

tourist numbers. Consequently, they need to constantly find ways to promote their cultural heritage sites and institutions in order to attract more tourists.

What is more, cultural heritage institutions and their resources are big draws for tourists, and marketing campaigns require a significant amount of investments. While traditional methods still exist to promote a country's cultural heritage and conduct effective marketing campaigns, it is very difficult to gauge their effectiveness in terms of attracting more visitors. The Internet and social media have opened new avenues for institutions to market any products and services practically for free, in part because users/clients generate some of the publicity and promote the products and services by sharing information as well as their experiences. One of the key tools for promoting a service, product, or anything for that matter, is social media such as Twitter. Twitter offers countries and their cultural heritage institutions new platforms for connecting their resources with potential users, customers, and/or visitors.

Characteristics of tourists' or visitors' tweets (e.g., how, what, when, where, how often, etc.) about their experiences at a cultural heritage institution and/or visits to a country could affect the countries' future reputation and ability to attract more visitors. Hence, an investigation to understand the nature and broad characteristics of tweets about cultural heritage institutions and experiences by tourists is an important undertaking because the findings of such investigations could assist not just the cultural heritage institutions but also the countries to devise appropriate strategies and policies. However, investigations into the nature of African cultural heritage institutions in general, and tweets about them in particular, are nonexistent. Hence, we set out to conduct a study that addresses the broad research question: What are the characteristics/nature of tweets about African cultural heritage with respect to their sources, influential Twitter users, the information flow network of those users, topics and subjects of the tweets, and the sentiments of the tweets? More specifically, the study attempts to:

- identify the source and location of tweets about African cultural heritage;
- determine the most influential twitter users with respect to African cultural heritage;
- characterize visitors who tweet about African cultural heritage and their information flow network;
- identify trending topics and most popular subjects discussed with respect to African cultural heritage; and
- identify sentiments of tweets about African cultural heritage.

Recognizing the value of social amplification or promotion tools like Twitter, this research aims to shed some light on the broad characteristics or nature

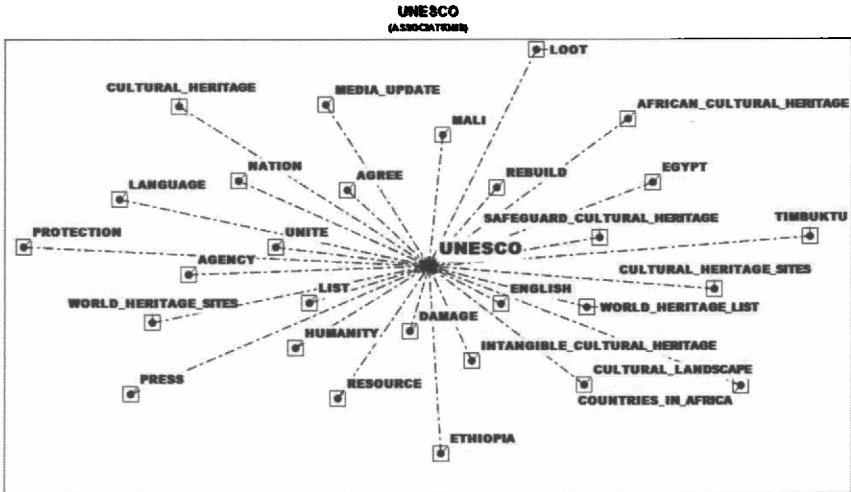


Figure 11.1. Word Association, UNESCO, as Source of Tweet Messages

tourism, and art ministries and departments are the most influential twitter users in the tweet landscape surrounding the topic of “African cultural heritage,” and “African tourism” in general. Based on the number of tweets they periodically post and the number of followers they have, table 11.1 presents the top fifteen influential twitter users.

As can be seen from table 11.1, the most influential twitter users come from South Africa. Given the country’s enormous potential in tourism and the level of infrastructure development in South Africa, this could be an obvious finding. The lesson, however, is that other African countries can emulate what South Africa is doing due to the ubiquity of smartphones and popularity of social media.

3. Characterize Visitors Who Tweet about African Cultural Heritage and Their Information Flow Network

To better understand the characteristics of tweets and the information flow network, we needed to generate a network graph. In T-LAB, the appropriate tool available to achieve a network graph is through sequence analysis where, based on selected key terms, graphs will be generated that present other related key terms that succeed and precede the selected key terms. The sequence analysis graphs are then exported as graph markup XML (GraphML) files, which are then opened with an external graph editor. In our case, we used a tool called yEd (<http://www.yworks.com/en/products/yfiles/yed/>) to create a fully interconnected graph between and among the selected key terms.

Related to the research question, we chose to generate a sequence analysis around “cultural heritage” and “Africa.” The key terms in the corpus text sorted by number of occurrences reveal the fact that “Cultural_Heritage” and “Africa” are the top two most frequently occurring lexical units (keywords). For the purpose of selecting the other key terms to add to the network graph, we chose a threshold of forty, the minimum number of occurrences, as criteria for adding to the graph. This is done so as not to clutter the graph so much that reading would be difficult. This method resulted in 140 nodes and 232 edges. In the network graph, the nodes are the most significant key terms, and the edges establish the level of association between succeeding and preceding key terms surrounding the selected nodes.

As stated above, to find a plausible answer to this research question, we chose to investigate the measure of association through a network graph by selecting “cultural heritage” and “Africa.” Figure 11.2 presents the network graph for ‘Cultural Heritage.’ As shown in the graph (figure 11.2), a reasonable interpretation can be made that the network graph is dominated by a flow network that represents the celebration and promotion of rich cultural and natural heritage in the African continent, with South Africa and major cities in South Africa such as Johannesburg, Durban, and the KwaZulu-Natal province cited as destinations for tourists, as well as celebrating national heritage days. The second major observation in the graph pertains to the other

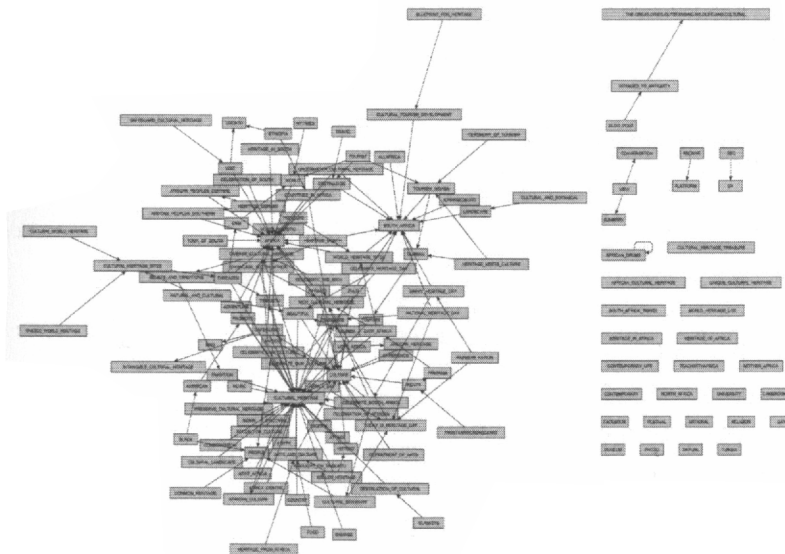


Figure 11.2. Network Graph around the First Most Occurring Key Term, “Cultural Heritage”

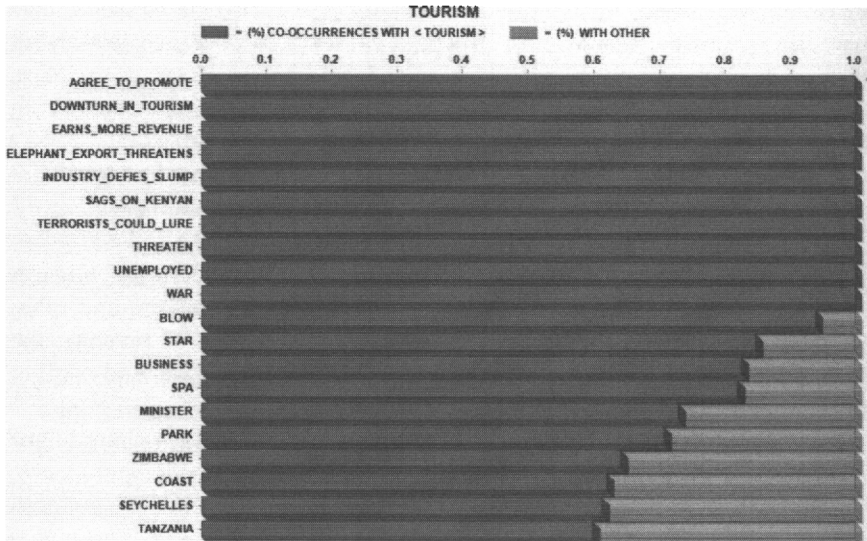


Figure 11.5. Sequence of Keywords around Adventure_Africa

In figure 11.5, selecting tourism as one trending word, the co-occurrence analysis graph shows what other key terms are mentioned in 60 percent to 100 percent of the cases. The co-occurrence analysis clearly shows which other themes and topics emerge across the tweet corpus related to African tourism.

5. Identify Sentiments of Tweets about African Cultural Heritage

Sentiments in the Twitter corpus can be detected by keywords that convey negative or positive messages and/or experiences as a result of visits and travels by those who tweet about African cultural heritage. In T-LAB, each tweet message is recorded as a document with its own record ID. One of the tools used to understand the sentiment of the tweet message is the application called “modeling emerging themes” in the thematic analysis category of tools. This application is used to discover, examine, and model the themes that emerge from the tweet corpus/text. Using the naïve Bayes classifier algorithm, we classified the elementary contexts of the documents (tweet messages). The maximum number of themes the application allows to be selected is fifty. To reproduce the fifty themes with all of their context requires much more space. We only chose pertinent themes, such as African_Cultural_Heritage, UNESCO, Timbuktu, Rich_Cultural_Heritage, and Preserve_Cultural_Heritage. Table 11.2 presents samples of positive and negative sentiments that are present in the tweet corpus for the themes—“rich cultural heritage” and one famous heritage site, Timbuktu.

**TIMBUKTU
(PREDECESSORS)**

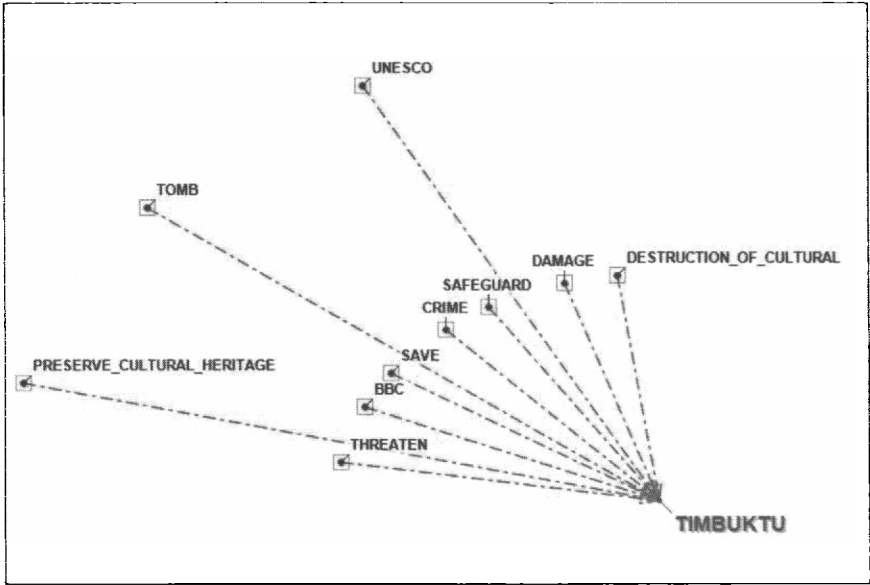


Figure 11.6. Sequence Analysis, Predecessors, for Timbuktu

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(SUCCESSORS)**

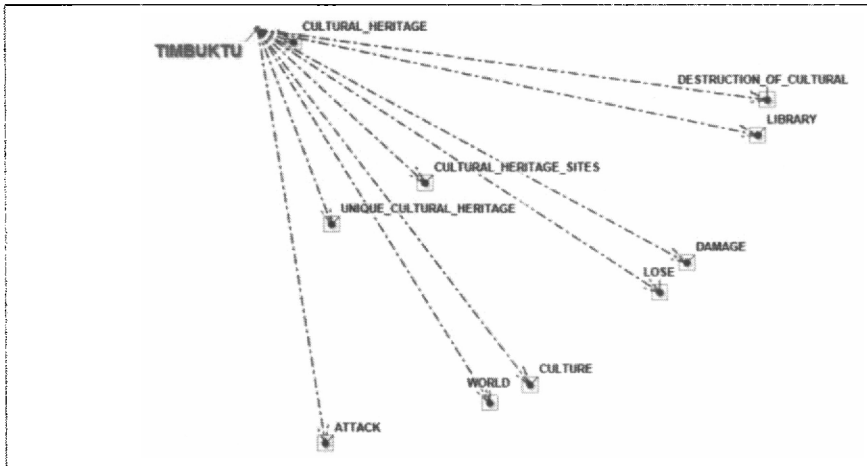


Figure 11.7. Sequence Analysis, Successors, for Timbuktu

Table 11.2 presents a partial view of only the top ten document classifications via thematic analysis. As can be seen from table 11.2, on one side, we have positive sentiments about the riches and celebrations of African cultural heritage, and on the other, we have negative sentiments that dominated the situation in Mali, especially the damage and destruction of Timbuktu shrines caused by Islamists in 2012 and 2013. Looking at the sequence of themes surrounding Timbuktu, we can also get a better view of the analysis, as shown in figures 11.6 and 11.7. The two figures show the result of the sequence analysis (figure 11.6 for predecessors, and figure 11.7 for successors).

CONCLUSION AND RECOMMENDATIONS FOR FUTURE WORK

Countries around the world have benefited from tourism as international global arrivals have grown. Visitor numbers in Africa have risen (up to 10 percent a year) for the past decade, albeit from a very low base. Considering the global middle-income population increases, progress is still needed to promote greater regional integration. About two-thirds of African countries still demand visas from Africans traveling outside their native lands. Greater cooperation is needed between governments to facilitate the intra-African or trans-border movement of persons within Africa. With the right policies and strategies, African countries can make tourism a pillar of their growing economies (African Development Bank Group, 2014).

There is a clear indication that Twitter has proven to be a strong platform for individuals and institutions both inside and outside Africa to disseminate information about African cultural heritage and the tourism industry in general. Tweets are posted from government tourism ministries, art and culture departments, tour operators, and travel enthusiasts, as well as international organizations such as UNESCO and media outlets. The most influential Twitter users are from South Africa or have some connection with South Africa. Trending topics and subjects include: the rich cultural heritages of Africa, the preservation of African cultural heritage, adventure travel and getaways, promotion of the tourism industry, a downturn in the tourism sector, tourism as a source of revenue and as an economic engine, and, most importantly, conflict and war that has brought destruction to cultural heritage sites, as well as the export of elephant tusks threatening the tourism industry. Looking at the information flow network and generating a network graph around African cultural heritage, we observe characteristics that visitors and Twitter users express around the same topics and themes. Oftentimes, the tweet centers around individual African countries such as Mali, Egypt, South Africa, Ethiopia, Kenya, and the

With full recognition of the complexities of the tourism sector in today's globalized market, the authors would like to reiterate that tourism is a powerful engine for economic growth. By creating job opportunities, generating foreign direct investments and foreign currency, and contributing to image building, the tourism sector can indeed energize the economy and lead the African Renaissance in the twenty-first century.

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