

Original Article

Predictive Analysis: Problematic Internet Use of Compulsive Buying Addiction using Web History

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Abstract - This study evolves from “Is it possible to conclude whether an internet user is in Problematic Internet Use (PIU) or not, based on the web history.” Nowadays, Smartphone and internet use become vital, but at the same time, excessive use of smartphones or the internet use (known as (PIU)) leads to multiple negative outcomes. PIU might be any form of activity such as entertainment (video, audio, pornography), communication (often updates at social media sites, persistent chats), and Impulsive and Compulsive Buying Addiction (ICBA). These make life complex in day-to-day activities such as learning, focus distraction, and conflicts in decision-making. Moreover, PIU leads to numerical physical and psychological traits. Smartphone-based internet use in recent trends become essential, immense, and vital. However, when it exceeds that level of consumption, there is a need to analyze, or else those activities become pathetic. Moreover, among multiple PIUs, this study concentrates on ICBA using online platforms. This proposed model reveals that ICBA could be tracked based on online persistence-seeking particulars on e-commerce platforms. To identify the ICBA, there is not enough to track specific e-commerce platforms. It also needs to analyze the users’ seeking patterns, such as inquiry analysis of Google and other browsers’ search and entertainment channels. The reason is that if we aim to understand only Impulsive and Compulsive Buying (ICB), we can analyze the e-commerce platform, but it also needs to analyze the ICB to ICBA. This study aims to develop a trajectory model using sentimental CNN-based distant supervision to identify the web-seeking pattern in terms of repeat and similar words for specific online purchasing. Repeated Mindset Analysis (RMA) is used to apply the cognitive psychology approach so that an individual spends time on multiple webs seeking the specific content then based on consistency of searching, which can make the clarifies whether an individual is in PIU or not.

Keywords - Addictive Assessment, Impulsive and compulsive buying prediction, Problematic Internet Use (PIU), Repeated Mindset Analysis (RMA), Sentimental and trajectory analysis.

1. Introduction

The computational psychology system is highly needed in this modern trend. The digital influence makes people so comfortable as well as induces addictive mindsets. It is indeed worth pointing out that Internet addiction is not listed as an addictive disorder or a behavioral addiction in the Diagnostic and Statistical Manual of Mental Disorders published by the American Psychiatric Association (DSM-V). As a result, “problematic use of the Internet” (Caplan [1], 2010) has become one of the terms that are most frequently used in the literature to refer to a structure that includes extreme anxiety about connecting to the internet and difficulty in self-control, which affects the early functioning of the individual’s daily life and is used to alleviate their psychological response artificially. Numerous research studies have been carried out regarding personal and contextual factors, as stated by Cebollero-Salinas et al. [2], 2022. There is more uncertainty existing in the psychological measure, and among those

multiple contexts, the PIU is making a psychological dependence on smartphones’ internet addiction (IA) for various activities. To analyze the problematic content in PIU, the excessive web seeking regards online gaming/gambling, pornography watching, and impulsive and compulsive buying addictive (ICBA), etc. ICBA attitude: with the growth of e-commerce, many consumers have made a shift from in-store to online shopping, and some are at risk of ICBA or a disorder due to addictive behaviors under the umbrella of problematic internet usage (PIU).

The risk of digital transactions is disclosed, especially in web browsing, by Rozo B J G et al. [3], 2023. Over the past few years, consumer researchers’ interest in compulsive purchasing has grown (e.g., Ridgway et al. [4], 2008). According to O’Guinn and Faber [5] (1989), this pathological form of compulsive and recurrent shopping arises in reaction to psychological issues.



The excessive and obsessive use of online applications and e-commerce platforms has several psychological effects, such as conflict, relapse, mood change, withdrawal, and salience (Andreassen et [6], 2017). Because it offers them immediately, though temporary, a reprieve from the anxiety or depression they are experiencing, compulsive shoppers do so.

Over the past ten years, and particularly in the last five years, online retail sales have significantly expanded in several nations. For instance, internet retail sales in the UK increased from a 3.4% proportion of all retail sales in 2007 to 27.9% in 2020, growing far more quickly than in-store sales.

Additionally, all retailing online sales—aside from those for motor fuel—had a little over a ten-fold increase between November 2006 and February 2020, demonstrating how these sales were already booming before the epidemic. Table 1 states some of the evolving reasons for how the e-commerce platform developed rapidly.

Above this vital factor and the importance of e-commerce essential, while analyzing, compulsive buying mindsets are also prevalent in this context. The major gap in identifying obsession-related consequences in the digital context was very limited. So, to overcome this issue is highly needed. This study aims to identify the negative outcome detection from the current web history analysis with cognitive dependent properties through semantic relationships using EA.

Since EAV(E-platform Accessing Values) can provide more insights about the web searching keyword and their semantic relationship and analysis of spending time and timestamp, though this factor values the psychological assessment over e-platform dependents can conclude their categorization and any individual can attain their self-auto-consciousness mode of cognitive functions. Furthermore, the orchestration of this study is followed in section two, which discusses a related study of psychological assessment using web history and EAV. The third is about methodology. The fourth illustrates the results and discussion, and the final states the conclusion.

Table 1. Reasons for the evolving of digital markets

Physical Market	E-commerce Platform
Geometric rely	Facilitates buying and selling from anywhere, and non-geometric relies on.
Limited Customers and Sellers.	Unlimited support for both.
Limited products and services.	Consistent support was offered.
Scaling and multiple things were quite complex.	Scaling the business is quite easy, as are infrastructure and production costs.

2. Related Study

Internet use in the last twenty years has greatly increased worldwide. Simultaneously, increased use of the internet has been accompanied by emerging concerns regarding problematic use since its abuse seems to be related to significant psychological distress (Aboujaoude [10], 2010; Spada [11], 2014). Problematic Internet use (PIU) is defined as the use of the internet that creates psychological, social, school, and/or work difficulties in a person’s life (Sameha Alshakhsi et al. [14], 2022). Internet addiction disorder was first proposed in 1995 as a result of excessive internet use and its associated psychological issues (Suler [12], J. 2004). The term “PIU,” employed in this study, is described in the literature as excessive internet use that has a detrimental influence on a person’s life in one or more of its key areas (Beard, K. W., & Wolf, E. M. [13] 2001). Studies from the past few years have documented the detrimental effects of PIU (Chow, H. [15] 2017). Studies have revealed strong correlations between PIU and poor academic performance (Mohamed, G., & Bernouss, R. [16] 2020), health issues (Güzel, N. [17], et al. 2018), and decreased life satisfaction [Lachmann [18], B,2016], in addition to its detrimental effects on mental health. Previous research also revealed an association between problematic app use and poor sleep quality and one’s health (Ho, T. T. Q. [19] 2021 & Pang, H [20]. 2021).

Among PIUs, compulsive buying (ICBA) needs to be addressed, and tracking the behavioral tracking is very complex and essential to prevent addictive behavior (Tarka P, et al. [21] 2022). Even though PIU is potentially required to prevent, there is still no symptom validation, especially in the ICBA context. Tarka. P [8], (2020) stated that the prevalence of digital marketing influences the psychological adaptive manner. There is no globally accepted measure for an uncertain cognitive contextual measure based on web history browser-based and psychological imbalance (Ishwarya, M. S., & Cherukuri, A. K. [9] 2020). Very limited trajectory analyses are carried out on the psychological and cognitive measures using web navigation and web history-based user compulsive buying or addiction attitude. To find the sentimental analysis Dong G et al. [22] proposed that web browser history can be analyzed with the help of a web map service platform [WSMP]. Through this modeling, we can identify the browsing interest through the trajectory and dimensionality reduction done by the Hierarchical Gaussian Mixture Model [HGMM]. This paper states the model of the browsing behavior identity techniques. Ghaemmaghami, S [23] (2022), et al. proposed a method for completely automating the development of behavioral models for extensive online applications. The help of a reinforcement learning technique and suggested solution infers a reward-augmented modeling approach by

- 1) dynamically creating a collection of probabilistic Markov models from user interactions and
- 2) enhancing the model’s state with reward values.

Shoppers' attention to hedonistic consumption experiences should encourage compulsive buying because it fosters and stimulates consumers' positive emotions, which in turn enables them to escape from negative feelings about themselves and negative states (such as depression), which are common compulsive buying triggers (Ridgway et al.[4], 1990). (Ridgway et al[4]., 2008; Tarka,[22] 2020). Additional indicators of internet use, such as the duration of app usage sessions, the frequency of app launches, and the purpose of app usage, may also be explored in numerous research (Alshakhsi, S et al. [14].,2022).

3. Proposed Methodology

The synchronous and asynchronous labeling phrases and web-seeking navigations can able to provide a better understanding of the state of the user's mindset of behavior. The user seeking intentions and how often the web navigation occurrence for similar, specific, or random requirements. There is the essential sentimental analysis and text phrase analysis for analyzing the user-seeking intentions and compulsive seeking. The web-seeking state might be information sharing, knowledge gaining, and human behavioral analysis and predictions. To analyze human behavioral and psychological requirements can be predicted through the web searching pattern system. The human cognitive analytic patterns can be derived through web searching parameters. Finding the semantic relationships among the keywords can provide better interpretations of their future needs and requirements. Finding the values of EAV can facilitate the users' dependents over the specific domains. Analysis of the semantic relationship of web searching history can provide multiple and worthwhile insights about an individual's behavioral, cognitive, and attitude. Since spending time with smartphones, values have become quite high. So, web history analysis such as spending time on e-platforms, can make sense to understand the individual cognition processing over multiple activities such as learning, communicating, and entertaining.

However, the numerous facilitates provided by the e-commerce platforms and smartphone applications have provided great support and achieved effective e-commerce. Since e-platforms could be effective on the internet, the smartphone has taken e-commerce to the next level. Since the accessing capability of e-commerce platforms highly relates to smartphone development. E-platform Accessing Values (EAV) are highly attained by smartphone development. The internet-based web applications, user interfaces, and virtual reality gaming reach society, and the smartphone plays a vital role and increases the EAV.

Our proposed model is Repeated Mindset Analysis (RMA) using sentimental web mining analysis. The RMA model is implemented using EAV based on how often users visit the e-commerce platform and visit things and how the inducing compulsive buying thoughts happen in e-commerce using sentimental and trajectory analysis. The repeated behavior indicates that an addiction mindset is not a certain limit but relatively long and consistent accessing the platforms.

A generic web-seeking pattern and PIU inquiry web-seeking pattern in multiple aspects are shown in Figure 1. The web-seeking pattern, especially in the PIU context, is the repeated inquiry extended through various searching patterns. Some important patterns are general inquiry platforms using the fact browser search, then moving into little interior searches such as reviews from entertainment channels, and extensive searches such as comparing various parameters within e-commerce applications such as prices and other considerations. This repeated search attitude might be one of the vital factors of PIU in ICBA. The intention towards the computational psychological assessment system using weblogs and channel hitting counts. Dawson. S et al. [7].,1990 stated that digital and online commercialization has the potential to scale up any industry across the globe. So, it is essential to address the negative consequences of PIU.



Fig. 1 Web seeking pattern

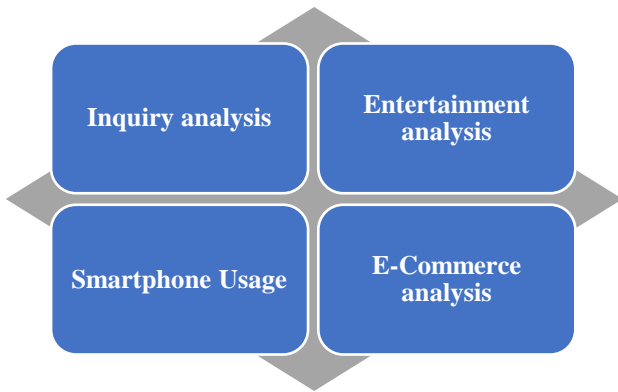


Fig. 2 Repeated Mindset Analysis (RMA) Web searching pattern

3.1. Addiction Event Detection

The RMA can provide a better interpretation to find the EAV from the web search pattern. This conclusive solution might lead to cognitive psychology insights into the impulsive buyer mindset and their states of EAV. The RMA can provide optimized ideology and lead to self-consciousness of EAV about the user: impulsive buyer mindset and their states of EA. The RMA can provide optimized ideology and lead to self-consciousness of EAV about the user. This RMA model analyses four interrelated links between the relationships, especially in e-commerce buying, as shown in Figure 2. Keyword Phrase Analysis, Enquiry Analysis, Entertainment, E-commerce Web Channel, and Search Engine/Browser. This RMA model is to identify how the user navigates multiple times with various web applications for making impulsive buying behavior.

3.2. RMA Sentimental-based Trajectory Analysis

Using trajectory sentimental analysis, how compulsive buying occurs, and cognitive psychology-based prediction awareness can build into a model that can provide a better solution to the addictive behavior of people and can offer significant self-awareness and self-consciousness over the user. The logging and hitting of repetitive data are measurable with frequency. This web analytics and predictive model can potentially measure computational statistics and the digital addictive mindset measure.

3.2.1. Keyword Phrase Analysis

The type of phrases and keywords used in browsers leads to numerous outputs and blog links to the user. Figure 3 illustrates that word Vectorization in RMA could be taken as N-dimensional vector space and dynamic index. The similarity of words in numeric application searches vectorized and got deep identification of web seeking consistency measure.

Moreover, the words Vectorization and split are used in web searching patterns such as positive and negative reviews and offers about specific products and services, leading to multiple aspects of commerce.

In web search patterns, reviews, positive and negative, offer about the specific product and services leading to multiple commerce aspects. Compared with the Markov model as quadruple $[m, A, T, k]$, where m is the number of states in the model, A is the state space, the matrix of transition probabilities, and k is the order of the model. For a k th-order model, the probability of transitioning to a particular letter depends on the previous k letters generated. The transition matrix is calculated as follows.

This RMA measure has been efficiently deliberated with the label of text-hitting phrases. The following grammatical proof was taken for the analytical part.

1) Let us assume to determine the frequency of matrix f , where $f(t_i, t_l, c)$ is the number of occurrences of the rectangle matrix, which consists of the t_i, t_l , and c as constant characters. For example, the password *parsnips* yield the trigrams *par, ars, rsn, sni, nip, and ips*. Hence i, l similar to the session initiated and last visited specific session, respectively.

2) For each bigram il calculate $f(i, l, \infty)$ as the total number of trigrams of the *aba, abb, ABC*, and so on.

3) Compute the entries T as follows

$$T(i, l, k) = f(i, l, k) \quad (1)$$

$$f(i, l, \infty) \quad (2)$$

A function f is said to be periodic if, for some nonzero constant P , it is the case that

$$f(x+P) = f(x) \quad (3)$$

For all values of x in the domain, a nonzero constant P , for which this is the case, is called a period of the function. If there exists a least positive constant P with this property, it is called the fundamental period (also primitive period, basic period, or prime period.) Often, “the” period of a function means its fundamental period. A function with period P will repeat on intervals of length P , and these intervals are sometimes also referred to as periods of the function.

3.3. Inquiry Analysis

For decision assurance and confidentiality of the product and service, the user and impulsive buying behavior make numerous inquiries with multiple web application platforms. This analysis makes confidentiality and makes better suggestions about the products and services. Figure 4 represents the multiple aspects of repeated web searching for the specific solution-seeking process as inquiry analysis. Inquiry analysis leads to multiple web application usage for rectifying the conflicts and ensuring self-decision about buying and selling in e-commerce. A simple keyword search in web browsers leads to multiple options and blogs, which facilitates the user going into the inquiry analysis phase and leads to multiple options, providing comparison results and reviews.

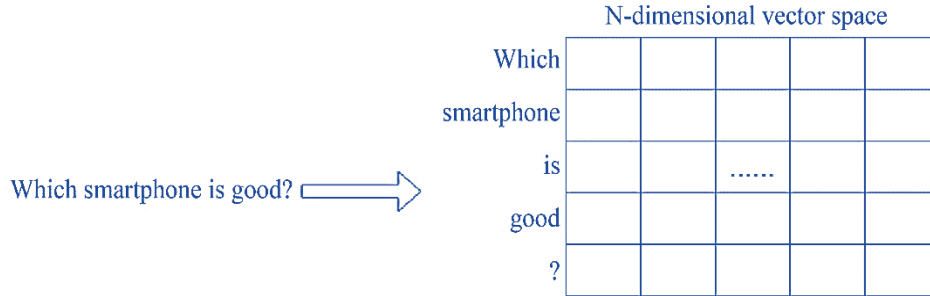


Fig. 3 Word vectorization

The inquiry with multiple seeking indirectly makes the digital assistant seeker habituate the addictive inducement. Moreover, digital conviction over the web analysis process greatly impacts massive e-commerce audiences. This consistent web-seeking inducement highly influences avoiding self-clarification, which is much needed in this context. Geometrically, a periodic function can be defined as a function whose graph exhibits translational symmetry, i.e., a function f is periodic with period P if the graph of 'f' is invariant under translation in the x -direction by a distance of P . This definition of periodicity can be extended to other geometric shapes and patterns, as well as be generalized to higher dimensions, such as periodic tessellations of the plane. A sequence can also be viewed as a function defined on the natural numbers, and for a periodic sequence, these notions are defined accordingly. This type of analysis can provide support for the decision-making at that same time, which might cause other product buying-inducing thoughts due to the offers and advertisements. Overall, it states the benefits of inquiry analysis and their requirements for numerous levels of repeated inducing web searching patterns. Although multiple web applications provide various reviews about the same products, which might be inconsistent among the reviews, leads to confusion about the products.

However, even though some of the benefits of inquiry analysis lead at that same time, it might extend that into addiction. The RMA and how the RMA makes impulsive buying addiction, especially at e-commerce platforms. As per the concept of RMA, the simple keyword phrase searching options provide multiple tags over the web applications related to the terminology. After that, the inquiry analysis automatically evolved due to the multiple results of web pages. These blogs might lead to self-conflicts about the product buying decision, make other products buying tendencies due to review and offer advertisements, and positive review motives to buy the product impulsively. The review inconsistency might lead to various conflicts due to the positive and negative commands.

3.4. Entertainment Channel Influence

Furthermore, the analysis has been extended to entertainment mediums such as social media such as Facebook, YouTube, and other web and mobile application platforms. Hence, the analysis has been continued such as about the seeking products and services. This analysis has been extended to the entertainment medium. Hence, gaining the review has ensured that the buying decision is fair.

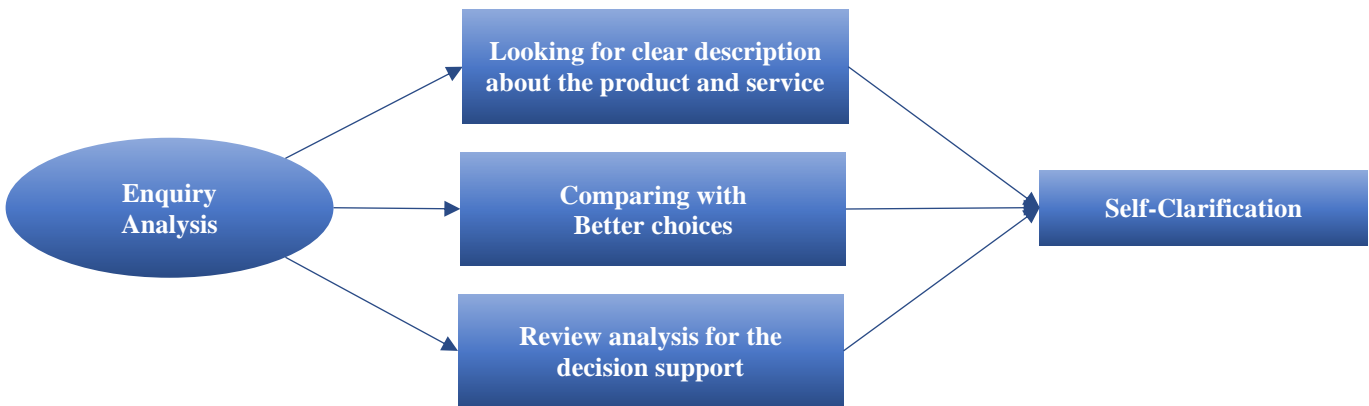


Fig. 4 Inquiry analysis



Fig. 5 Overall Flow graph of RMA

3.5. E-commerce Analysis Influence

Like entertainment mediums, e-commerce platforms have been providing better influence on seeking product descriptions, price offers, customer reviews, and service reputation. The availability of numerous e-commerce applications provides various options and dynamic web navigations and interactions over the user interface and platform access. This kind of e-commerce might lead to numerical processes and connective systems and connections.

3.6. RMA Model

From the web-seeking pattern, the RMA pattern evolved. Cumulative analysis of web-seeking patterns for the specific period of weblogs can provide human psychological and cognitive influence over the decision-making process. Moreover, psychoanalysis has been made through web search analysis. The repeated pattern of the entire cycle (as shown in Figure 5) can assist in predicting the goal or intensive-oriented web search. Optimization of cumulative web search patterns can provide a better solution to the addiction pattern of ICBA.

RMA can provide a better understanding of problematic internet use (PIU). To understand the PIU and excessive use of smartphones for video gaming, online gaming applications, gambling applications, and e-commerce compulsive buying applications, which can make a better understanding of the psychoanalysis and identify the addictive state of PIU.

3.7. Psychoanalysis from RMA

It is essential to measure and treat the cognitive psychological state of an individual, especially those who were more immersive active participants towards PIU. To describe the PIU, which is any form of repeated activity that can make an individual into a more addictive and dependent state. The RMA-based psychoanalysis (as shown in Figure 6) with psychoanalysis can provide deeper insights and assist in preventing PIU. Psychoanalysis using web history can provide good insights and assist in preventing PIU and awareness of consciousness build-up. A large amount of knowledge and information from web mining can be used to find human psychological behavior from semantics and relationships from web searching patterns. Some of the major interpretations from psychoanalysis can be attained through RMA-based psychoanalysis.

3.7.1. Understand Frequent Access to Web Seeking

The RMA relates to repeatedly searching patterns in the specific task-seeking process. The RMA model is effectively used to identify the frequent access web seeking and using multiple channels for the specific content. Frequent access might lead to compulsive access to a particular activity, such as compulsive buying and social media addiction. This frequent access to the same product or service might explicitly state that an individual or highly addicted is needed for the specific task. This might be used to identify an individual who has been addicted to either the substance products or a virtual

platform such as PIU. The frequent access represents that repeated pattern of seeking and measure of often use.

3.7.2. Analysis of Stress and Depression State

The web searching patterns are repeated to find the optimized solution, which acts as a recurrence psychological process. These processes are continuously updating as addictive and impulsive inducements behavior. Repeated activity, such as web solution seeking, might lead to stress and depression state. Psychoanalysis can be used to identify atypical activities such as suicidal attempts from online addictive game activity Blue Whale or any gambling-based impacts. Similarly, making web history-based RMA pattern psychoanalysis can assist in making self-analysis about the addictive activity, which can assist in virtual dependency relapse.

3.7.3. Understand the Needs are Dynamic

The searching and seeking patterns based on requirements it gets vary. Due to the changes in requirements, they are quite dynamic but seek patterns constantly using similar web searching with multiple inputs. RMA-based psychoanalysis can provide self-clarity and be used to build self-consciousness to prevent PIU. Moreover, the symptom validation test for psychological issues is essential since the explicit symptoms are very few. Since the addictive contexts are very dynamic and might change from various factors of requirements of an individual.

3.7.4. Understand the Decision-Making Uncertainty

The rationality of addiction context impacts behavioral and decision-making differences. There is no or very limited measure of uncertain contexts, such as addiction prediction, specifically with PIU, whether the excessive use of the internet impacts decision-making and makes more dependent on virtual systems. RMA analysis can recommend PIU based on consistency requirement over the periodic analysis, which makes self-consciousness to prevent various virtual addictive activities such as online gaming/gambling, impulsive buying, pornography watching, and so on. Furthermore, this study explores and simulates web history-based trajectory analysis and interpretations of decisions over the PIU impacts using cognitive psychology.

4. Results

This study aims to identify addictive behavioral analysis using web searching patterns; applying RMA trajectory analysis to these results can provide effective insights and cognitive psychological-based interpretations.

Exploring this study requires two important parts: one is identifying the suitable pattern for trajectory analysis of addiction prediction, and the other part is to move from the results of sentimental analysis of RMA values into cognitive psychological interpretations.

Table 2. Accuracy according to vocabulary

Vocabulary Size	Epoch 1	Epoch 2	Epoch 3
20000	0.8251	0.8566	0.7861
25000	0.7864	0.8342	0.8023
30000	0.8326	0.8724	0.8159
35000	0.8155	0.8467	0.8346
40000	0.7952	0.8156	0.8234

4.1. Experiments on RMA Trajectory Sentimental Analysis

This repeated word-based web searching pattern analysis needs to consider the sentimental and emotional tolerance in the context of PIU. The CNN-based distant supervision method was used to identify the repeated word pattern in multiple web channel applications to identify the RMA. Table 2 shows the variation of accuracy based on the vocabulary size of the RMA sentimental model.

The accuracy is calculated using a conventional calculation process similar to information retrieval. The table represents the accuracy of repeated words from 1 to 5, respectively. Experiments were conducted while repeated modification of the word searching pattern, and the variables were diversely changed; the optimum results were obtained when the word size was 30,000, as shown in Figure 7. The number of filters was 128, and the batch size was 64. Hence, compulsive picking has been analyzed by how many times it hits the Amazon website-based user-seeking task. The compulsive web and digital addiction have been measured with the frequency of seeking the particular web-based metrics that were explored.

4.2. RMA-based Cognitive Psychological Interpretations

This study explores 50,000 datasets from Amazon AWS open dataset to understand impulsive buying behavior and web history trajectory analysis-based predictions.

Moreover, this study used Asterix DB, an open-source proposed by the Big Data group (UCI) that can support BDMS (Big data management system) and semi-structured datasets. It is an object-oriented database, and NoSQL is extended with JSON. It can support feed function real-time context datasets and indexing such as B+ and R-tree and so on. Figure 8 refers to the web-seeking pattern using Amazon for impulsive buying analysis. For iPhone, searching on Amazon e-commerce platforms was explored as an inquiry analysis.

Moreover, analysis of repeated web searching patterns shows repeated patterns or word phrases with multiple channels. The proposed RMA model provides better accuracy of PIU through a repeated pattern of web history-based inputs. Applying Cognitive effective support to identify the impulsive buying addiction prediction. Asterix DB is used to analyze the web mining process. In a specific seeking pattern, the URL is extracted with similar products based on specific searching in various channels. Based on the semantics of the text phrase used in multiple channels and visiting consistency based on finding the time spent on specific semantic searching, it can be measured from web cache analysis.

4.3. RMA Analysis on Amazon Browser History

To explore these contexts, an Amazon browser history examination was conducted. For the sample of examining the RMA model, iPhone searching phrases were used to extract the cached web pages based on the specific period, as shown in Table 3. By analyzing the last visiting time from the initiated time, we can understand whether the searching individual might be a PIU or not. Use of the Internet frequently for several hours each day or week is a strong indicator of Internet dependence. Pathological Internet Usage (PIU) is substantially more prevalent in those who use the internet more than 5 hours per day than in people who use it less frequently (Odaci and Kalkan[25], 2010). From this literature, this study takes a certain threshold value, either PIU for specific session-related web searching or RMA, which takes 5 hours as a threshold value. The analysis of consistency measures in terms of measuring spending searching timing on RMA could provide whether an individual PIU or not.

Table 3. Web-Session visiting frequency measure

Impulsive buying PIU	Session initiated period (ti)	Last Visited (tl)
https://www.amazon.in/s?k=iphone&crd=3DEF7M9F79C4S&sprefix=iphone%2Caps%2C1088&ref=nb_sb_noss_2	03/11/2015 06:07:24	03/11/2015 13:05:47
https://www.amazon.in/s?k=smartphone&crd=2ALBSWN9XHVSI&sprefix=smartphone%2Caps%2C478&ref=nb_sb_noss_1	05/11/2015 07:09:37	05/11/2015 15:26:37
https://www.amazon.in/s?k=top+selling+smartphone&crd=3T37QJ585XY3D&sprefix=smartphone+top+re%2Caps%2C365&ref=nb_sb_ss_ts-doa-p_1_17	08/11/2015 09:11:43	08/11/2015 11:56:17

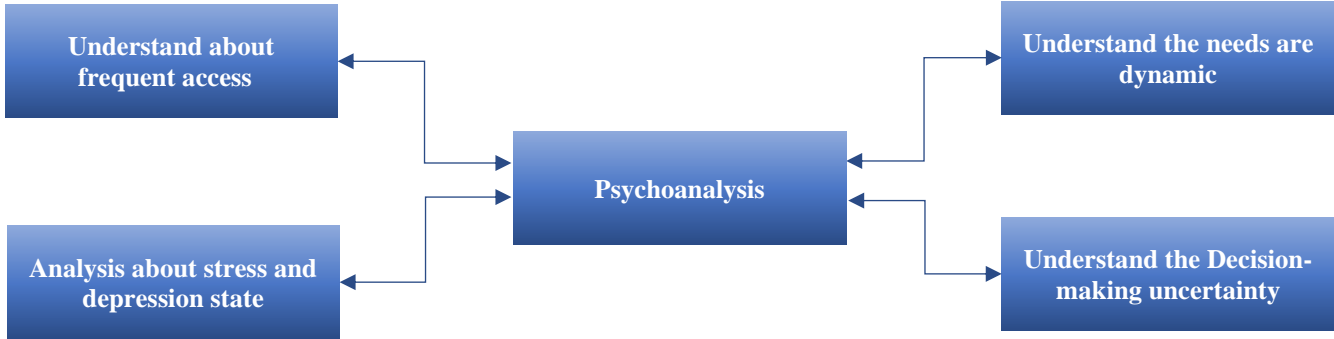


Fig. 6 RMA-based psychoanalysis

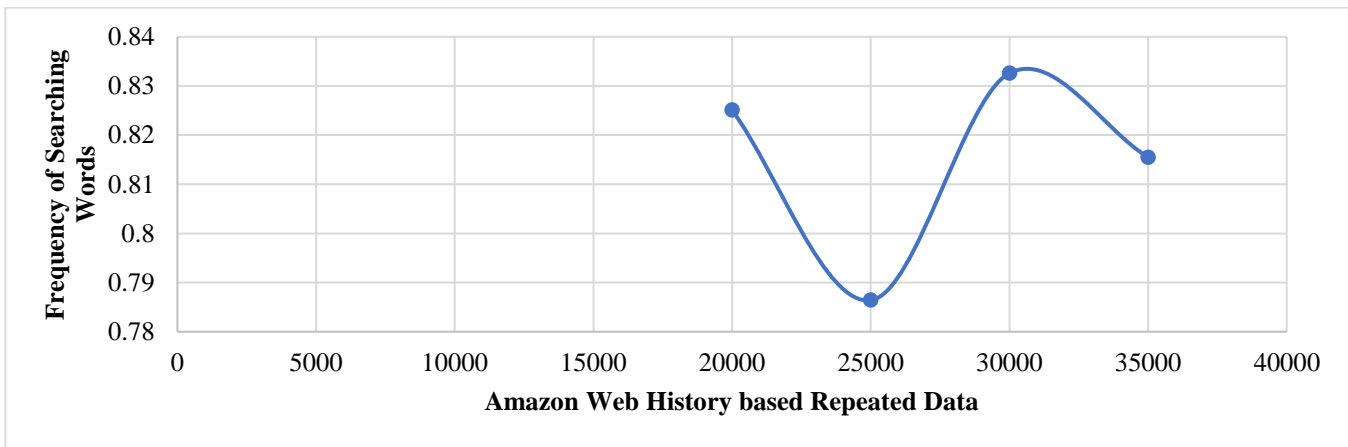


Fig. 7 RMA-based trajectory analysis

Frequent Access Analysis

Web Cache Analysis

URL	Fetch Count	File Size (Bytes)	Web Browser
http://www.amazon.co.uk/Apple-iPhone-UK-Smartphone-Space/dp/B00NQ15NOI/ref=sr_1_1?ie=UTF8&qid=1446478709&sr=8-1&keywords=	121687	121687	Chrome
http://www.amazon.co.uk/	83429	83429	Chrome
http://www.amazon.co.uk/s/ref=nb_sb_noss_2?url=search-alias%3Daps&field-keywords=iphone	81709	81709	Chrome
http://www.amazon.co.uk/exec/obidos/tp/browse/-/468294/202-0892989-7471050	74913	74913	Chrome
https://www.amazon.co.uk/Prime-Instant-Video/b/ref=sd_alcat_av_priv?ie=UTF8&node=3280630031	53899	53899	Chrome
http://www.amazon.co.uk/gp/site-directory/ref=nav_shopall_btn	39246	39246	Chrome
http://www.amazon.co.uk/s/ref=nb_sb_sabc?url=search-alias%3Daps&pageMinusResults=1&suoo=1446478704809	29795	29795	Chrome
http://www.amazon.co.uk/gp/ask-widget/askWidjet.html?asin=B00NQ15NOI&skError=&skMessage=&wdg=wir_phone_display_on_website	3356	3356	Chrome
http://www.amazon.co.uk/gp/ask-widget/askWidjet.html?asin=B00NQ15NOI&skError=&skMessage=&wdg=wir_phone_display_on_website	3328	3328	Chrome
http://fs-dev.vipinteg.amazon.com/1/softlines/1/OP/ImageBlockUDP?&_=1446478734619	1358	1358	Chrome

Viewing 17/1161 records

amazon.co.uk All iphone

1-16 of 14,985,134 results for "iphone"

Shop iPhone on Amazon.co.uk

By model: iPhone 6 | iPhone 6 Plus | iPhone 5s | iPhone 5c

Related Searches: iphone 5s, iphone 6, iphone 6 case.

Apple iPhone 6 UK Smartphone - Space Grey (16GB) 5 Dec 2014

from £0.00 New Contract
from £0.00 Upgrade Contract

Without Contract £459.00 Prime

Eligible for FREE UK Delivery

See more colours
Electronics & Photo: See all 14,309,970 items

Betron B650 Noise Isolating Earpho... £13.99 Prime

Fig. 8 Web-seeking pattern impulsive buying analysis

4.4. Entertainment and Inquiry Analysis

Similarly, other channels of web applications besides the e-commerce platform and Google finding and navigating multiple websites for the specific requirement might lead to a huge time spent and making impulsive for other even unnecessary purchases.

Figure 9 states the web-seeking other channels' impulsive buying analysis. Using web caches, similar session searching patterns can be identified at specific initial and ending stages to understand repeated searching patterns occurring.

Furthermore, Figure 10 reveals the RMA using the web pattern of the recursive seeking process using URL-based session tracking and web browser history. These can be better supported at RMA to understand the individual PIU state. Figure 11 represents the web visit chat and how long the web search hit on specifically related queries in various channels.

4.5. Discussions

Web history analysis plays a vital role in analyzing the patterns of searching behavioral systems. In recent trends, Smartphone applications provide multi-facilitate systems to gain knowledge and information sharing, social interactions, and so on.

This study proposed a novel psychological measure using web navigation trajectory analysis and web history-based user-compulsive buying or addiction attitude. It has a huge impact on daily lives and processing systems and makes

effective results on productivity through leveraging pervasive, simultaneous, and distributing systems. The multi-functions at mobile application platforms make the user highly device-dependent.

Even though Smartphones offer multiple leveraging uses and communication devices, the negative things and vulnerabilities also increase directly and indirectly. For example, the analysis of spending time on e-commerce platforms through web history provides a keen decision on how adequate the compulsive e-commerce processing occurrence is connected in a real-time context.

However, this study highly requires a huge set of computational and psychological approaches in terms of a specific gateway to address human digital addiction. The process through seller and buyer platforms, how the interface makes the user into compulsive, and repeated purchasing systems. After Smartphones arrived, the internet and accessing capabilities increased as E-platform Accessing Values (EAV) were highly attained by Smartphone development.

Further, this study aims to develop something similar to Cham S et al. [26]., (2019) regarding whether self-control may be improved by creating software-based behavior controls, such as goals and limited sitting, in this area of investigation should be pursued. Psychometric model development requires this type of EAV or other virtual system measurement so that psychologically compulsive prediction systems can be used.

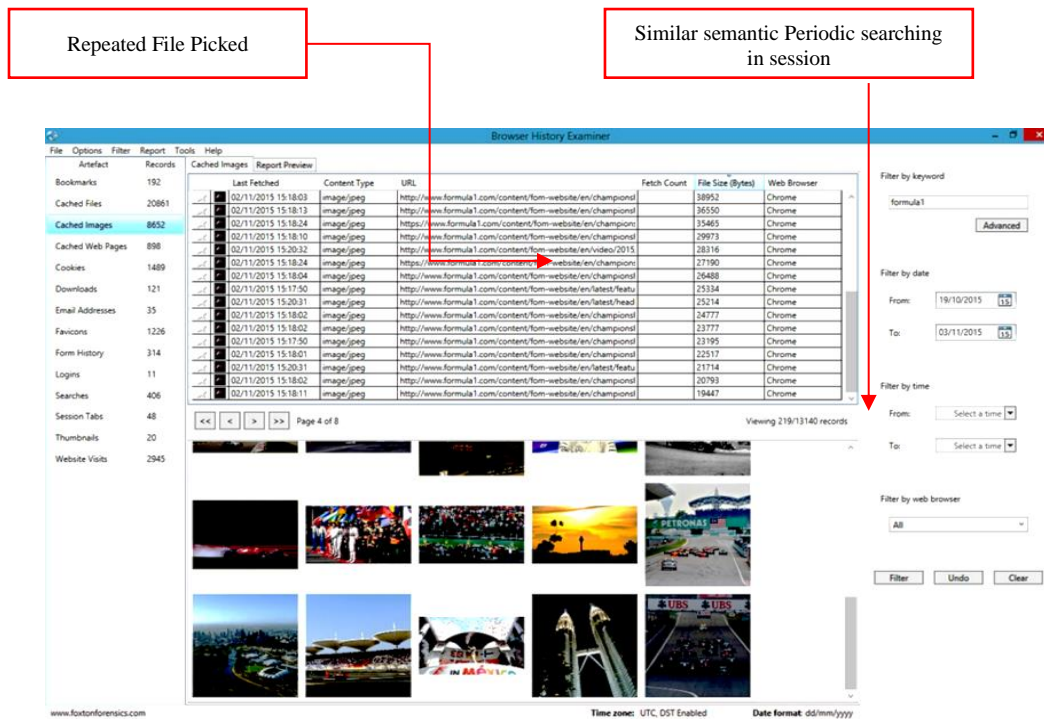


Fig. 9 Web-seeking other channels impulsive buying analysis

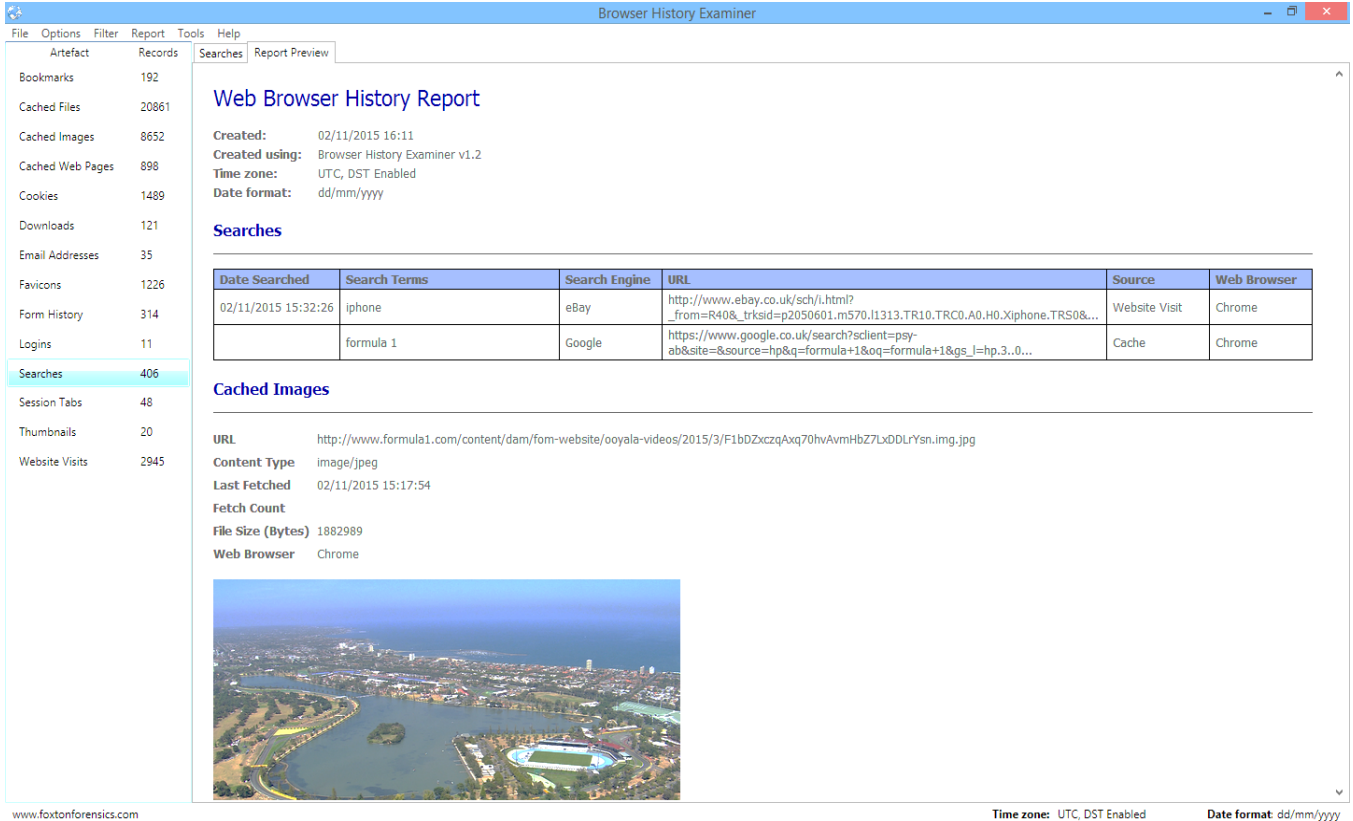


Fig. 10 RMA using web pattern of recursive seeking process

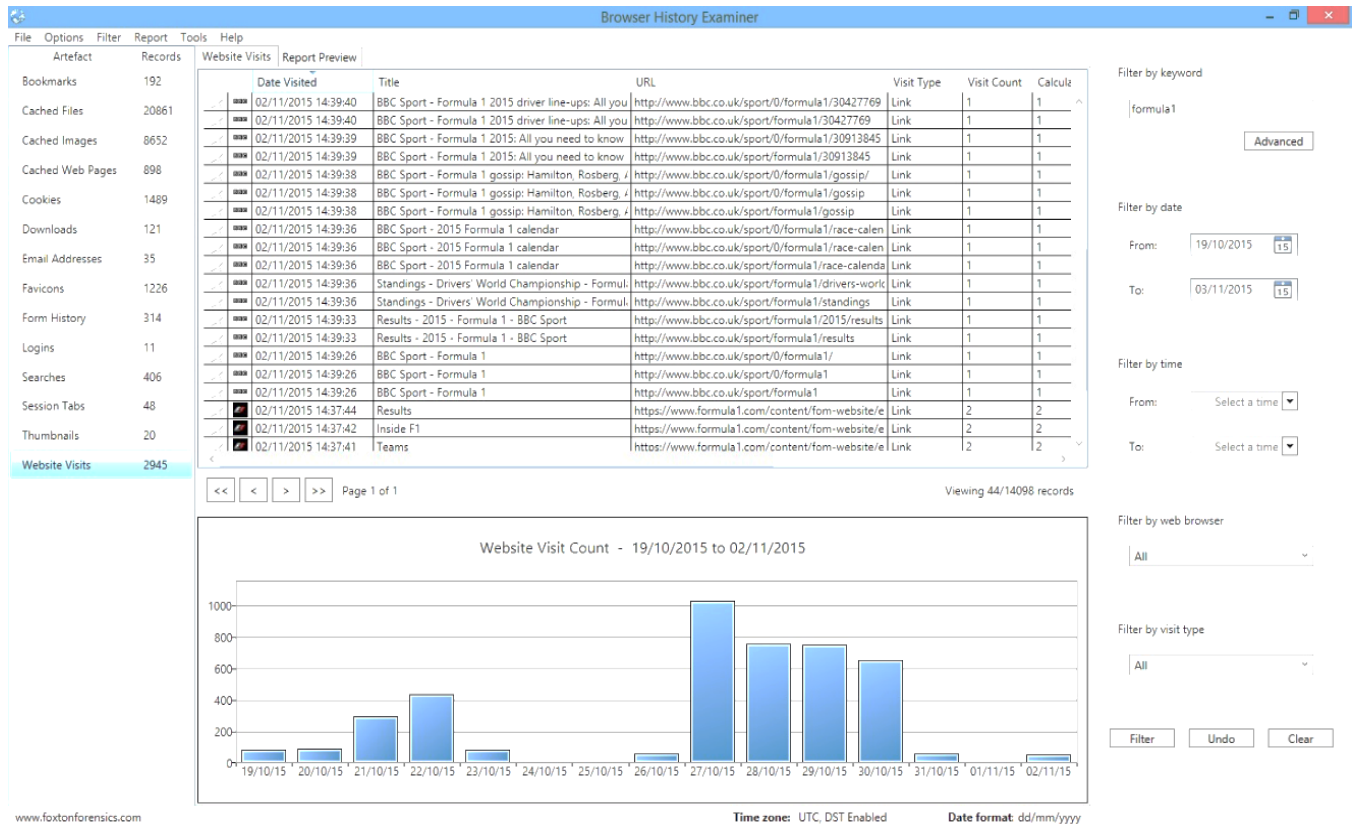


Fig. 11 RMA using web visit chat

4.5.1. Limitation

This study explored a specific dataset with Amazon. This study intends to make society aware of digital addictive realization through EAV; any regular web user can understand their psychological compulsions and their effectiveness. This study has taken very limited metrics regarding the delivery of psychometric systems. These could assist in making a psychometrics development system. However, these proposed models try to provide psychometric measurements to protect their system.

5. Conclusion

Analysis of the semantic relationship of web searching history can provide multiple and worthwhile insights about an individual's behavioral, cognitive, and attitude. Since spending time with smartphones, values have become quite high. So, analysis of web history, such as spending time on e-platform, can make sense to understand the individual cognition processing over multiple activities such as learning, communicating, and entertaining aspects. Analysis of web history patterns makes sense and could make self-aware over psychological assessment. The enormous growth and usage of the internet and Smartphone access leads to dependence on the facilities. At that same time, Excessive use of Smartphones or the internet use (known as Problematic Internet Use (PIU)) leads to any sack of activity such as entertainment (video, audio, pornography), communication (often updates at social media sites, persistent chats), and impulsive and compulsive buying (ICBA) which makes complex at the day-to-day

activities such as learning, focus distraction, conflicts at decision making. Moreover, PIU leads to numerical physical and psychological traits. Smartphone-based internet use in recent trends become essential, immense, and vital. But when it exceeds that level of consumption, there is a need to analyze, or else those activities become pathetic. This cognitive psychological interpretation provides better consciousness among the addicted or not addicted. This can be adapted to any form of digital addiction and tracking process of PIU.

The virtual platform-based addiction prediction requires deep psychological insights to prevent digital addictive relapse. Amazon web history-based identification of impulsive buying addiction prediction carried out. In the previous part, sentimental analysis was done, and RMA was used to identify whether repeated word-searching patterns could help identify the addictive prediction. From the previous stance, the second part explored and implemented to identify the impulsive buying predictions from web searching patterns. An analysis of the web browser history and the repeated words and semantic relationship can suggest better interpretations of an individual impulsive buyer or not. This clarity makes the user understand their realization, which can assist in protecting them from their compulsive addiction.

Authors' Contributions

The first author contributed by analysis, preparation, and draft part, and the second and third authors supervised and problem definitions.

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