stakeholder.

Each initiative whose activities will be monitored through MIS is called a "**campaign**", and a module has been designed where new campaigns can be entered into the system by advertisers. Campaign entries to be received through this module should be shared with publishers after the approval of the administrator who performs the "Usage Policies" compliance test. A publisher module has been developed for this process.

There was a need to develop a reporting module to track the business and transactions between publishers and advertisers and a finance module to monitor the receivable-receivable relations arising from the realized commitments.

Due to the force majeure that may occur after the date of the membership process of each stakeholder (change of e-mail, address, contact information, etc.), it has been necessary to develop a settings module where this personal information can be updated.

It is envisaged that it is necessary to develop a system management module that will be used only by system administrator stakeholders in a way that regular user stakeholders will not be authorized, where the first settings can be made during the system setup phase, and which allows critical operations such as backing up and exporting the system, etc.

3.3. Design

General definitions: Under this heading, the interface, campaign, commission, user policies agreement, and membership user code components of the MIS model were examined and defined.

Stakeholders: Managers who will use the system (information manager, customer relationship manager, and accounting manager), advertisers, and publishers are examined and defined under this heading.

Modules: The main modules that will belong to the model are designed in this section. The membership module, advertiser module, publisher module, manager module, and the sub-components of these modules, respectively, are defined in this section together with theoretical modeling.

- Advertiser module
- Publisher module
- Admin module
    1. Publishers management
    2. Campaigns management
    3. Advertiser commission payments management
    4. Publisher payment management
    5. Message center
    6. Slider management
    7. Announcement management
    8. Settings management

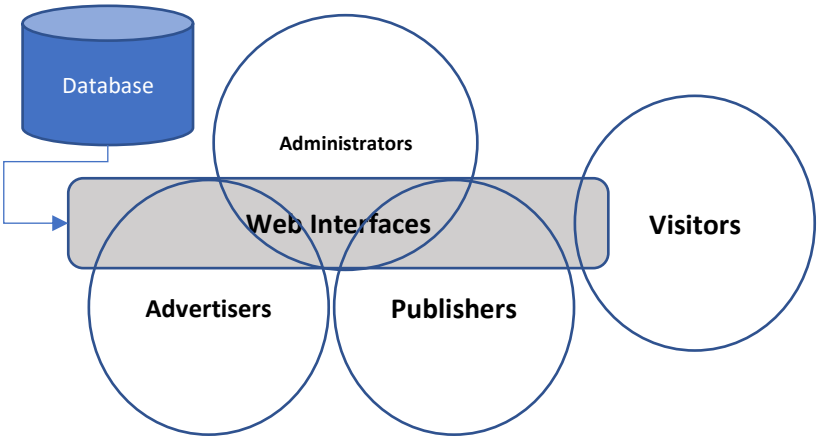
Database: The table and indexing structure, which is needed at a minimum level in order to create and run the Management Information System from the model, is defined in this section.

- Administrators table (yoneticiler/administrators)
- Administrator login session information table (yoneticiler_oturum_bilgileri/ administrators_session_informations)
- Members table (uyeler/members)
- Members login session information table (uyeler_oturum_bilgileri/ members_session_informations)
- Code dictionary table (kod_sozlugu/code_dictionary)
- Campaigns table (kampanyalar/campaigns)
- Table of campaign referral records (kampanya_yonlendirme_kayitlari / campaign_redirecting_records)
- Campaign portfolio table (kampanya_portfoy / campaign_portfolio)
- Table of campaign categories (kampanya_kategorileri / campaign_categories)
- Campaign commission sub-team revenues table (kampanya_alt_ekip_gelirleri / campaign_sub_team_revenues)
- Campaign commission revenues table (kampanya_komisyon_gelirleri / campaign_commission_revenues)
- Earning plan table (kazanc_plani / earning_plan)
- Messages table (mesajlar / messages)
- Announcements table (duyurular / announcements)
- Transactions table (islemler / transactions)
- General settings table (genel_ayarlar / general_settings)
- Advertiser campaign payouts table (reklamveren_kampanya_odemeleri / advertiser_campain_payouts)
- Slider table (slider / sliders)
- Member registration approval checktable (uye_kayit_onay_kontrol / member_registration_approval_checktable)
- Publisher commission payments table (yayinci_komisyon_odemeleri / publisher_commission_payments)
- Publisher payment requests table (yayinci_odeme_talepleri / publisher_payment_requests)

These tables and the data structures they contain are designed with a very detailed examination according to the general needs of the model.

Interface design: The model interfaces that will be open to stakeholders via the Internet have been studied in this part. In Figure 2, the relationships between interfaces are expressed schematically.

Figure 2. Schematic representation of inter-interface relationships



Interface pages open to all visitors:

- Home page
- About Corporate page
- Campaigns page
- Advertisers page
- Information page
- Sign-up form page
- Contact page
- Sub-page links

User-specific interfaces:

- Admin panels
    - Information managers panel
    - Customer relationship admin panel
    - Management panel for accounting managers
- User panel for advertisers
- User panel for publisher members

Workflow charts (please see attachments for flowchart figures): This is the schematic representation of each stakeholder's work in the management information system.

- Figure 3. Workflow to become a member of the system as an Advertiser-Publisher

- Figure 4. Login workflow with member account information
- Figure 5. Sub-team creation workflow as a publisher
- Figure 6. Workflow for creating a new campaign by the advertiser
- Figure 7. Campaign approval workflow by admin
- Figure 8. Campaign lifecycle workflow
- Figure 9. Publishers' workflow for directing visitors to campaigns
- Figure 10. Workflow for advertisers to pay commission commitments
- Figure 11. Workflow for transferring commissions from downstream earnings to upstream sponsor
- Figure 12. Workflow for publishers to collect commission earnings

3.4. Coding

In the next stage, an application software by the definition of the model was coded by following the waterfall-cascade software development process, and the workflows in the model's design were tested and evaluated on the software. With the revisions made in the relevant modules and workflows, the identified negativities have been eliminated, and the modeling process has been optimized.

In light of all the design database structuring and workflows of the MIS model up to this stage, it has been coded using the PHP programming language in a way that can be understood most simply by adhering to the standards of the coding language. The adopted coding method has been made with the least possible library dependency to be maximally compatible with PHP versions that may change.

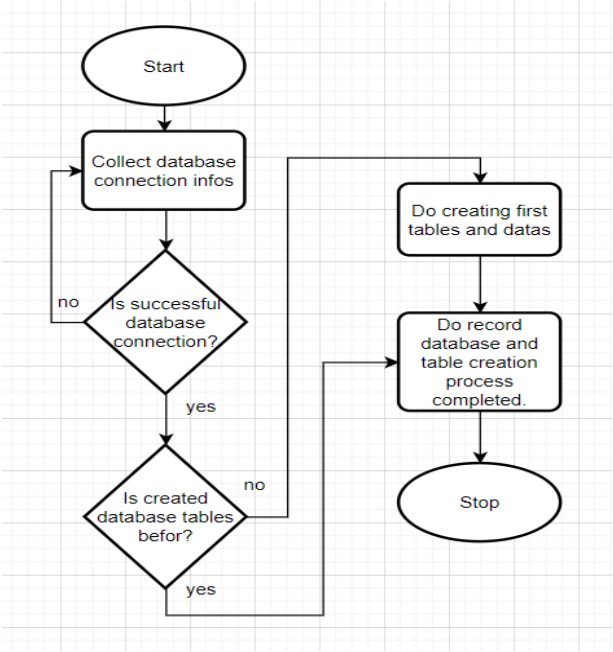
3.5. Testing and integration

At this stage, the developed coding was examined through sample users, including all modules and sub-components, workflow scenarios were tried, errors were noted, and improvement/debugging studies were carried out on problematic or risky workflows.

3.6. Distribution, installation, and maintenance procedure:

This section shares the necessary information for entrepreneurs who create a venture based on the software to set up most efficiently. The recommended setup workflow is shown in Figure 13 below:

Figure 13. Recommended setup workflow



With the applicable model put forward and the application software developed for it, a workflow process has been planned in which advertisers can avoid unnecessary and uncontrolled internet advertising costs, pay only for the promotional activities that take place, and thus keep the operating expenses related to the promotional activities under control. A process planning has been proposed that allows publisher members, who are another stakeholder, to organize within the earnings plan and to create and manage controlled marketing teams.

4. RESULTS AND DISCUSSION

Our recommendations are presented below, together with the identified advantages and weaknesses of the MIS model, which is the subject of our research.

4.1. Advantages of The Proposed MIS Model

The advantages of the MIS model proposed within the scope of our research are presented below:

- The proposed MIS model is designed to have no license requirements and works independently of the platform. For this reason, the initial installation cost can be realized with a meager investment amount. When the domain name specified in the requirements section and a hosting server are created, the system can be started without needing any other financial investment.
- The workflow processes recommended for Advertiser-Manager, Advertiser-Publisher, Publisher-Publisher, and Manager-Publisher interactions have been adapted to the software in the same way, and the controls and operations that need to be done automatically are carried out with coding, allowing the highest capacity service with the most minor workforce.
- The developed MIS model has been designed so that the operations of many advertisers and publishers can be easily carried out even with only one user with an administrator role.
- Due to the system's nature, a campaign's control is wholly given to the advertiser. The advertiser can stop the campaigns it organizes at any time.
- Since the publisher is not paid until the campaign's requirements are fulfilled, the advertiser can effectively control the promotional budget.
- The commission income committed by the advertiser is displayed to visitors and other users after the deduction rate of the MIS is automatically deducted. This will ensure consistency between the commission amount that publishers will receive and the commission rates announced across the MIS.
- A structure has been designed to organize publishers hierarchically, as in multi-level marketing. Once a publisher is included in the system, it can promote itself and bring its sub-team members into the system within the scope of the earning

plan. Thus, the publisher can earn from its activities and the commission income from its sub-team members.

- When a broadcaster earns commission income, the commission amounts given to upline sponsors will be automatically calculated and automatically recorded by the system based on the earning plan.
- Advertiser campaigns can be instantly published or withdrawn by the administrators after being entered into the system by the advertiser.
- In order for publishers to easily share the campaigns they follow with their influencers, HTML and QR codes can be created, and integration infrastructure has been provided to save them on Facebook and Twitter social media platforms.

4.2. Weaknesses of The Proposed MIS Model

The disadvantages of the MIS model proposed within the scope of our research are presented below:

- When the proposed MIS model is turned into an initiative and put into practice, a promotion activity is required. For this process, an investment and process planning should be made by the entrepreneur.
- There is a possibility that features such as the hierarchical organization of publisher stakeholders in multi-level marketing and earning from sub-team members may be perceived as pyramid structures in the eyes of the public. If the differences between these two structures are not explained to the public correctly, they may be adversely affected by the system's acceptance process.
- Since visitor referrals made by publishers to advertiser campaigns will be tracked by advertiser systems other than MIS within the validity period, they become open to fraud or abuse. At this stage, it is necessary to establish supervisory and regulatory legal structures to protect publishers' rights.
- The use of cookies by publishers in the referrals provided to advertiser campaigns is essential. These cookies must be placed in the browser in case the visitor does not take an action on the referral page on the same day. Cookies are designed to allow the advertiser to monetize the visitor's activity for a certain period and to enable the

publisher to monetize the visitor's activity. However, the advertiser's site must be processed with the same browser for the cookie information to be processed during this period. Suppose the referred visitor fulfills the advertiser's commitment with a browser other than the browser in which the cookie is placed. In that case, the publisher will not be able to generate revenue, and financial loss may occur because the publisher's information cannot be accessed.

4.3. Suggestions

It would be appropriate for investors who will start a venture to start the promotion activity for MIS first by applying the MIS model proposed by our research. It is predicted that systems that do not achieve sufficient public awareness and cannot be explained correctly will be less likely to be successful.

It is foreseen that it would be appropriate to determine the domain name where the MIS model will be run as a catchy and short address that will describe and remind the work done.

Since multi-level marketing is very similar to pyramid structures when explained to the public, it is foreseen that the subject will need to be explained clearly by revealing its differences.

For an advertiser to correctly pay the commissions it has committed, a system must also be installed on its side from a technological point of view. As a result of the promotional activity carried out by the publisher stakeholders on the MIS side, the campaign code and publisher code information are sent in the redirect process to the advertiser site. The advertiser site should protect these two pieces of information, and the information about turning into a sale should be recorded. Referral requests to the advertiser system must be accurately protected throughout the commitment period. For example, suppose an agreement is reached by accepting that the validity period of the visitor referral made by a publisher is accepted as 30 days. In that case, the advertiser should record the incoming referral transaction and transfer the commissions to the publishers from the transactions that will take place during the 30 days. At this point, the control of the process is transferred to a system other than MIS, and after this stage, all transactions are followed by the advertiser. In case of necessary audits and examinations by supervisory and regulatory institutions, reports and log records should be able to be presented

accurately by MIS management and advertisers. Thus, it is foreseen that a fraud that the advertiser can make can be prevented.

The legal aspects of publishers participating in promotional activities for advertiser campaigns should be examined instead of directing visitors. In impression-based or click-based paid campaigns, it is foreseen that publishers displaying or clicking ads themselves or using robot software may also be an activity that falls within the scope of the fraud.

Workflow planning has been done for the fee transfers between the advertiser-MIS-publisher by bank transfer. The number of received and sent payment transactions may also increase depending on the increasing transaction volume. In this case, it is envisaged that payment transactions can be automated and service quality can be increased by integrating alternative payment channels operating within the borders of Turkey, as in non-bank payment channels (PayPal, e-Gold, digital currency, etc.), which are examples abroad.

5. APPENDINGS

Figure 3. Workflow to become a member of the system as an Advertiser-Publisher

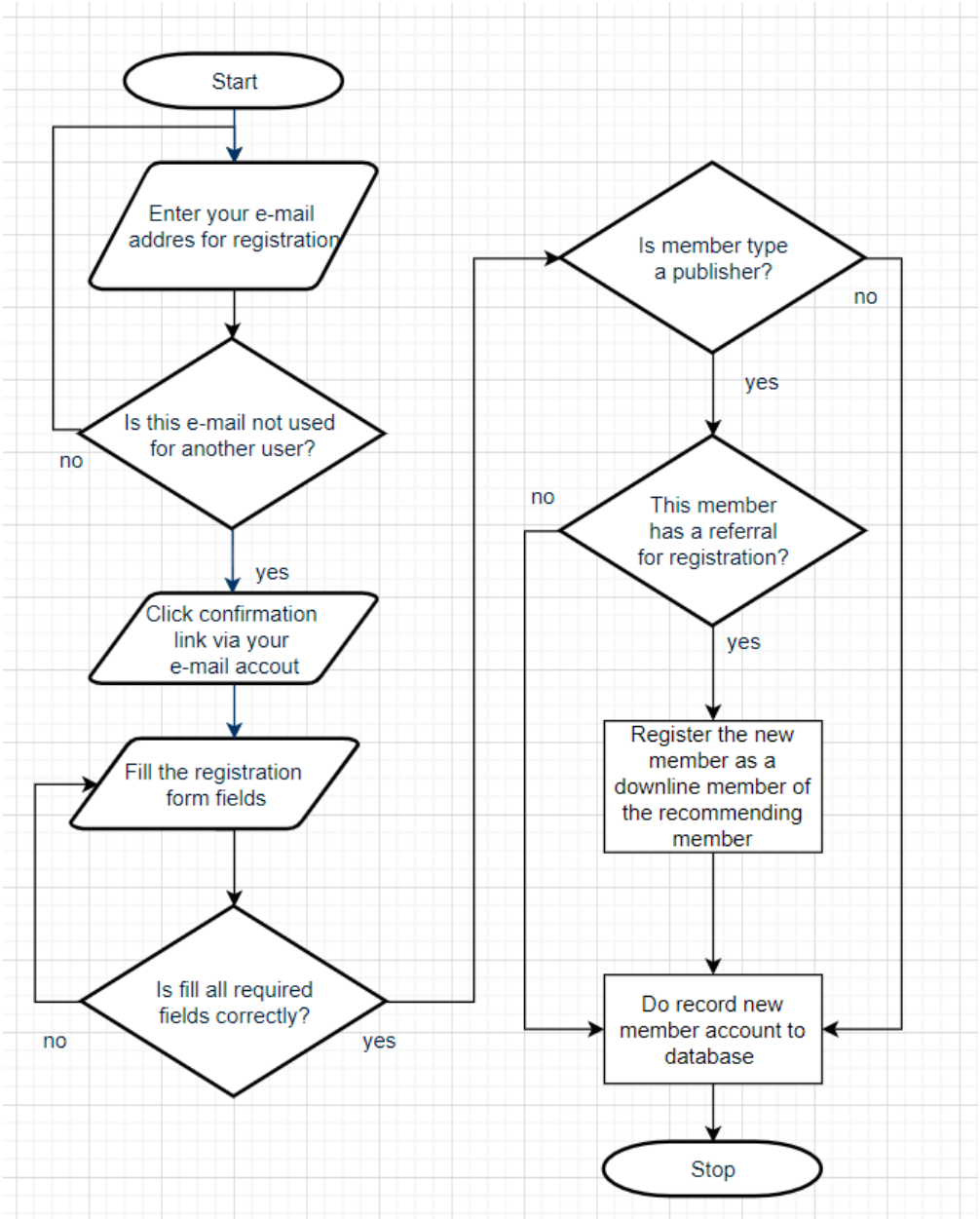


Figure 4. Login workflow with member account information

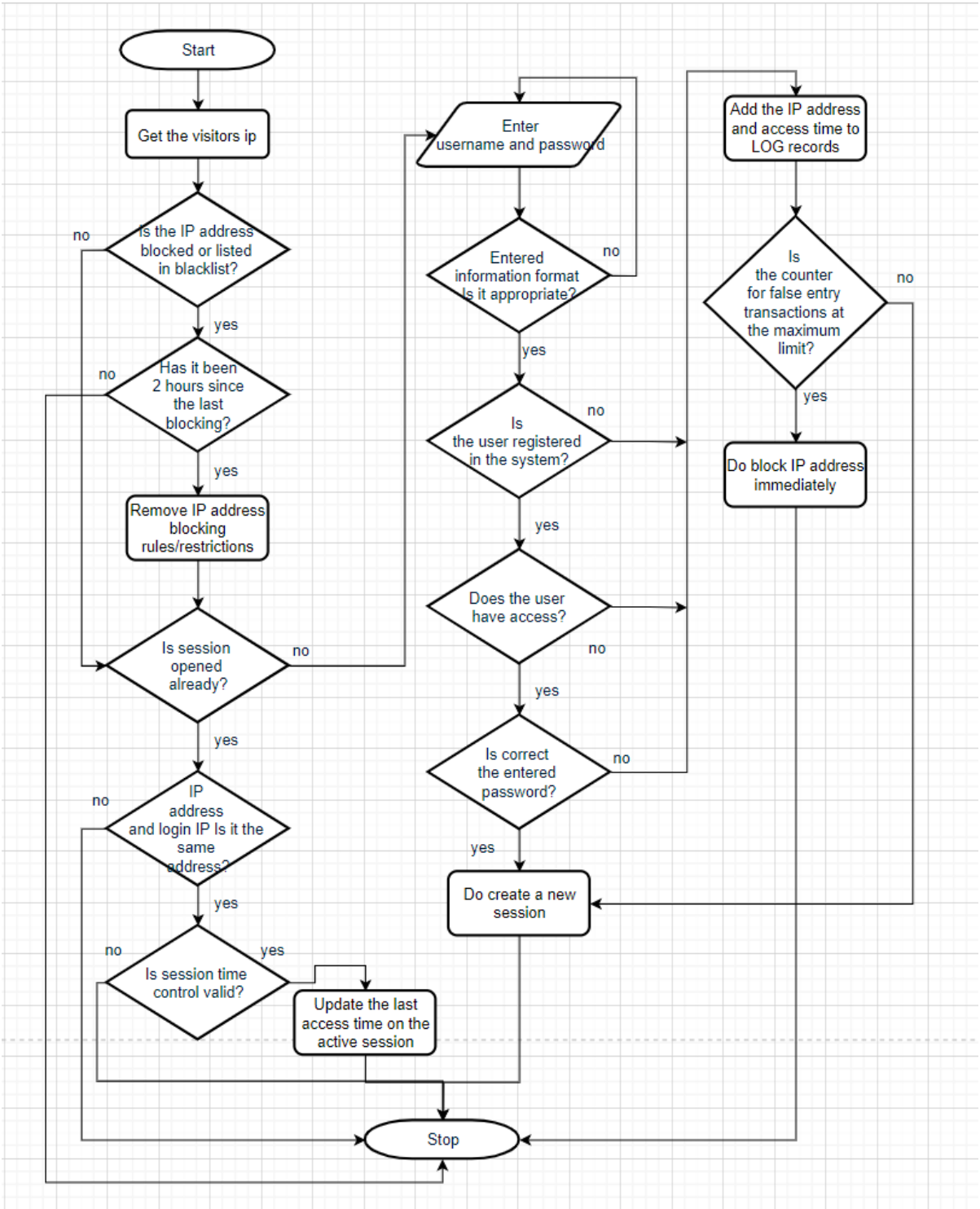


Figure 5. Sub-team creation workflow as a publisher

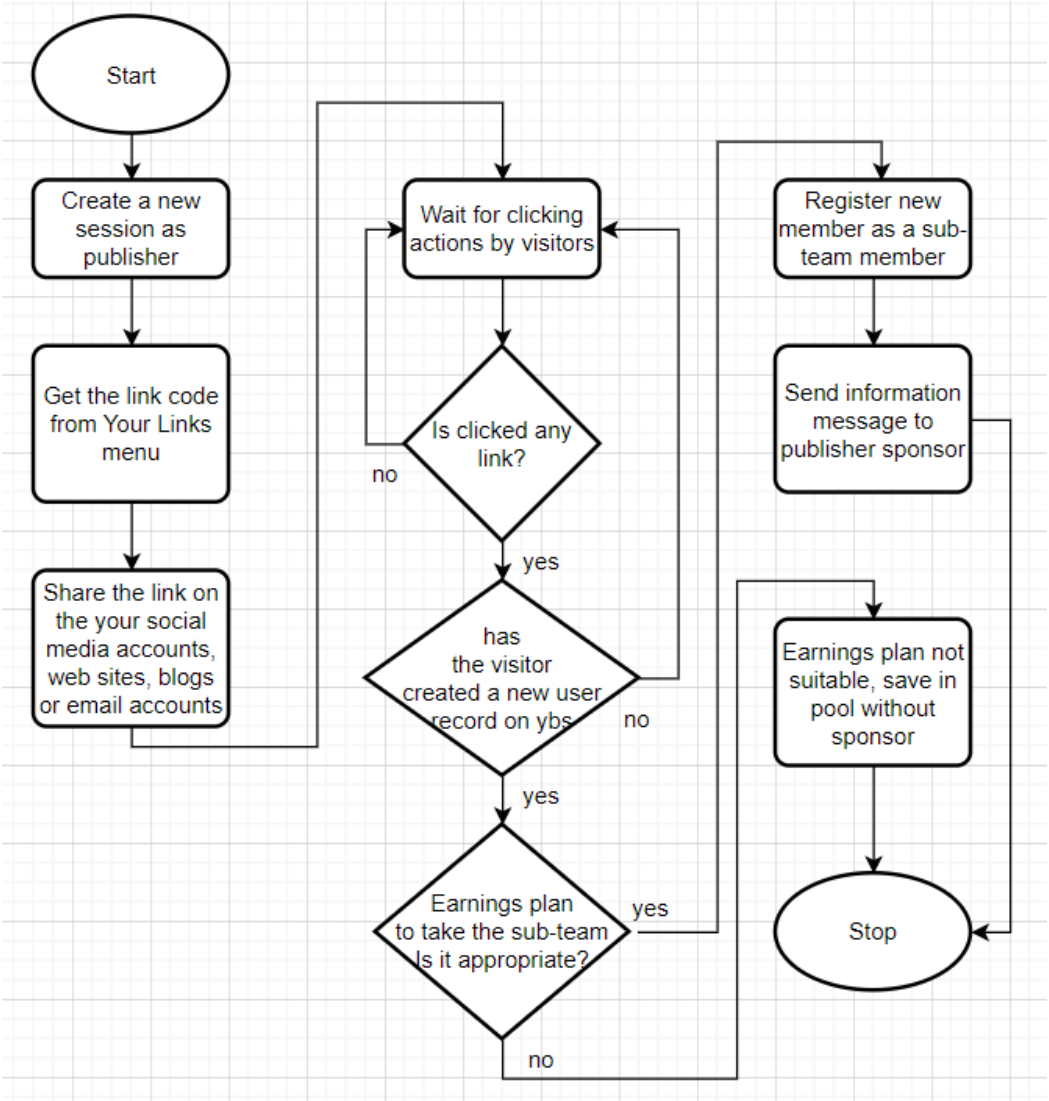


Figure 6. Workflow for creating a new campaign by the advertiser

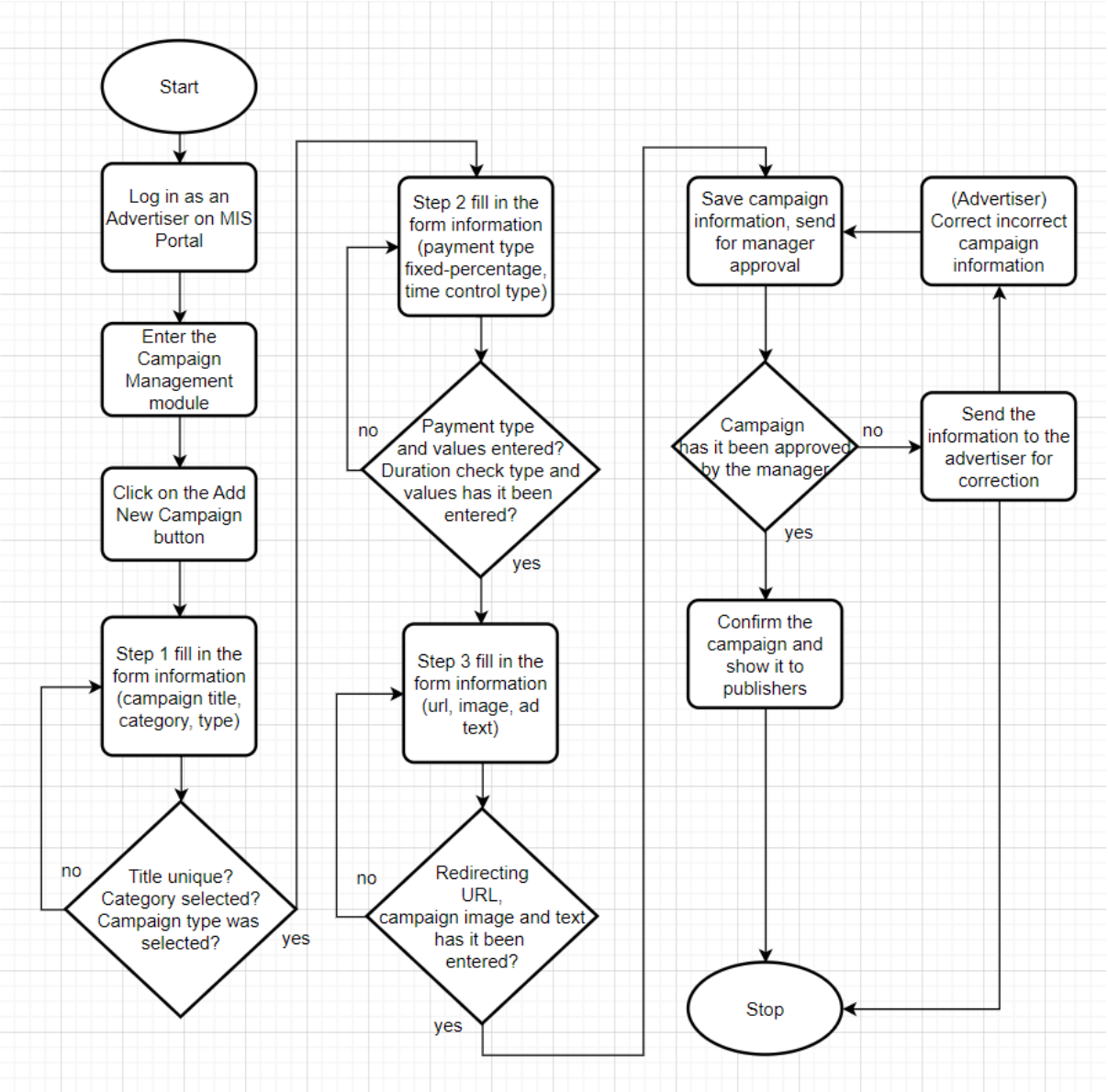


Figure 7. Campaign approval workflow by admin

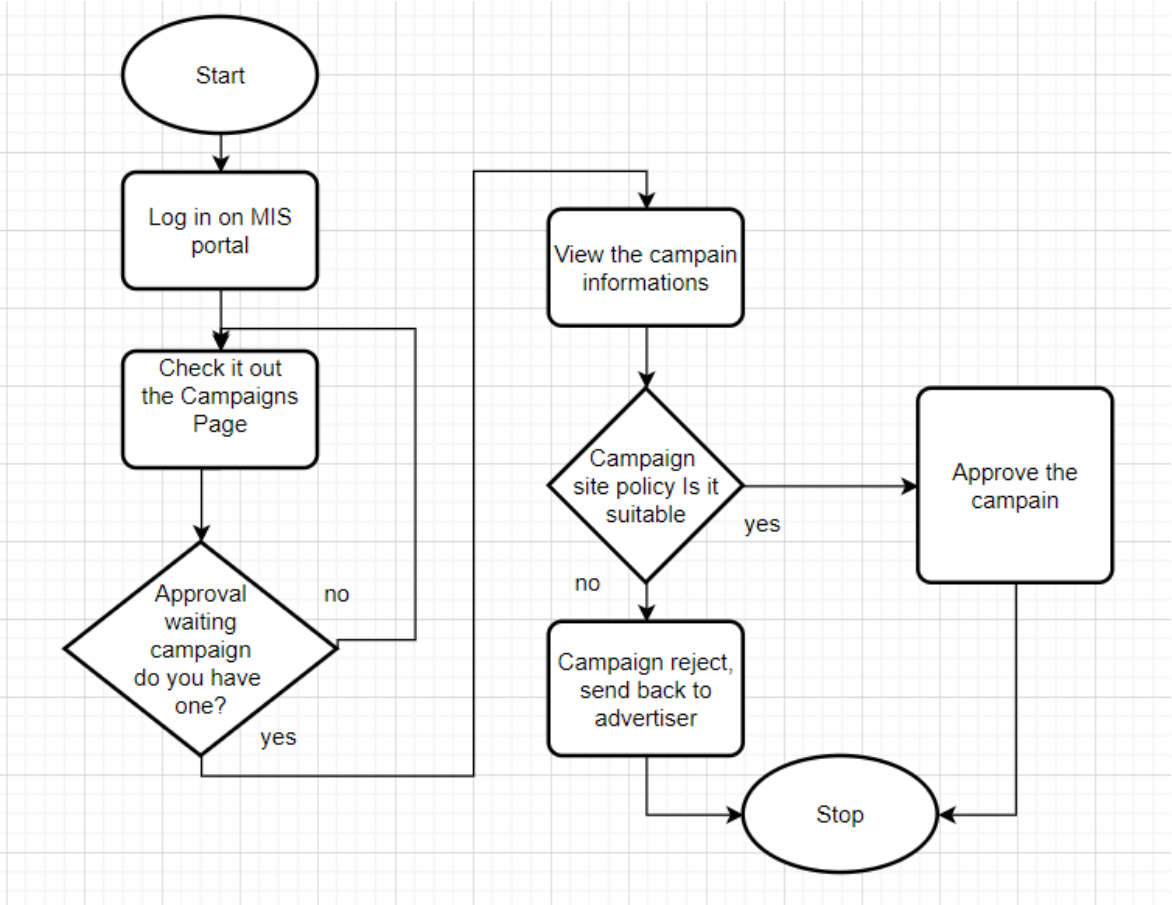


Figure 8. Campaign lifecycle workflow

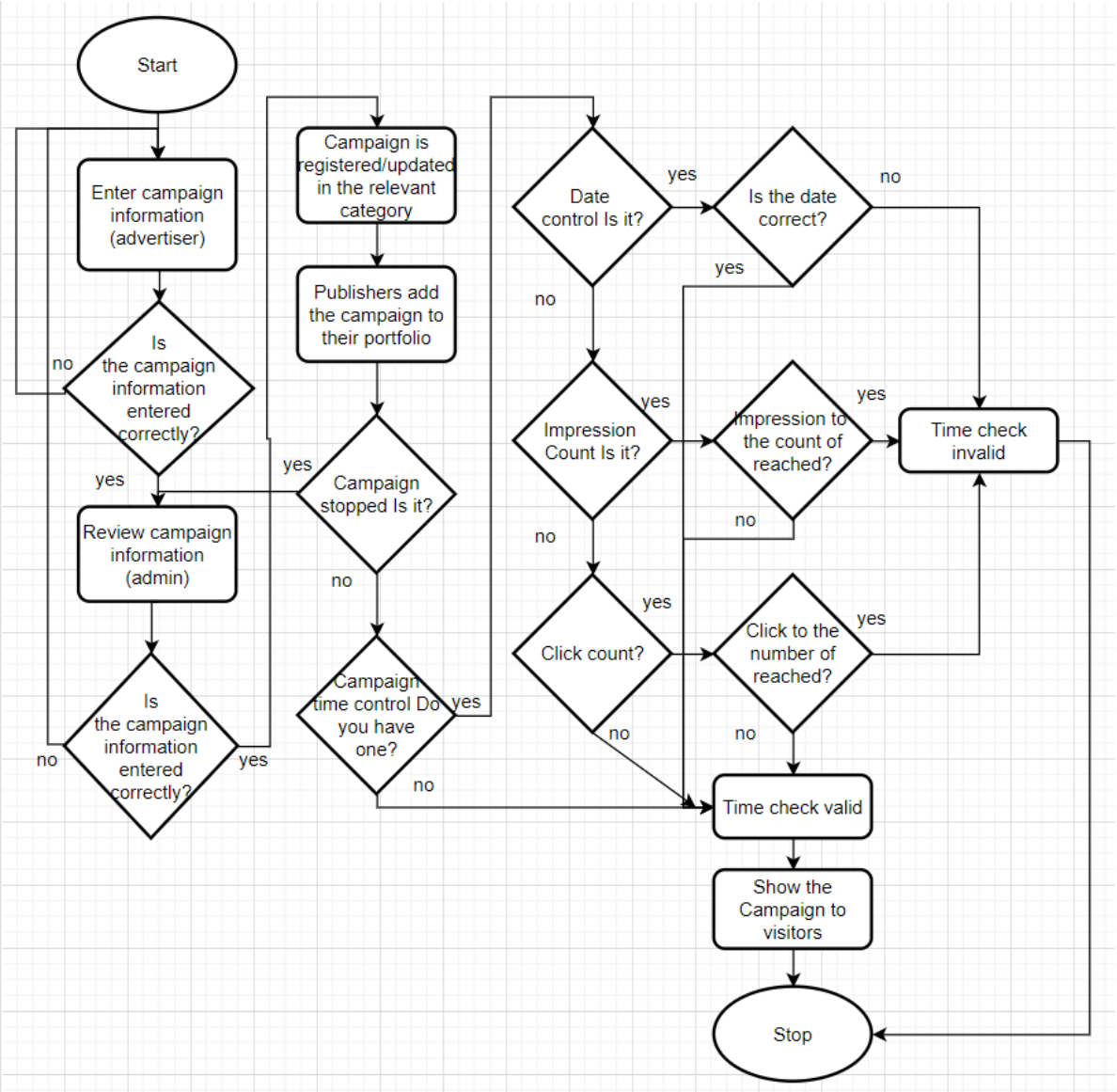


Figure 9. Publishers' workflow for directing visitors to campaigns

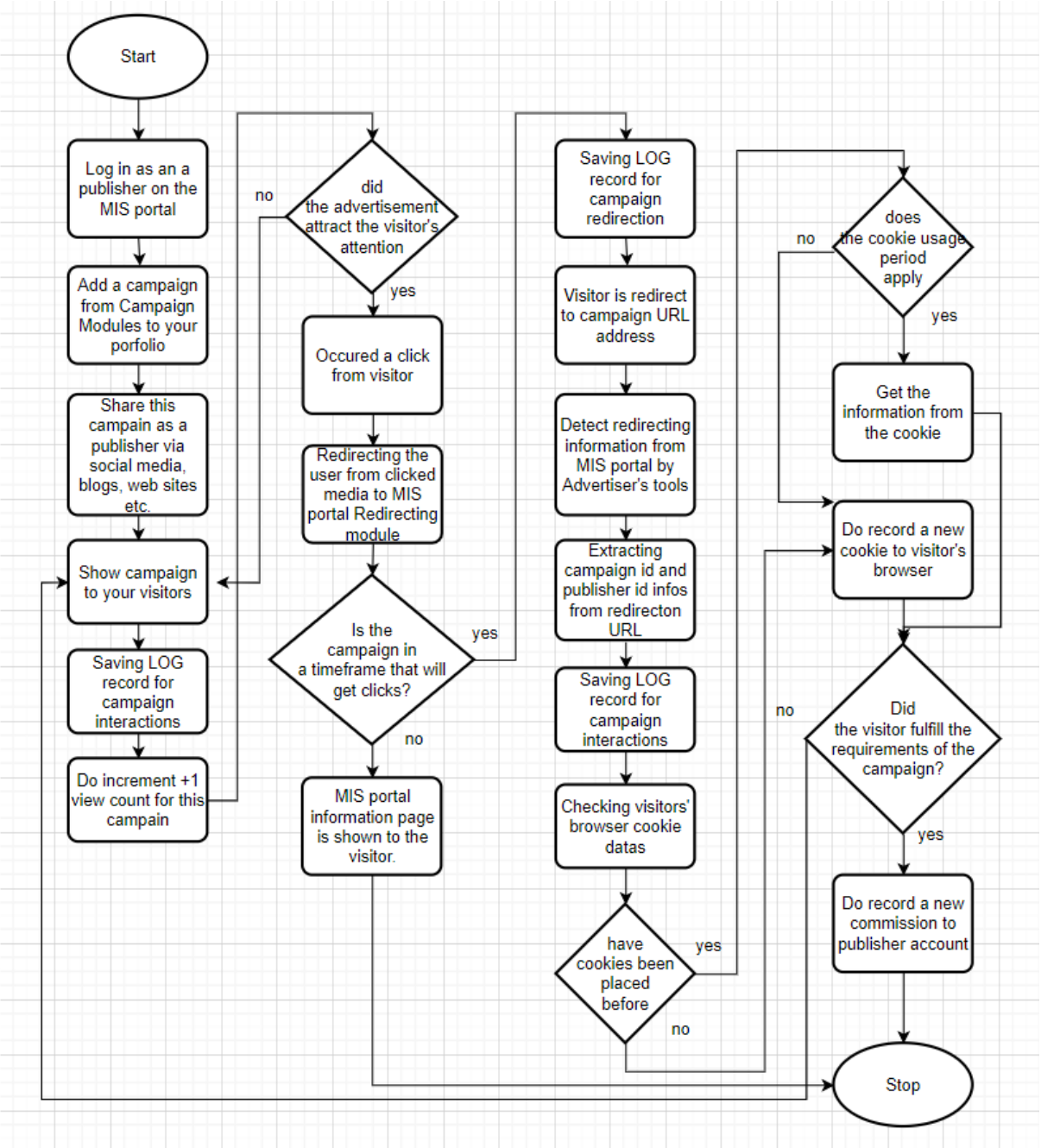


Figure 10. Workflow for advertisers to pay commission commitments

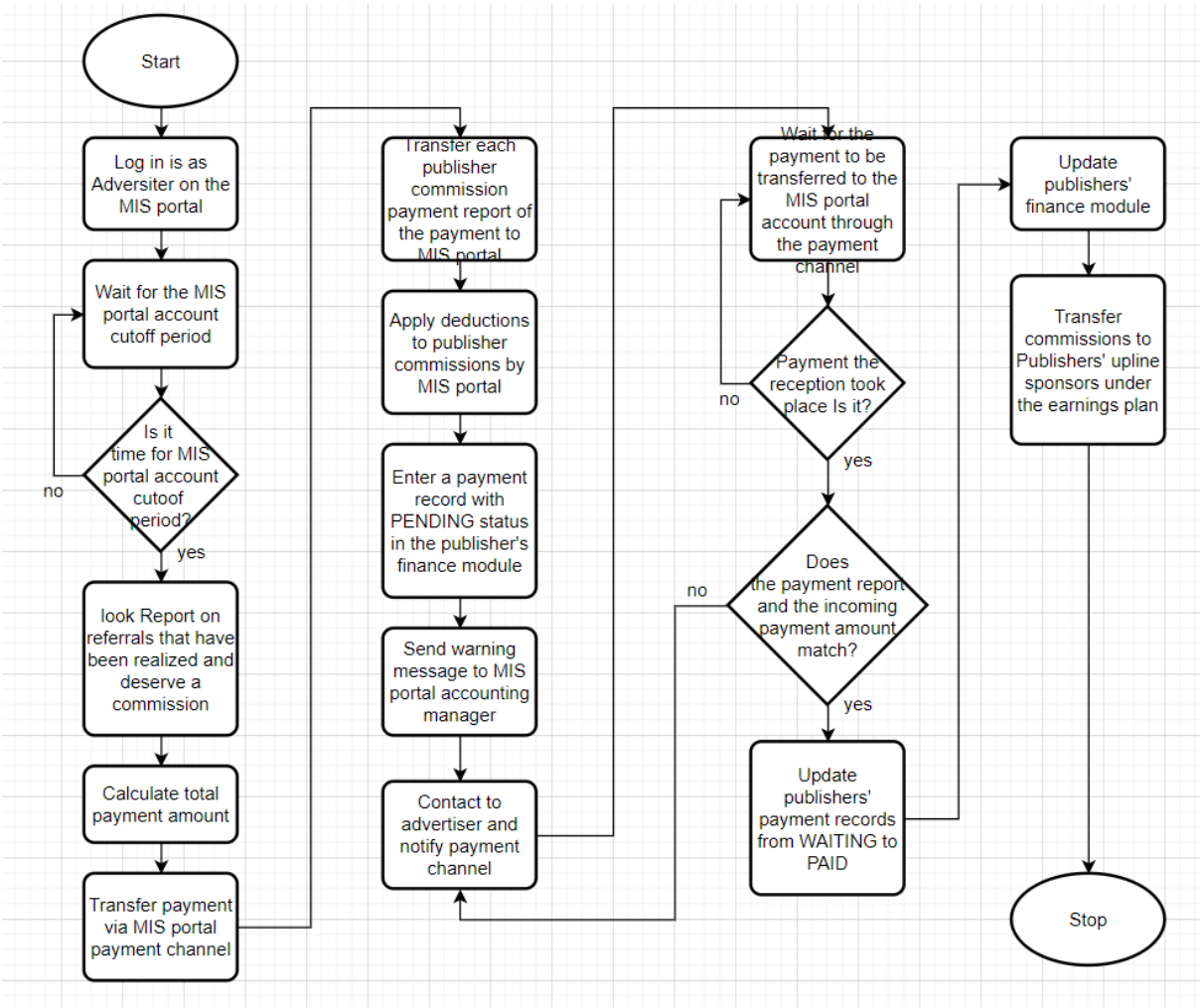


Figure 11. Workflow for transferring commissions from downstream earnings to upstream sponsor

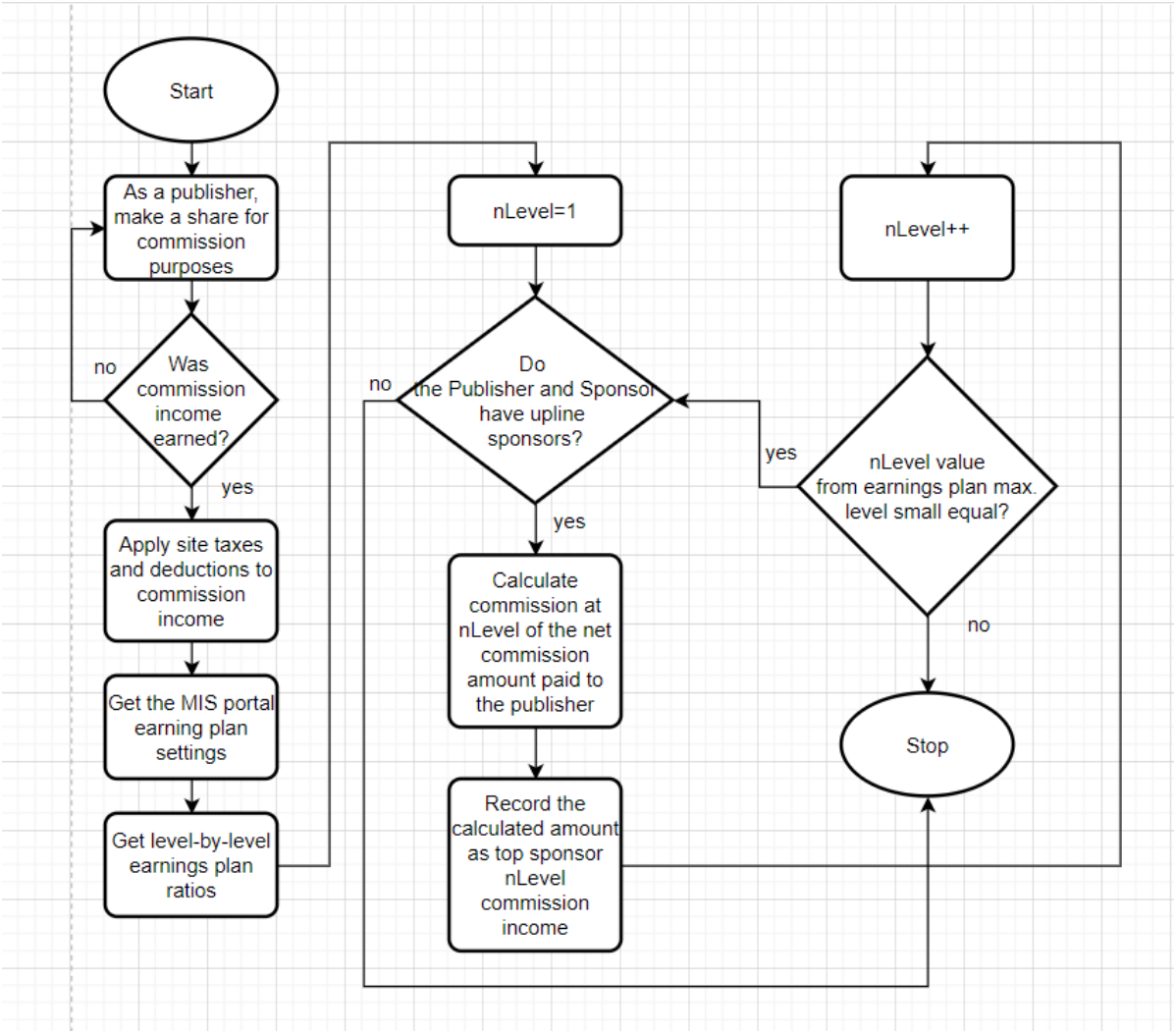
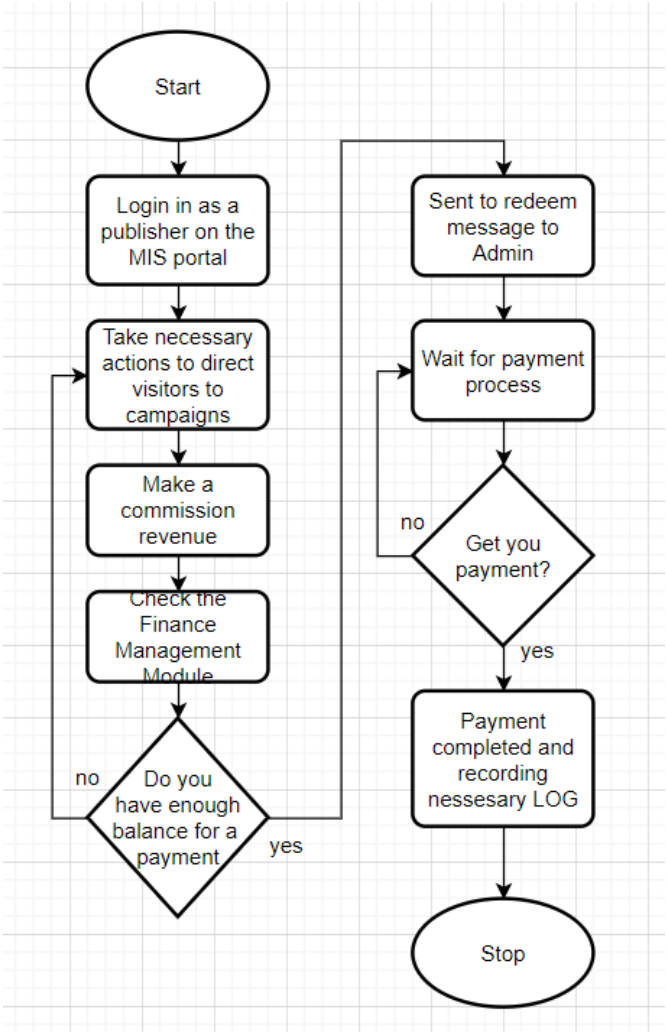


Figure 12. Workflow for publishers to collect commission earnings



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Genişletilmiş Özet

"Pazarlamanın 4P'si" olarak isimlendirilen pazarlama karması elamanı (Kotler ve Armstrong, 2006) Promotion-Promosyon/Tutundurma ana başlığı altında yürütülen Reklam ve reklamcılık faaliyetlerinin amaçlarından birisi de işletmenin ürün satış gelirini artırmaktır. Reklam bütçesi doğrudan bir harcama kalemidir ve dolaylı olarak maliyet artışına yol açar. Bu nedenle yerinde, yeteri kadar ve etkili reklam kampanyası planlamak çözümü için en çok çaba harcanan sektörel sorunların başında gelir (Topsümer ve Elden, 2015).

Gelişen teknoloji, kitle iletişim ortamlarını da değiştirmektedir. Bilinen en eski reklamcılık faaliyeti örneklerine milattan 3000 yıl önce papirüse basılı el ilanından rastlanmıştır. 14.yy'da Guttenberg'in ilk matbaa makinesini icat etmesi modern basılı reklamcılığın gelişmesine büyük katkı sağlamıştır. 19.yy'da sırasıyla radyo ve televizyonun icadıyla sesli ve görsel reklamcılık mecrasına geçilmiştir. Son olarak 2000 yılından sonra internet müthiş bir genişlemeyle televizyondan sonra yeni bir mecra olarak hayatımızda yer aldı ve kısa sürede 400 milyon kullanıcıya ulaştı (William vd., 2009).

İnternet ortamında yapılacak bir e-ticaret faaliyetinde ilk karşılaşılacak zorluk, milyarlarca web sitesi ve internet kullanıcının olduğu bir ortamda, doğru kişilere, doğru zamanlarda ve doğru mesajlarla nasıl ulaşılabileceği problemidir. Her geçen gün kapsamı genişleyen internet ortamında işlemler günden güne zorlaşmaktadır.

Bazı işletmelerde tutundurma faaliyetlerini yürütmek için, doğrudan pazarlamaya dayalı geliştirilmiş bir çalışma modeli olan "Çok Katlı Pazarlama" yapılanması tercih edilmiştir. Çok katlı pazarlamanın ilk olarak ortaya çıkış süreci 1934 yılında Dr. Carl Rehnborg'un 'California Vitamin Company' şirketini kurması ile başlamış, daha sonra 1945 yılında şirketin adı 'Nutrilite Products' olarak değiştirilmiş ve çok katlı pazarlama sisteminin tüm özelliklerini kapsayan bir modele geçilmiştir. Bu değişim ile birlikte, sisteme dahil olan girişimciler, fiziksel olarak bir işyeri açmaya gereksinim duymadan kendi işini kurma ve faaliyette bulunma imkanına ulaşmışlardır. 1959 yılında ise Nutrilite şirketinden ayrılan Jay Van Andel ve Rich Devos tarafından yeni bir sistemle American Way (Amway) kurulmuştur. Bu sistemde ise şirketlerin üretim sonrasındaki nihai tüketiciye ulaşım maliyetlerinin yok denecek kadar az olması sistemin en büyük özelliğini oluşturmaktadır (Clothier, 2009).

Bir diğer tür işletmeler ise Satış Ortaklığı Pazarlaması (Affiliate Marketing) sistemi yardımıyla, sabit veya yüzdelikçi bir komisyon geliri önerisi vaat ederek tüm bu işleri ortaklık

kurduğu bağlı kuruluşa devretmiştir. Bağlı kuruluş, tüm tutundurma faaliyetleri için gereken personel ve harcama kalemlerini kendisi finanse ederek satış gerçekleştirmeye çalışmakta ve bunda başarılı olursa vaat edilen komisyon gelirini almaktadır. Tüm riski bağlı kuruluş üstlendiğinden, İşletme açısından herhangi bir harcama riski bulunmamaktadır (Jurisova, 2013).

Artan rekabet koşulları işletmelerin kâr marjlarını artırmak için cerrahi hassasiyetle çalışmalarını gerektirmektedir. Çok katlı pazarlamanın kendine has üstün ve zayıf yanları olduğu gibi, satış ortaklığı pazarlaması sisteminin de kendi üstün ve zayıf yanları bulunmaktadır. Araştırmamız neticesinde ortaya konulmuş olan yönetim bilgi sistemi modeliyle; Pazarlama karması "4P" elemanlarından biri olan Promotion/Tutundurma faaliyetleri içerisinde değerlendirilebilecek;

- Satış ortaklığı pazarlaması ve çok katlı pazarlama çalışma yöntemlerinin üstün yanlarını sentezleyerek kullanabilen bir pazarlama ağı Yönetim Bilgi Sistemi'nin bir model olarak ortaya konulması,
- Paydaşların belirlenmesi,
- Paydaşların yetki ve sınırlarının ortaya konması,
- İş süreçlerinin analiz edilmesi ve tasarlanması,
- Bir yazılım modeli tasarlanması,
- Bu yazılım modelinin web tabanlı bir yazılım diliyle kodlanması, çalışır duruma getirilmesi, geliştirme aşamalarının dokümantasyonlarının yapılması, elde edilen sonuçların ve öngörülerin paylaşılması amaçlanmıştır.

Araştırmamızın ana problemi:

Bir taraftan, satış ortaklığı pazarlaması (Affiliate Marketing) sistemiyle belirli bir komisyon/ücret karşılığı tanıtımı yapılacak mal ve hizmetlere ait internet reklam tekliflerinin kabulünü yapabilen, diğer taraftan bu işlerin tanıtımını yapmak üzere bir arada bulunan ve çok katlı pazarlama yapılanmasıyla örgütlenen nitelikli bir pazarlama takımının bir araya getirilmesine imkân verecek "Yönetim Bilgi Sistemi" modeli nasıl olmalıdır? olarak belirlenmiştir.

Araştırmamızın alt problemleri ise:

- Satış ortaklığı (Affiliate) sözleşmeleri elektronik ortamda nasıl kabul edilebilir ve uygulanabilir?
- Bir kazanç planı dâhilinde çok katlı pazarlama örgütlenmesiyle pazarlama takımı kurularak, aralarındaki iş ve işlemler elektronik ortamda nasıl yönetilebilir?
- Kabul edilecek Affiliate –satış ortaklığı- tekliflerinin pazarlama takımına aktarımı ve sonrasında hak edilecek ücretlendirmelerin takibi nasıl olmalıdır?
- Her iki paydaşı ve bunlar arasındaki bütünleşme ve enformasyonu idare edebilecek bir çevrimiçi yönetim bilgi sistemi nasıl olmalıdır?
- Yapılacak ticari faaliyetlerin etik ve yasal sınırlamaları nasıl olmalıdır?
- Ortaya konulacak çalışma modelinin uygulamasında oluşan hukuki boşluklar var mıdır? Paydaşlarca istismar edilebilecek kontrolsüz noktalar nelerdir? Buradaki sorunlar nasıl giderilebilir?

olarak belirlenmiştir.

ÇALIŞMA YÖNTEMİ

Araştırmamız, üç ana fazda yürütülmüştür.

Birinci fazda, ilgili akademik kaynaklar ve konularla ilintili sektör işletmeleri, bu işletmelerin faaliyetleri ve bültenleri ayrıntılı bir biçimde taranmış ve kavramsal çerçeve sınırlılıkları içinde elde edilen bilgi birikimleri genelden özele doğru sistematik olarak raporlanmıştır. Her bir alt başlıkta irdelenen konulardan, çalışmamız içerisinde hangi noktada faydalanılacağına dair atıflar yapılmıştır.

İkinci fazda; birinci fazın sonunda elde edilecek bulgular ışığında teorik bir model önerisi gerçekleştirilmiş, bu modele uygun bir yazılım geliştirme süreci izlenerek önerilen modelimiz somut bir uygulama yazılımı haline getirilmiştir.

Araştırmamızın ikinci fazı olan ve kaynak taramasında elde edilen bulgulara dayalı kavramsal çerçeve üzerine oturtulan YBS modeli ve uygulama yazılımı, barındırdığı karmaşık iş süreçleri, farklı paydaşların aynı iş kaleminde farklı işlem yapmalarını (yöneticilerin bir kampanyanın farklı özelliklerine müdahale etmesi, reklam verenin aynı kampanyayı sisteme giriş yapması, bağımsız dağıtıcının bu kampanyanın dağıtım işini üstlenmesi v.b.) gerektirdiğinden, bir süreç takip sistemine ihtiyaç duyulmuştur.

Giriş seviyeli yazılımlar için tercih edilen kodla-düzelt türü süreç yaklaşımlarıyla araştırmamız inceleme konusu olan YBS modelleme ve yazılım geliştirme iş yükünün karşılanamayacağı öngörülmüştür.

Yazılım mühendisliğinde benimsenen belirli yazılım geliştirme süreç modelleri irdelendiğinde, önerilecek YBS'nin modüler yapısı ve bu modüllerin ayrı ayrı ele alınması gerektiğinden, bu süreç yönetimlerinden Çağlayan (Şelale) Modelinin bu araştırma için uygun olabileceği öngörülmüştür.

Çağlayan (Şelale) Modeli, yazılım mühendisliğinin en eski ve temel modelidir. 1950'li yıllarda yazılım geliştirme için kullanılan kodla-düzelt türü yaklaşımda herhangi bir planlama ve tasarım aşaması olmadan doğrudan gereksinim hedefli çalışmalar yapılmıştır. Zaman içinde karmaşık ve daha büyük ölçekli yazılımlar için bu yaklaşımların yetersizliği görülerek 1960'lı yıllarda yaşanan yazılım krizinin ardından NATO Bilim Komitesi tarafından 1968 yılında Almanya'da Yazılım Mühendisliği Kongresi düzenlenmiştir. Bu konferans üzerinde durulan temel konular, yazılım mühendisliği kavramının tanımlanması ve yazılım geliştirme süreçlerinde uygulanması gereken standartların tespit edilmesidir. Bundan çok kısa bir zaman sonrasında Dr. Winston Royce tarafından yayınlanmış bir bildiriyle Şelale Modeli tanımlanmıştır (Gencer ve Kayacan, 2017).

Üçüncü ve son fazda ise, ikinci fazın sonucunda ortaya konulan modele dayalı uygulama yazılımı geliştirme sonrası elde edilen bulgular derlenmiş ve raporlanmıştır.