Original Article

Artificial Intelligence in Public Relations and Association Rule Mining as a Decision Support Tool

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Abstract - *Association Rule Mining (ARM) is an important data mining technique for finding frequent terms that are very useful in evaluating and recommending a range of activities a business will implement to entice customers. This study aims to highlight the importance of ARM and to shed light on Public Relations (PR) practitioners to increase the effectiveness of data mining tools such as WEKA. Rather than providing a comprehensive description of the algorithm used, the analysis included in the study paints a general picture of how this technique can be used to facilitate PR practices. In this framework, filtering, processing, and term calculations on the collected data were made using WEKA. Analysis and understanding of output rules are one of the main tasks that Public Relations practitioners must perform. In summary, it is concluded that ARM can be used effectively in PR applications such as cross-selling, targeted campaigns, and managing activities.*

Keywords - Artificial Intelligence, Association rule mining, Data mining, Weka, Public relations.

1. Introduction

Today, many institutions aim to obtain meaningful information from the data they store with the opportunities offered by information technologies. Organizations in various sectors use Artificial Intelligence (AI) technologies to access information that may be useful to them from the data stored in their databases and within this framework to enable them to do their work faster, more efficiently, and more easily. The use of AI technologies, which are increasingly taking place in today's world, is increasing in many areas, from map applications to health and defense technologies.

In a world where competition is increasing rapidly with technology development, Public Relations organizations attach importance to information technologies and actively use them at every stage to provide better service to their customers. AI, together with big data, is changing communication environments today. Together with the global data ocean, these challenges can be met with the power of AI. PR professionals will inevitably use the AI revolution to increase comfort and productivity, as in many other industries.

AI systems are used to perceive an event, phenomenon, or object similar to human intelligence and to respond and create a solution similar to human intelligence (Thiraviyam, 2018: 3).

AI is described in different contexts, and in terms of public relations, it is essential to conceptualize it. The

various ways in which AI has been identified since the term was first used in 1956. (Dignum, 2018) stated that the ability to generate many economic sectors from AI technology has many advantages for the PR industry. Public relations professionals who use them (AI tools and applications) find that they do their work more effectively and do their work better.

Galloway & Swiatek (2018) stated that the potential of AI for PR could be demonstrated in many ways, such as through presentations and lectures at conferences and events and on social media. PR professionals can use the information obtained by AI tools to adapt their approach and improve their success rate. To achieve their goals more quickly, using AI in publishing will lead to faster and better results. At the same time, Valin (2018) stated that the refined implementation of technology shows human psychological features such as analysis and analytical problem-solving in the machine. Building on these definitions, we tend to conceptualize AI in the context of PR as technologies that demonstrate automatic cognitive skills and perform automatically with PR practitioners or several individuals.

2. Public Relations and Artificial Intelligence

"PR is a discipline, a field of practice required by every institution or organization that should communicate. PR is a discipline with its rules and gains vitality through communication. In fact, every new communication tool and method has become a PR tool. The method from the first applications to the present is the most important basis of the

relationship between communication and PR. Today, communication that has been moved to the digital environment has affected PR practices, and social media has turned into a PR tool and method as soon as possible" (Peltekoğlu, 2012: VII).

"Practically speaking, PR is a 'relationship' business built around creativity, networking, and the ability to communicate effectively through compelling content. Factors like accelerated business and digitization of the media have changed PR from a business relationship to a terabyte business" (Ibrahımzade, 2017: 34).

Although practitioners perform a variety of roles in their profession, one function is played more frequently than others. This dominant function could be one of Broom's four conceptual roles for PR roles, which he developed in his initial work (Broom, 1982).

The first role is the communication technician; the PR professional is primarily responsible for creating communication materials such as brochures, videotapes, newsletters, and press releases. He administers communication programs but is not involved in the decision-making that leads to the program's creation.

The expert prescriber is another role. The expert prescriber, unlike the technician, is the authority on PR issues and resolutions. He is, moreover, pigeonholed as 'the expert,' even though the PR role is not integrated into the organization's management. According to Broom and Dozier (1986), this is a high-risk function for PR experts because there is no top management vested interest.

The communications facilitator is the third role those PR managers play. This individual works beyond organizational boundaries to serve as a liaison between the organization and its constituents. The facilitator of the problem-solving process is the fourth conceptual role. When a practitioner takes on this leadership role, they work with the management team to identify organizational issues and engage in strategic planning and programming to address the obstacles. Collapsing the manager and technician roles into one function and isolating the technician role as a second dimension has proven beneficial in several case studies (Dozier & Broom, 1995; Lauzen & Dozier, 1992; Johnson, 1997).

Dozier (1992) concluded that the management and technician roles were stable and resilient and a useful approach to reducing the four jobs into a reduced typology, based on his reanalysis of roles data from three pieces of research. He also concluded that the management and technician roles were stable and resilient and a useful approach to reducing the four jobs into a reduced typology,

based on his reanalysis of roles data from three research studies.

The transmission of information between an individual or an organization and its public is known as PR. PR experts work to establish and maintain relationships between an organization and its target audience, the media, and other influential people. The theme, topic, or news items are used in this type of business communication, which may or may not need direct payment. PR is distinguished from advertising and other types of company communication in this line. PR, with its historical roots, evolves with the passage of time and demands. Technological improvements are the causes that have been renewed PR initiatives regularly. Understanding and discussing AI and machine learning (ML) are critical in this environment.

AI is concerned with creating computers capable of learning, reasoning, and self-correction like humans. The idea is that machines can develop some of the same skills as humans, such as learning, adapting, and self-correcting. Human intelligence is being expanded through the use of computers, just as physical power has been expanded through the use of mechanical tools in the past. In a limited sense, the study of methods for more successfully using computers through enhanced programming approaches.

Rather than looking at a broad definition of AI, one can focus on the notion of artificially intelligent systems. There are numerous definitions available, but most of them may be divided into four groups: systems that think like people, systems that act like humans, systems that think logically, and systems that act rationally.

In the communications industry, AI has gradually gained traction. In PR, AI can frame data-driven content and manage crises. It is also aware of forthcoming media trends. Only the most well-known PR firms have been able to use AI in their regular operations so far. It is being used to improve people's talents. As a result, PR professionals can devote more time to creative endeavors. The level of diversity in PR roles may be reduced due to AI ignorance. As a result, the function of such technology has become critical in ensuring the success of PR campaigns.

Such machine inputs are beneficial for both qualitative and quantitative judgments. It aids in determining the campaign's timing, substance, media, and target audience. PR professionals can use AI to create hyper-specific communications best suited to their client's needs. It can reduce the effort spent creating material for a certain audience.

AI has attempted to relieve PR experts of tedious work. With the help of AI, routine or repetitive tasks can be completed quickly. Robotic Process Automation (RPA)

makes various routine tasks possible thanks to this technology. The firm's machine schedules calendars, structure meeting notes, and perform other related tasks. Technology is freeing PR professionals from tasks such as administration, number crunching, and file organization. They can use technology to generate, organize, and prioritize tasks in their businesses to fulfill the needs of their clientele. In some cases, it has been shown that PR agencies have begun to automate processes.

Earnings reports are an example of this, as they optimize their creative duties. Because AI is used to complete several projects, PR professionals are becoming more involved in project ideation and branching out into new areas.

The creation of new campaigns may be achievable with AI inputs. It can also assist a PR business in eliminating guesswork. Automation and machine learning assist experts in determining which components contribute to the success of PR initiatives. Because a machine can perform tasks faster than a human, it is simple to make quick and precise conclusions that benefit the client. It aids in understanding and predicting trends, which is necessary for decision-making.

AI and machine learning are used to power a variety of analytical and creative tools that can be used to improve an agency's offerings and marketing efforts. AI allows many traditional PR and marketing agencies to take a more proactive approach to their work. AI is used to refine PR and marketing efforts by predicting future news events.

PR professionals now enable from the new relationship between humans and those new intelligent machines to create data-driven campaigns, automate repetitions, analyze online conversations, and predict crises.

AI is the embedding of technologies that enable machines to perform tasks such as moving data, analyzing data, and processing data, while being better than humans. Rather than creating jobs, AI and machine learning can help skilled workers do a better job, complementing rather than competing with PR professionals. Social media platforms like Twitter, Facebook, Instagram, and LinkedIn are transforming the PR industry, which is good news. AI allows PR professionals to accurately quantify people's feelings and opinions about a brand and compare those feelings with real-time data from social media platforms.

(Dignum, 2018) stated that AI can carry out typically human intelligence tasks. Agencies in the PR industry are on the verge of a few AI transformations to perform some of their daily tasks. Experts have told PR industries that in the AI age, they will rediscover themselves. AI technologies in the PR industry can generate many economic fields.

(Ardila, 2020) Many of these tools currently feature AI algorithms that extract qualitative and quantitative data about individuals' behaviors, feelings, and opinions. An explanation is sentiment analysis which uses AI to decide whether or not some writing is positive, negative, or neutral. The analysis will facilitate public opinion measurement, market research, brand reputation monitoring, or large amounts of insights into customer experience by public relations professionals.

AI has had a bit of a slow beginning within the communications profession. In fact, in 2017, simply three percent of news stories discussing the PR industry even mentioned AI. PR professionals are slowly, however for sure adapting to new technologies. PR agencies have begun harnessing AI's ability in their daily functions and understanding its potential to streamline consumer operations, create new experiences that increase brand affinity, and improve user experiences.

(Panda, 2019) pointed out that organizations will measure the value and integration of PR efforts to the overall objectives of their companies by adopting and applying AI tools and technologies. AI can automate and accomplish multiple tasks within the PR framework. These tasks encompass data-based story writing, media lists organization and updating, crisis management assistance, audio transcription and conversion to text, media trends and prediction, social media monitoring, and management.

Data Mining (VM) is the job of obtaining useful information needed and desired from large databases.

3. Data Mining-Association Rule Mining As A Decision Support Tool

It can be said that data mining, with a very simple definition, is the discovery of knowledge. Today, the importance of information is known. With the proliferation of this data that can reveal information, it has become important to extract meaningful and useful information from a large number of data, especially in social media and today, as a concept, big data. It has an economic value, especially an added value. To create this value and see its benefits of it, the subject of data mining has been developed on data and analysis.

In the past, these analyses were made based on statistical package programs in the form of summarizing data or queries over databases. From this point of view, data mining is not just a query, making inferences from data using statistical package programs; it is the processing of all of the data that is formed today, without the need for any sampling, without the need to collect the data through surveys.

Today, developing technologies that increase memory capacities and storage capacities have facilitated the work of data mining. Data mining is a technique developed as an extension of AI, and today we see that data mining is used in many fields, in many disciplines, as a technique used as an extension of AI.

Data mining is defined as "the process of revealing valuable information that is waiting to be discovered in large data piles, that we cannot reveal with fore-sense and predictions, and that will provide great benefit to the unit in need if it is discovered" (Silahtaroğlu, 2016: 9-11), is a process that uses statistical, mathematical, artificial intelligence and machine learning techniques to extract meaningful relationships between the data in the database, to distinguish, identify, reveal and obtain usefully, sought and useful data from large databases.

Data mining applications are becoming increasingly popular for various applications in various sectors.

Data mining, which is used in fields such as marketing, banking, insurance, stock market, communication, health and medicine, industry, science, and engineering, where there are large databases, produces solutions for determining the demands in the sectors, finding and developing the most suitable solution for the demands.

In the use of a data-mining program and algorithm, which is one of the steps of the process of reaching meaningful information from databases, the data-mining method is selected among the different methods used, and "it is aimed to apply the algorithm until stable and useful rules are obtained" (Aytaç & Bilge 2013).

Borkar, S., & Rajeswari, K. (2013) mentioned that Data mining is the process of analyzing data from different perspectives and summarizing it into important information to identify hidden patterns from a large data set

"Data Mining is divided into methods according to the subject and the type of data. Classification, clustering and association rules are the main methods" (Karagöz, 2007). These methods contain many algorithms in themselves, and one of the methods used in this framework is association rule analysis.

"Association rule analysis is one of the most widely used techniques among data mining methods. Association Rules Analysis problem was first discussed by Agrawal and Swami in 1993 and is one of the first techniques used in data mining" (Ateş & Karabatak 2017). It is referred to as 'market basket analysis in the literature. In this framework, "it helps the operator to determine customer behaviors by determining the products purchased together, to analyze the products sold according to time, to create sales strategies on which products should be discounted to increase the amount of profit, and how to place the products on the shelves" (Agrawal & Srikant, 1994).

One of the most used rule-based machine learning methods is association rules learning, designed to find meaningful relationships between variables in large databases using metrics and other measurable tools. The researchers Agrawal and his friends have introduced relationship rules based on strong associations to define the consistency among products in large-scale transaction statements recorded by supermarket point-of-sale systems. The rule in the supermarket's sales data shows that there is some consistency between the customer's purchases.

In addition to the examples mentioned above from the market basket analysis, association rules are used in many fields, such as bio-informatics, continuous production, intrusion detection, and web mining. In contrast, rule-based learning generally does not consider the order of items. It only considers the order of items between transactions or within a transaction.

Association rules greatly benefit marketing, decision-making, and business management by finding association patterns among big data. Since association rules are useful and easy to understand, they have spread in finance, communication, marketing, retailing and electronic commerce (Yurtsever, 2002). Association rules are a data mining model that aims to find connections between data in a database.

(Aggarwal, 1994) Association Rules Mining is a data mining task rather than a machine learning task. The output of the AR program is deterministic; it does not depend on the technique used in computing the rules; however, it depends on the data used in the experiment. Unlike other data mining methods, no model is built from the input data. Several existing tools help in finding frequent terms.

(Yun, 2006) mentioned that in multi-store environments, traditional mining association rules could not produce healthy results. The principles of the developed algorithm rule also provided data concerning the shop location and time—an algorithm such as the APRIORI was developed to examine association rules in these stores.

(Özdagoglu, 2008) The association rule analyzes the Aegean region's research, hospital, and educational emergency services. The APRIORI rule had been found to have associations concerning gender, the time of arrival of emergency services, and a few diagnoses of disease, by the rules association found.

(Cil, 2012) assumed that customer receipt and product bar-code data were collected for the research analysis in line with the association rule strategy to provide information to a supermarket MigrosTürk, which is crucial in the retail

sector. Then the new store layout and plan based on output rules resulting from an analysis using the APRIORI algorithm was suggested.

ARM techniques are AI techniques for finding frequent terms in large data sets. Usually, the data take the form of transaction items that may come from documents, chatbots, social media posts, pages on a website, and anything else that's essentially a pile of words. In this case, the document is the transaction, and the keywords are the items.

(Özgülbas, 2009) stated that the association rules carried out to assess hidden relationships in a huge data set are qualitative data and mining models.

This method and technique apply a series of experiments to the data within the data set, information in stock, and the rules describing the relations between the records are extracted. The association rules technique presents and describes how the development of a set of events affects the occurrence and prevalence of a given event as a summary and an outline. The analyst shall determine rules equal to and above the success rate set at the beginning of the application.

Data mining allows confidential information to be redesigned and converted into valued data for the company through massive knowledge stacks. One of the best answers to this need has become data mining. That is valuable data filtering technology from massive databases.

4. Method

The main purpose of this study is to examine the use of association rule mining for activity management.

We used WEKA (Witten, 2005) in our case study to compute existing rules. Weka is an open-source software frequently used in academic circles, combining data preprocessing tools and machine learning algorithms for data mining tasks. It was developed with the Java software language at the University of Waikato in New Zealand. It can be used in large or distributed databases: data preprocessing, classification, association analysis, clustering, selection of attributes, and visualization. The important task for PR practitioners is tuning the input parameter and selecting the proper algorithm. In Weka, algorithms can be applied directly to a data set or created using Java, but this is out of scope and is not required by PR practitioners. However, they should be aware of the advantage and disadvantages of available algorithms and when they should use them.

R. Agarwal and R. Srikant presented Apriori in 1994 as a seminal approach for mining frequent item sets for Boolean association rules. The algorithm's name comes from relying on prior knowledge of common item set attributes. Anwar & Ahmed (2011) mentioned that

association rule learning is a well-known and well-researched method for determining interesting relationships between attributes in huge databases.

Association rule mining aims to identify strong rules in databases using various measures of support and confidence. The two measurements of the rule support (s) and confidence (c). They represent the utility and certainty of the found rule.

The mining of association rules can be thought of as a two-step process:

- Locate all the frequently used item sets: Each of these will appear at least as often as a minimum support count is set.

- The often-occurring item sets generate strong association rules: The regulations must elicit minimal trust and support. These are known as strong rules.

4.1. Research Design

Naturally, quantitative analysis is statistical-based, focuses on measuring an objective fact and reality, and depends on massive samples to form generalized statements. The task is deterministic, which means that if it is repeated several times or using different tools will produce the same rules. The analysis and understanding of the output rules are the main tasks that should be done by the PR professional.

4.2. Sampling Method

This section describes the population from which the samples were selected. It describes the participants involved in the study.

- The respondents were people living in North Cyprus and Egypt trying to obtain from them the places they are aiming for and prefer to visit.

- Questionnaires using Google docs were sent as a link through Facebook, Gmail, and Instagram.

- Mentions were collected from 14th March 2021 to 31st March 2021.

- The Number of Respondents collected for the first questionnaire was 301, while the other questionnaire was 300, and both were in the English language.

4.3. Data Collection Procedures

Two surveys were prepared using Google Docs, and Facebook accounts and Gmail were used to collect respondents.

The first questionnaire was about the most visited cities in turkey by tourists, and the other questionnaire was about the best places they prefer to visit in their preferred cities. Using docs.google.com to make a questionnaire and collecting respondents by sending emails or posting it through different social media apps by publishing.

4.4. Method of Data Analysis

Using Weka as an association rule data mining program to set rules for managing certain activities, as shown in the below figure. As a PR professional at a tourism company, an example will help make a perfect program according to understanding the output rules.

Run the data inside the Weka; the association rules were derived from the previously converted data set into (ARFF) format using the APRIORI algorithm under the Associate option in the Weka system.

As a result of experiments on a dataset of this size, the Weka software for Data Set-1 was the first to run for the APRIORI algorithmic. In 3.05 minutes, 17 rules specified minimum confidence and supporting values.

Weka program can examine a huge number of questionnaires in seconds and how the program will put rules for the common preferred cities and vacations of 301 respondents who want to visit.

The first questionnaire, as shown in the figure, was a simple question asking the tourists which cities they prefer to visit in Turkey, while the 301 respondents for that form filled in the given check-boxes for their preferred vacations. In contrast, the other questionnaire was for the preferred vacations in Turkish cities. The second questionnaire depends on the results of the first one to see first the preferred cities for the tourists, which were Istanbul, Antalya, Konya, Bodrum, and Edirne.

After collecting responses, we should save them from docs.google.com in CSV file format as an excel sheet to be eligible to be inserted at Weka. The filtration process is needed to get the right output rules by applying filter nominal to string, then applying filter string to word vector, and applying filter numeric to nominal. Then, remove the unneeded attributes such as date and user. Moreover, finally, apply the association rule algorithms (Apriori), an algorithm used for frequent item set mining and association rule learning over relational databases.

It proceeds by distinguishing the frequent individual items within the information and database and extending them to larger and bigger item sets as long as they seem sufficiently typically within the database.

The frequent sets verified by Apriori are used to get the output association rules that highlight the trends within the information and database. (Inokuchi, 2000)

5. Results and Discussion

In this section, association rules for the first and second questionnaires are recognized and analyzed in terms of support and confidence. In addition, the meaning of the rules found is explained.

The best rules found for the first survey are shown in Table 1. Confidence was determined to take into account significant relationships between items. So from the total number of times X is visited, the number of times Y is visited when X is visited. Table 2 shows the meaning associated with the association rules found.

As shown, the Weka program identified programmatically 1 as yes and 0 as no, Then the number of times it was investigated. <conf:(0.99)> which refers to the confidence, which is what we set where Y is the item (City) that is visited when X is visited (preferred to visit).
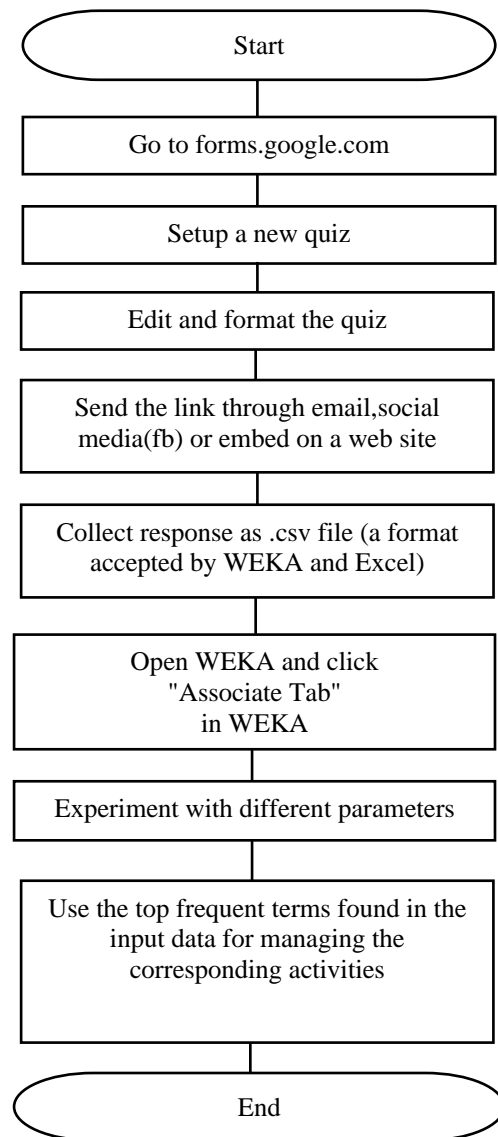

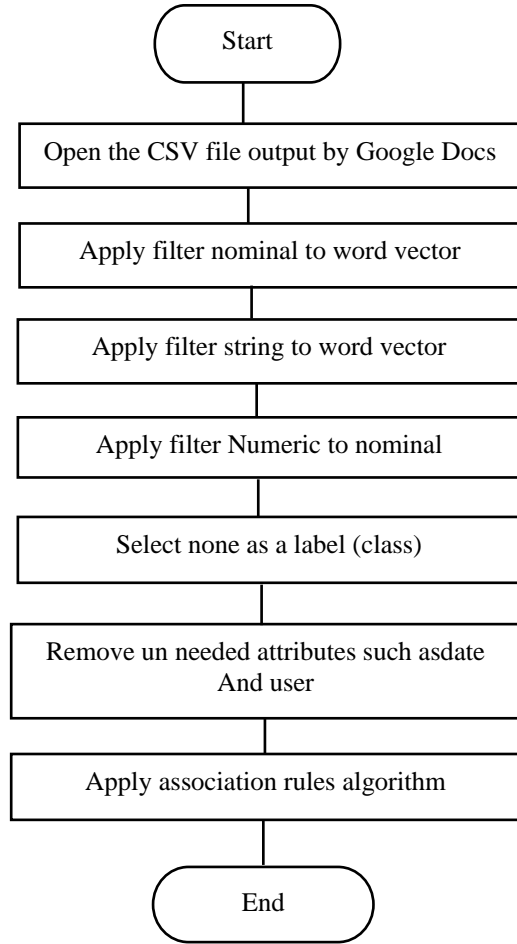**Fig. 1 Flowchart for managing activities using association rules**

Start

Open the CSV file output by Google Docs

Apply filter nominal to word vector

Apply filter string to word vector

Apply filter Numeric to nominal

Select none as a label (class)

Remove un needed attributes such asdate
And user

Apply association rules algorithm

End

Fig. 2 Flowchart Showing the Process Using Weka

The results show that most of the participants did not visit Mardin. The cities preferred by tourists from the 9 cities included in the first survey are İstanbul, Antalya, Ankara, Bodrum, Konya, and Edirne. The output rules were as follows: 98% of those who visit İstanbul also visit Antalya, while 97% of those who visit İstanbul also visit

Bodrum. 96% of the tourists visit İstanbul and Edirne, and 97% visit Ankara.

Tables 3 and 4 show the output results of the second questionnaire; the output rules show that 98% of tourists who visit Karatay Medresesi in Konya visit Whirling Dervishes in the same city, Konya, while also visiting Aya Sophia in İstanbul. 91% of tourists who visit Castle St. Peter in Bodrum also visit Ankara Castle in Ankara.

88% of the tourists visiting the Mnydos Gate in Bodrum and the Grand Bazaar in Istanbul also visit the Selimiye Mosque in Edirne. 78% of the tourists visiting the Bodrum Peninsula beaches also visit the Roman Castle. Furthermore, finally, 70% of the tourists visiting Antalya's Old City (Kaleiçi) and Old Port also visit the Antalya Museum.

The size of the data plays an important role in the accuracy of the output rules and the time needed for the task. The more data used, the more accurate results; new dependency rules may appear, and old rules may have low or insufficient support due to adding new data.

For big data, the recommendation is to use an incremental online AR program where new data can be inserted without needing to recalculate dependency rules from scratch. The choice of the association rule algorithm only affects the program's runtime because association rule mining is a deterministic task. Different algorithms count occurrences of elements in the same way.

Generally, PR practitioners do not have to fuss too much with existing algorithms or practices. The important task for PR professionals is to recognize and formulate a real problem, such as event management, as an association rule problem and to prepare enough data for input and set the input parameter, such as support of accepted rules. Finally, understand the meaning of the found rules and transform the found rule into appropriate action.

Table 1. Weka Output Rules Found for The First Questionnaire

Bodrum=1 and Mardin=0 200 ➔	İstabul=1	<conf:(0.99)>
Antalya=1 224 ➔	İstanbul=1 219	<conf:(0.98)>
Mardin=0 214 ➔	İstanbul=1 209	<conf:(0.98)>
Bodrum=1 206 ➔	İstanbul=1 201	<conf:(0.98)>
Bodrum=1 206 ➔	Mardin=0 200	<conf:(0.97)>
Ankara=1 203 ➔	Mardin=0 197	<conf:(0.97)>
Edirne=1 ➔	İstanbul=1 Mardin=0 198	<conf:(0.96)>
İstanbul=1 and Mardin=0 209 ➔	Antalya=1 198	<conf:(0.95)>
Mardin=0 214 ➔	Konya=1 200	<conf:(0.93)>

Table 2. Meaning of the Output Association Rules for the First Questionnaire

Meaning of the Output Rule	confidence
200 Tourists who visit both Bodrum and İstanbul do not visit Mardin.	99%
219 Tourists out of 224 who visit Antalya visit İstanbul.	98%
209 Tourists out of 214 who didn't visit Mardin visited İstanbul	98%
201 Tourists out of 206 who visit Bodrum visit İstanbul.	97%
197 Tourists out of 203 who visit Ankara don't visit Mardin.	97%
198 Tourists who didn't visit Mardin visited both İstanbul and Edirne.	96%
198 Tourists out of 209 who visited İstanbul and didn't visit Madrin visited Antalya.	95%
200 Tourists out of 214 who didn't visit Mardin. Visit Konya.	93%

Table 3. Best Rules Found for the Second Questionnaire

Karatay Medresesi = 1 295	➔ Aya Sophia=1 295	<conf:(0.98)>
Whirling Dervishes=1 295	➔ Karatay Medresesi=1 295	<conf:(0.98)>
Aya Sophia=1 295	➔ Whirling Dervishes=1 295	<conf:(0.98)>
Ankara Castle=1 276	➔ Castle of St. Peter=1 276	<conf:(0.91)>
Grand Bazar=1 265	➔ Myndos Gate (Kapısı)=1 265	<conf:(0.88)>
Grand Bazar=1 and Selimiye Mosque=1 265	➔ Myndos Gate (Kapısı)=1 265	<conf:(0.88)>
The Bodrum Peninsula Beaches=1	➔ Roman Fortress=1 237	<conf:(0.78)>
Old town (Kaleiçi)=1 and Old Harbour=1	➔ Antalya Museum=1 212	<conf:(0.70)>

Table 4. Meaning of the Output Association Rules for the Second Questionnaire

Meaning of the Output Rule	Confidence
295 of 301 tourists who visit Karatay Medresesi also visit Aya Sophia.	98%
295 tourists who visit Karatay Medresesi also visit Whirling Dervishes.	98%
276 Tourists who visit the Castle of St. Peter also visit Ankara Castle.	91%
265 tourists who visit Grand Bazar and Myndos Gate also visit Selimiye Mosque.	88%
265 tourists who visit Grand Bazar also visit Myndos Gate (Kapısı).	88%
237 Tourists who visit The Bodrum Peninsula beaches also visit Roman Fortress.	78%
212 tourists who visit the old town (Kaleiçi) and Old Harbour also visit Antalya Museum.	70%

6. Conclusion

In this study, the responses collected through different social media platforms to two surveys about touristic activities in Turkey were analyzed using the WEKA data mining program's APRIORI algorithm and google form. Thus, it is aimed to determine the activities that tend to be carried out together.

The results from the experimental analysis can be summarized as follows:

- Association rules mining makes an extremely important contribution to marketing and promotional activities such as cross-selling or targeted campaigns and PR applications such as managing activities. Few research articles in the literature apply this important data mining task to PR activities.

- As the experiment with WEKA shows, the size of the data plays an important role in the accuracy of the AR program. The more data is used, the more accurate the results; new dependency rules may emerge, and the support of old rules may be low or insufficient due to adding new data.

- It is recommended to use an incremental online AR program where new data can be inserted without needing to recalculate dependency rules from scratch.

- Clustering before the AR task helps in drawing conclusions and finding the current dependence on the activities of a particular category of people.

- Random sampling can be used to deal with large datasets.

- The response to the questionnaire, while rated, was limited to yes or no. In general, AR can be applied to any numerical or categorical dataset. Numerically, the user must discretize the dataset before applying AR.

PR professionals and organizations believe AI will be a big game-changer that will improve workplace culture. In this regard, they must thoroughly understand such technologies to provide educated advice to their clients. According to John Bara, President and CMO of a renowned company, smart public relations professionals will understand that big data and artificial intelligence can provide their readers with great, data-rich research on various topics.

As John Bara, President and CMO of a famous company, emphasized, smart PR professionals will understand that big data and AI can provide their readers with great, data-rich research on various topics.

PR practitioners; should embrace trends such as big data and AI and try new applications based on big data research relevant to their target audience. AI is expected to develop and optimize PR work sooner than previously thought and become a driving force in the PR industry. Today, it is inevitable for PR and marketing departments to use these technologies to get better results and achieve their goals.

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