

Modeling of the Internet Film Piracy - Preliminary Report

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Abstract—This paper covers various aspects of film piracy over the Internet. In order to successfully deal with this matter, it is needed to recognize motivational factors related to film piracy. Thus, this study discusses group factors that could motivate individuals to engage in pirate activities. Furthermore, the paper discusses the theoretical effect on box office revenues and explains it on a proposed scheme of solutions for decreasing revenues. The article also maps the scheme of incentive motivational anti-piracy campaigns. Moreover, the paper proposes the preliminary scheme for system dynamic modeling of the Internet film piracy. Scheme is developed as a model of behaviors, influences and relations among the elements pertaining to the Internet film piracy.

Keywords—Box office, Cinema, Film, Internet piracy, Uploading

I. INTRODUCTION

THE Internet network has undergone massive development as users who initially only passively consumed information started to directly influence and later even run the network. One's unlimited ability to share data with anyone around the world gave birth to the Internet piracy. Unauthorized use of copyrighted data has become massive; it is a modern era phenomenon. The currently available technologies make the infringement very easy, while the prosecution of an individual uploader or downloader is almost impossible.

The current global situation involving the ACTA, website Megaupload.com and various anti-piracy activities [1], [2], [3] inspired me in developing the system dynamic model of the Internet film piracy, and writing a preliminary report article about gathering information and building the draft model schemes of behaviors, influences and relations among the elements. Therefore, this article builds upon my previous researches carried as part of my doctoral project at the Faculty of Management; University of Economics, Czech Republic.

Internet film piracy (download or upload) is influenced by various factors, relations, policies and authorities. Possible aspects of film piracy are seen on the Figure 1. Chapter II - Motivational factors for uploading and downloading of pirated film products, represents the shortened version of my earlier findings presented at the International Conference on Computer Science and Applications (ICCSA2011) and published at its proceedings. [4]

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Furthermore, the theoretical effects of the film piracy are described in the Chapter III – Theoretical effects on box office revenues. The chapter studies the aspects of DVD and box office revenues being influenced by the download of pirated movies (as one's decision to buy or not to buy a DVD or movie theater ticket). Moreover, paper also discusses the model of the anti-piracy campaigns and the influencing factors for theater attendance. Proposed scheme is developed as a model of behaviors, influences and relations among the elements. Moreover, the proposed scheme will become the draft for the system dynamic modeling of the Internet film piracy.

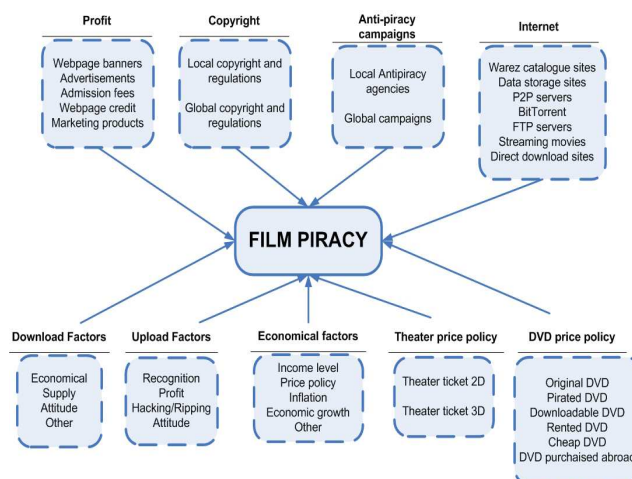


Fig. 1 Film piracy aspects

II. MOTIVATIONAL FACTORS FOR UPLOADING AND DOWNLOADING MOVIES

The main reasons for downloading are considered the high prices for media goods, income factor, and cheap digital technologies. [5] However, many other various motivational factors influence Internet users to upload or download pirated film products. [4] The following figure presents the groups of such factors – Economical, Supply, Attitude and Other factors on the side of influencing factors for download. The groups of factors for uploading are represented by the following ones – Recognition, Profit, Hacking/Ripping and Attitude factors. However, for reasons of simplicity, the article does not deeply study the factors as it is not the main aim of this article.

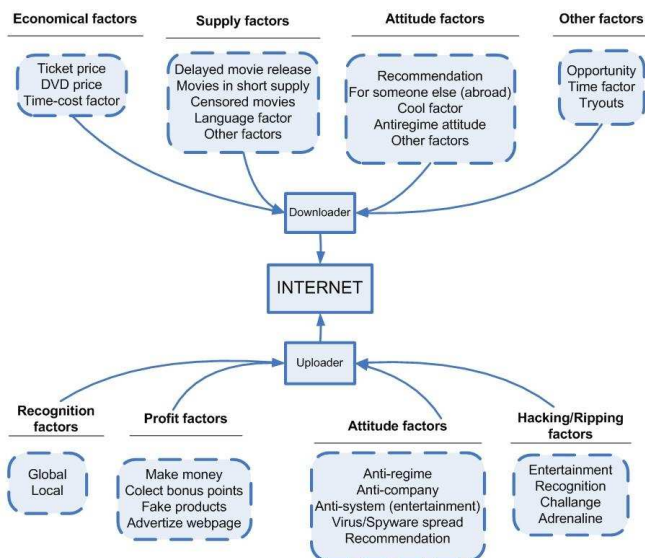


Fig. 2 Motivational factors for uploading and downloading pirated movie products

III. THEORETICAL EFFECTS ON BOX OFFICE REVENUES

A. Internet piracy effects

Activities of movie pirates pressure the movie studios and exhibitors for development of new distribution channels, methods and business opportunities for the film industry. The movie audience wants to enjoy a movie experience in 3D. Therefore, the viewers are willing to pay higher price ticket for better experience, as it is incomparable to experience 3D movies on a home video screen. Therefore, the studios and exhibitors profit from higher ticket prices. [6]

On-demand Internet streaming videos – a new distribution method has a profit potential for the vendors, i.e. variety of companies offer products exclusively on the Internet competing with traditional businesses. [4], [7], [8]

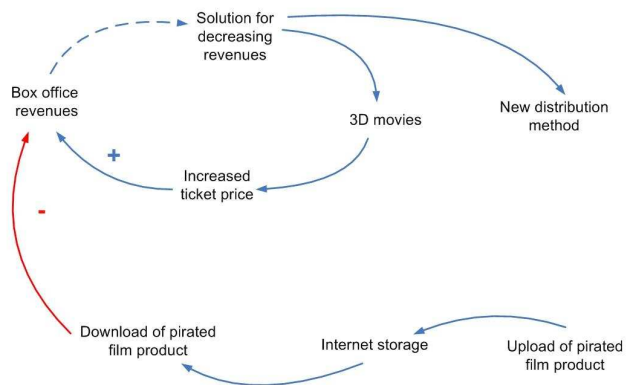


Fig. 3 Downloading movies and its effect on box office revenues

B. Anti-Piracy campaigns

The main goal of global campaigns against film piracy (e.g. "Piracy is a crime") is to alert the public that piracy means stealing from groups and individuals in the film industry. The campaign primarily strives to expand public awareness of the copyright. The campaigns are mainly focused on preventing the purchase of illegal copies, and downloading

and sharing illegal copies on the Internet. The following figure shows the ideal scheme of the effect of the anti-piracy campaigns. [4], [9]

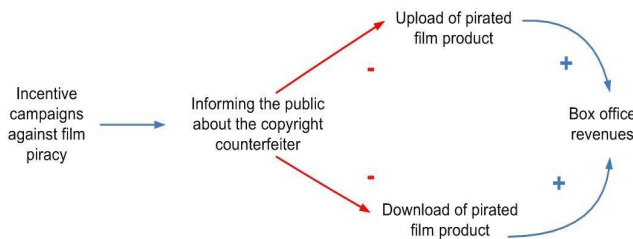


Fig. 4 Motivational campaigns against film piracy and its theoretical effect on box office revenues

C. Theater attendance factors

Box office revenues are counted as theater attendance multiplied by the theater ticket price. However, the attendance itself is influenced by various factors and effects which theater owner (distributor) can or cannot control. The first group consists of factors as – Movie reviews, Seasonality, Trendy movies, Weather factor, Substitutes, Pirated products and the Other factors. The group of factors that can be controlled includes Theater location, Theater image, Showtimes, Technologies used in theater, and mainly the Theater price policy. Economical factors consist of Income level, Economic growth, Inflation etc.

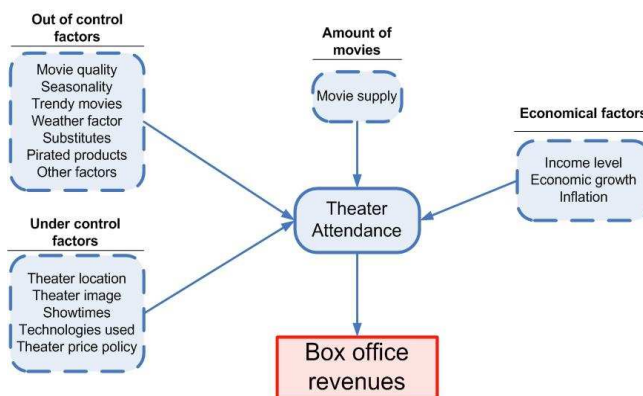


Fig. 5 Theater attendance factors

D. Substitutes – Internet film piracy

The Internet websites offer pirated products. Pirated movies can be found on various websites and networks. However, this chapter discusses only the major websites that might lead to copyright infringement. [10], [11]

On-line streaming movies websites - Illegal activity if the owner of the streaming website does not own a license or does not pay regular fees to the copyright owner, to exhibit movies.

Peer-to-peer networks and BitTorrents - Peer-to-peer network is based on supplier and consumer client relation. Such networking is a distributed application architecture that partitions tasks or work loads between peers. Peers are both suppliers and consumers of resources, in contrast to the traditional client-server model where only servers supply, and clients consume. The Torrent webpage gathers information of the Torrents (Bittorrents) to download.

Such BitTorrent software protocol works on principle of peer-to-peer file sharing that is used for distributing data over the Internet. Downloading a file from a single source server (as described in the previous paragraph), the BitTorrent protocol allows users to join a several hosts to download and upload from each other simultaneously. Therefore, the main difference is that downloader becomes an uploader at the same time. [12], [13]

Data storage webpage servers and Direct download websites - websites on which users can upload data that can be easily downloadable by anyone, e.g. www.ulozto.net, czshare.com, www.hellshare.com etc. Providers of such websites are not liable for the uploaded data, as the server does not examine the contents of the files. However, if the servers' operators are noticed to possess illegal content of a file (or archive), the data is removed from the server. The automatically generated link after the data upload might be also password-protected; therefore without the valid password the file itself is completely useless. [10]

Warez websites catalogues - The warez websites gather information about movies stored at data storage sites and servers; they work as a catalog of information mainly for registered users only, e.g. war4all.com, allyoulike.com etc. The term warez refers to unauthorized releases by organized groups, as opposed to file sharing between friends. This term was initially coined by members of the various computer underground circles. Although the catalog sites are mainly for registered users, an average-skilled Internet user can still gain access to password-protected pages using the Internet search webpage. Movie title and expected name of the data storage site e.g. "Inception" and "rapidshare.com", make finding it easy. [10]

IV. SYSTEM MODEL

A. System model

The following figure covers relations of elements pertaining to DVD and box office revenues. However, for reasons of simplifications the figure omits several relations as it would exceed the aim of this article.

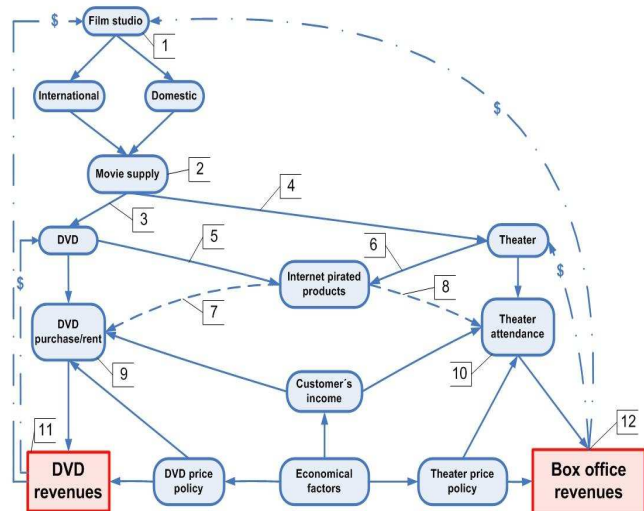


Fig. 6 System model

The Point 1 characterizes the Film studios that are represented by the domestic or international companies. These studios (Point 2) deliver the movies to DVD supply (DVD represents all disc media, i.e. DVD, HDDVD, Blu-ray etc.) and Theater – 2D or 3D theatrical releases (Step 3 and 4). Moreover, for simplicity the figure does not include the DVD release of the movie after showing in theaters, but illustrates only the theatrical-releases and direct-to-video releases.

Ripping the original DVD disc and uploading the content to the Internet is shown as Step 5. Moreover, assume that an individual buys a theater ticket to see a movie, and while watching the movie this individual also records it on his/her camera - committing a crime of camcording and uploading the film to the Internet (Step 6). For reasons and motivations of uploading the file to the internet, see the chapter II.

The uploaded data works as a certain substitute offer for the possible movie viewers (Step 7 and 8). The reasons why the Internet users eventually download the movie are discussed in Chapter II – motivational factors for downloading. In this scheme case, if an individual is influenced to download the pirated movie rather than see it on DVD or in a movie theater, the film industry is shorter for hypothetical revenues (Step 9 and Step 10). Some of the influencing factors to attend the movie theater are discussed in Chapter III.

However, I dare to say that the movie download itself does not have to mean the theft from the film industry. For I see it as a certain money redistribution to different purposes. Such priorities can also mean decision-making between seeing the movie in a theater or buying a DVD while being influenced by the Internet pirated products supply. However, deep analysis of exact impact (positive or negative) on revenues is not the aim of this study, but will be analyzed with the system dynamic model that is a key outcome of my doctoral project.

Box office revenues are redistributed (usually 45% - 55%) between movie exhibitor (theater) and back to the film studio (Step 11 and 12) that compensates advertisements, production, distribution and actors. [14], [15]

B. System dynamic model set up

System dynamic model, the key outcome of my doctoral project, will cover elements pertaining to the Internet film piracy based on data from the Czech Republic. The micro-world of the Internet film piracy consists of various aspects to which the proper model design will be applied. Furthermore, I see the knowledge as key element in establishing the model. However, knowledge, as a scope and experience-holder, is internalized which might become a certain barrier. The selection of high level representation language set on economic background transforms the behavior, relationships, influences and economic effects on the closed micro-world of the Internet film piracy. As a result, such model can be later tested for various experiments.

Therefore, in order to effectively simulate the model behavior, it is needed to establish the system entirely on financial and unit flows, stocks and other factors. On the other hand, such model then might be considered flat and narrow. However, I believe that the model will represent the realistic scheme of mentioned matter, and will become a problem-solving platform.

When the model is constructed and works appropriately, the whole design will be verified. Furthermore, successful reviews and verifications will lead to the validation of results. That would provide the model outputs of all data, statistical results and mathematical formulas that can be further improved and modified.

V. CONCLUSION

The presented article outlines the motivational factors for uploading and downloading of pirated film products, and presents the preliminary report of the draft model schemes of behaviors, influences and relations among the elements pertaining to the Internet film piracy. The model studies the theoretical impact of the piracy on box office revenues. However, the main aim and the key outcome of this paper is to map the scheme of film industry which will become the input for the system dynamic modeling of Internet film piracy.

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