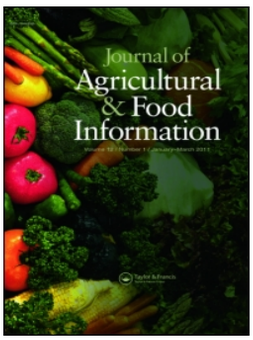

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Information Use Behavior of Decision-Makers for Food Security in the English-Speaking Caribbean: A Study of Trinidad and Tobago, Belize and Barbados

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ABSTRACT

Information required by food security decision-makers is multi-disciplinary and must be timely and accurate. A survey conducted in three Caribbean countries determined that e-resources are highly important; print, frequently used; and e-mail, used daily. There is a distrust of social media, and problems accessing reliable, local, up-to-date information. Some interviewees (33.3%) evaluated online resources and 95.0% consider access to food and agricultural information professionals an asset. Though 84.3% rated themselves as competent or better at finding information, 89.3% would attend information literacy training. The results reveal the need for improved information management systems and understanding of the workplace information environment.

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agricultural information; information experience; information literacy; policymakers; West Indies

Introduction

Food security, according to the popular 1996 World Food Summit definition, "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food and Agriculture Organization of the United Nations [FAO], 1996, p. 1). It is affected, among other things, by population issues, trade, poverty, accessibility and availability of food, land issues, climate change, natural disasters, and areas of conflict. In addition, dependence on imported food, farming and food production issues, high cost of transport, volatility of food availability, increasing food prices, and increasing incidence of diet-related disease are some of the additional concerns which affect the Caribbean, a hurricane- and earthquake-prone area (Renwick, 2017, pp. 10–24).

Those who are decision-makers, with regard to food security, include policymakers (e.g., Ministers, Permanent Secretaries), their advisors (planners, technocrats, statistical officers, etc.), and persons who most influence

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them both: directors of international and regional agencies, academics and professionals, heads of relevant associations, committees, nongovernmental organizations (NGOs), and political advisors (FAO, 2011, p. 111). Decision-makers must have, among other things, an understanding of the interrelated, multidisciplinary, multi-faceted attributes of food security. For example, policies implemented in one area may affect other areas; reducing taxes on imported food may create unfavorable competition for domestic producers, but poorer people might access and afford basic food previously unavailable. Food security at the national level involves many disciplines, including all aspects of agriculture and food, economics, social sciences, geography, medicine, science, and education. Decision-makers need to be aware of data and information in a range of disciplines and from a range of sources.

Information needs and information seeking of food security decision making

Some of the factors involved in determining information needs in the workplace are kind of job, country/culture, personality and information threshold, level of information awareness/training, gender, age, time availability, access, resources/costs, and information overload (Nicholas, 2005). The information and data needed for decision-makers working in food security planning are encyclopedic in scope and content. Much like information overload itself, the coping strategies used to counteract having to deal with too much information are regarded as pathologies or as unhealthy information behavior (Manheim, 2014). One coping strategy is information avoidance, which Sweeny, Melnyk, Miller, and Shepperd (2010) define as "any behavior intended to prevent or delay the acquisition of available but potentially unwanted information" (pp. 341–342). This may involve asking that information not be revealed, physically leaving, or not taking steps to disclose the content of information. The intention may be to learn of the information later or not at all. There may be three reasons for this evasion: (a) a change in beliefs may be needed, (b) undesirable action may be required, or (c) unpleasant emotions may be a consequence (Sweeny et al., 2010). Similar to the principle in economics of the law of diminishing returns, Ruff (2002) explains that after a time, more information actually produces a reduction in the capacity to make accurate decisions. One dilemma in understanding the information environment is that many persons do not know what information exists for which one can ask or search. They are often unaware of where to look for such information.

Information literacy is the ability to know when there is a need for information, and to be able to identify, locate, evaluate, and effectively use that

information for the issue or problem at hand (American Library Association, 1989). The premise which underscores this study is that the more information literate the person, the better equipped they are to seek and probably find appropriate and timely information; hence, being well-informed should result in sounder decision making. The analysis of information use supports the design of information services and systems, the allocation of resources to customize services to the users, and to modify the delivery of information within existing systems (Hale, 1986).

Objective and research questions

The objective of this study is to investigate the information behaviors of decision-makers in the area of food security.

Research questions

- What information resources do policymakers use in food security planning?
- What types and sources of information do policymakers use in their decision making for food security?
- How do decision-makers rank information formats, in terms of importance?
- What problems do decision-makers have in locating the information they require?
- What e-services and social media do decision-makers use?
- How do decision-makers rank their competence in using online resources?
- Do decision-makers evaluate online resources, and if so, what criteria are used?
- Do decision-makers consider information literacy training useful to their decision making?
- Do decision-makers consider consultation with a qualified food and agricultural information specialist an asset to their decision making?
- How does information literacy rank as a socio-personal characteristic of a decision-maker?

Methodology

Research design

This study examined what information is actually used, both print and online, and not relegated to simply what materials may be available at a "library," that is, formally published literature. The study used a cross-sectional, analytical survey design to explain the phenomenon of information use and pertinent aspects of information needs and information seeking.

Face-to-face interviews were conducted in two parts: a profile questionnaire (questions 1–8) and ranking, in terms of importance, of the socio-personal characteristics of a person making decisions about food security (Table 1), followed by a detailed questionnaire on information usage (Table 2).

The Caribbean Community (CARICOM) comprises 15 states. There are three mainland territories (Belize, Guyana, and Suriname); three larger islands (Trinidad and Tobago, Haiti, and Jamaica) and nine small island development states (Antigua & Barbuda, Barbados, The Bahamas, Dominica, St. Kitts & Nevis, Grenada, Montserrat, St. Lucia, St. Vincent & the Grenadines). Three CARICOM countries—Trinidad and Tobago, Belize, and Barbados—are the focus of this study, with selection based on their diverse characteristics regarding food security, each being sufficiently different from each other yet reflective of other Caribbean territories to allow meaningful generalizations. Table 3 illustrates key characteristics of the selected territories.

The study population, decision makers for food security, makes or influences decisions for national food security. Over a period of four months, a total of 87 persons agreed to be interviewed. There were 30, 27, and 30 persons from Trinidad and Tobago, Belize, and Barbados, respectively (Table 4).

Reliability of the survey instrument: Structured questionnaire

Cronbach's alpha coefficient, used to measure internal consistency (i.e., the degree to which the instrument consistently measures what it is designed to measure), was 0.857. A measure > 0.70 is considered reliable (Laerd Statistics, 2017a). Because the key policymakers were quite busy, there were a few questionnaires not fully completed, resulting in some missing data.

Analytical framework

Statistical Package for the Social Sciences (SPSS) software (ver. 22) was utilized to execute the calculations. A nonparametric statistical approach was appropriate as the sample was small ($n < 100$), the sampling method non-random, and the data were mostly ordinal and categorical with rank-order scales (e.g., Likert scales). The unit of measurement of the variables were mainly nominal and ordinal. Therefore, for most of the questions, descriptive statistics with frequencies illustrated the responses, and Spearman's Rank Correlation estimated the degree of association among variables. For those questions using a Likert scale, the median value also was identified (Conover, 1999; Hill & Lewicki, 2006; Laerd Statistics, 2017b; Siegel, 1956; Statistics Solutions, 2017; Stats Tutor, 2017).

Table 1. Profile and ranking of socio-personal characteristics.

Profile:

1. Age: ☐ < 35 yrs ☐ 35 – 60 yrs ☐ > 60 yrs
2. Sex: ☐ M ☐ F
3. Post: _____
4. Education Level: ☐ Primary ☐ Secondary ☐ Tertiary

   If, tertiary: 4a. ☐ Undergrad ☐ Postgrad

   4b. Qualifications/Degrees: _____
5. Where have you studied > 3 months ☐ Local ☐ Caribbean ☐ International
6. Where have you resided > 3 months ☐ Local ☐ Caribbean ☐ International
7. Where have you lived > 3 months ☐ Urban ☐ Rural ☐ Both
8. Practical Agricultural Experience: ☐ No ☐ Yes _____

Rank the socio-personal factors that may affect decision making for food security in terms of importance.

Socio-personal factors	Essential	Very Important	Important	Not really Important	Irrelevant
Age (the older person would make wiser decisions in food security)					
Life experience/maturity					
Education level (i.e., the higher educated, the wiser decisions?)					
Practical agricultural experience					
Having lived in rural areas					
Having lived abroad for >3 months (i.e., international experience)					
Level of information literacy related to food security (i.e., knowing what info you need, where to find it and how to use it)					

Additional Comments: _____

_____

Thank you!

Table 2. Information use questionnaire.

Use of information related to planning/decision making for food security

1. Which of the following types of information do you depend most on for your decision making?

Type	Often	Sometimes	Don't need it
Official Documents (Plans, Policies, Reports, etc.)	☐	☐	☐
Raw/ Statistical Data	☐	☐	☐
Census	☐	☐	☐
Current Awareness/International	☐	☐	☐
Research	☐	☐	☐
Production Data	☐	☐	☐
Trade/Marketing Data	☐	☐	☐

Other_____

2. Source of info – Rank and Usage

Rank		Usage: Often	Sometimes	Not used
____People:	Planning staff	☐	☐	☐
	Heads of Department/ Colleagues	☐	☐	☐
	International/Regional Peers	☐	☐	☐
	Other _____			
____Print:	Library: Departmental/Institutional /National /Academic /Personal	☐	☐	☐
	Official Documents in Ministry	☐	☐	☐
	National Statistical Office	☐	☐	☐
	Ministry Stat/Info Unit/Library	☐	☐	☐
	Other Ministry	☐	☐	☐
	International/Regional Organization	☐	☐	☐
	What other institutional sources of info do you use? _____			
____Mass Media:	Radio	☐	☐	☐
	TV	☐	☐	☐
	Newspapers (Print)	☐	☐	☐
	Newspapers (Online)	☐	☐	☐

(*continued*)

____Online: ☐ ☐ ☐

3. What type of information do you find difficult to obtain? Why?

_____

4. What problems have you had with the information/data you have accessed?

_____

5. When you have problems accessing information/data, what do you do next?

_____

6. Do you think that the information from the international institutions is relevant to our food security needs in the Caribbean? Why?

_____

(If you use online resources, go to Question 12)

7. If you *do not* use online resources, do you delegate research using electronic resources to someone else, e.g., secretary, technical advisor, research assistant, family member?

☐ Yes ☐ No

8. Please indicate which of the following reasons are applicable:

☐ No computer access	☐ No Internet access	☐ No time
☐ No e-mail address	☐ No training	☐ High cost
☐ No interest	☐ Information not trustworthy	

Other _____ (*Go to Question 17.*)

9. How do you rate the importance of the online resources in your decision making?

Essential	Very important	Important	Somewhat important	Not important
5	4	3	2	1

10. How often have you used the following online resources to support your decision making?

	Daily	Sometimes 2-4x a month	Rarely	Never	Don't know it
E-mail	☐	☐	☐	☐	☐
Search engines	☐	☐	☐	☐	☐
Free e-resources					
(Online databases)	☐	☐	☐	☐	☐
(Online journals)	☐	☐	☐	☐	☐
(E-books)	☐	☐	☐	☐	☐
(Online books- Google books)	☐	☐	☐	☐	☐

(*continued*)

Institutional websites (Universities, Associations)	☐	☐	☐	☐	☐
Regional/International Organizations' websites	☐	☐	☐	☐	☐
Ministry of Agriculture website	☐	☐	☐	☐	☐

Social Media (If no, why?) ☐ No ☐ Yes
(If no, why?) _____

Professional networking (LinkedIn)	☐	☐	☐	☐	☐
Research networking (ResearchGate)	☐	☐	☐	☐	☐
Social networking (Facebook)	☐	☐	☐	☐	☐
Blogs	☐	☐	☐	☐	☐
Podcasts	☐	☐	☐	☐	☐
Social videocasting (YouTube)	☐	☐	☐	☐	☐
Social bookmarking (StumbleUpon)	☐	☐	☐	☐	☐
Social referencing (CiteULike)	☐	☐	☐	☐	☐
Document/Slide-sharing (Slideshare)	☐	☐	☐	☐	☐
Microblogging (Twitter)	☐	☐	☐	☐	☐
RSS feeds	☐	☐	☐	☐	☐
News or Database Alerts	☐	☐	☐	☐	☐
Listserv/Mailing lists	☐	☐	☐	☐	☐

11. How do you rate your competence in use of online resources?

Expert	Very good	Competent	Somewhat competent	Beginner
5	4	3	2	1

12. Do you evaluate the resources you find online?
☐ Most of the time ☐ Sometimes, depending on purpose ☐ No

13. If you evaluate resources, which of the following criteria do you use?

Authoritativeness ☐
Accuracy ☐
Coverage ☐
Audience ☐
Objectivity ☐
Currency ☐
Maintenance ☐
Comments: _____

14. Would you like further training in using information resources?

Yes ☐ No ☐

(*continued*)

Table 3. Characteristics of selected countries.

	Country[a]		
Characteristics	Trinidad and Tobago	Belize	Barbados
Land size (km^2)	5,128	22,966	430
Population (Pop)	1,225,225	334,297	288,275
Pop density (pop per km^2)	239.0	14.6	670.4
Agriculture labor force as % pop	3.8	10.2	10.0
Main economic activity	Oil / Gas	Agri/Tourism	Tourism
GDP (USD billion)	26.4	3.0	6.9
Agri contribution to GDP (%)[b]	0.3	10.2	3.1
Food import bill (USD million)	364	44	128
Description	Large island state	Mainland state	Small island state

Source: Data from Central Intelligence Agency (2013).
[a]Trinidad and Tobago (11° 00′ N and 61° 00′ W); Belize (17° 15′ N, 88° 45′ W); and Barbados (13° 10′ N, 59° 32′ W).
[b]Gross Domestic Product (GDP) (PPP—Purchasing Power Parity) figures are a 2012 estimate in 2012 dollars.

Comments: _____

15. Do you believe that access to a dedicated food and agriculture information specialist would be an asset for food security planning/decision-making?

Yes □ No □

Why? _____

Additional comments?

_____

_____

Thank you!

Table 4. Breakdown of interviewees by country and category of persons.

	Country			
Category	Trinidad and Tobago	Belize	Barbados	All
Policymakers	5	5	7	17
% of total	5.7	5.7	8.0	19.5
Planners/Technical Advisors	7	4	5	16
% of total	8.0	4.6	5.7	18.4
Influencers	18	18	18	54
% of total	20.7	20.7	20.7	62.1
Total	30	27	30	87
% of total	34.5	31.0	34.5	100.0

Rankings for the overall set of respondents, by category of persons and by country, was calculated using Point Score Analysis (PSA) (Ilbery, 1977; Ryder, 1993). Kendall's coefficient of concordance W reflected any agreement among groups (Geert van den Berg, 2016; Siegel, 1956). Only statistically significant results are reported.

Results and discussion

Use of information: Types, formats, and sources

Frequency of use of different types of information

The types of information most used by food security decision-makers in descending order of importance are (Table 5):

- current awareness/international events (news/reports from international agencies about food security issues)—89.9%;
- official documents (government documents/reports) —75.9%;
- national statistics—74.7%;
- trade/marketing information—67.1%;
- food production information—67.1%;
- research information (journal articles/university research reports) —65.8%; and
- census data—53.2%.

Spearman's rank-order correlation test indicated that there is a significant positive correlation between use of raw statistics and increasing levels of education, and between gender and persons using research material. There was a moderate negative association with use of national statistics, official documents, and international and regional organizations with an increase in age of the interviewees, implying that younger persons used these resources more.

Importance of the different formats

All participants ranked four formats of information access (people [interpersonal], print, mass media, and online) in terms of importance. Online sources of information were most important overall, that is, across countries and in use by planners and influencers ($W = 0.911$, implying a very high level of agreement). However, policymakers used people most; policymakers, though not the primary users of online information, would be affected by the online information seeking behaviors of others. Mass media was the least important source of information across all categories of persons and countries.

Importance of the sources of information

As mentioned previously, online information was most important (Table 6). In terms of people as a source of information, colleagues and

Table 5. Use of different types of information.

	Usage					
	Often		Sometimes		Don't use	
	No. of persons	(%)	No. of persons	(%)	No. of persons	(%)
Current awareness/International events	71	89.9	6	7.6	2	2.5
Official documents	60	75.9	16	20.3	3	3.8
National statistics	59	74.7	13	16.5	7	8.9
Trade/marketing	53	67.1	17	21.5	9	11.4
Food production	53	67.1	10	12.7	16	20.3
Research	52	65.8	23	29.1	4	5.1
Census data	42	53.2	20	25.3	17	21.5

$n = 79$.

Table 6. Use of various sources of information.

		Frequency of Use		
Sources of Information		Often (%)	Sometimes (%)	Do not need (%)
People	Planners	43.8	32.9	23.3
	Colleagues	50.7	39.7	9.6
	International/regional peers	50.7	41.1	8.2
	Farmers	22.7	12.0	65.3
	Other			
Print	Library[a]	24.7	30.1	45.2
	Agricultural Ministry documents	64.4	19.2	16.4
	National statistical office	50.7	24.7	24.7
	Agricultural Ministry library	11.0	21.9	67.1
	Other Ministry	37.0	43.8	19.2
	International/regional organization	47.9	39.7	12.3
	Other print source			
Mass Media	Radio	37.0	50.7	11.0
	TV	45.2	43.8	9.6
	Print newspapers	69.9	20.5	11.0
	Online newspapers	47.9	41.1	23.3
Online		93.2	6.8	9.6

$n = 73$.

[a]The data for this category "Library" included departmental library, academic library, institutional library, national/public library, personal collections and "do not use" the library.

international/regional peers were key (50.7%), while less than one-third sought information from farmers and a single person—when "stumped" for information—stated that he/she would ask a librarian. Even though mass media is used least overall, print newspapers were the most popular source, with 69.9% using these frequently and 20.5% sometimes, with high levels of use of both print and online versions. Regarding print sources, Ministerial documents, statistical documents and those from international and regional organizations were consulted often, with Libraries the least used (Table 6).

Use of libraries

Interviewees reported their library use (Table 7). Almost half (45.2%) of respondents did not use a library, with 21.9%, 15.1%, 9.6%, 6.8%, and 1.4% using academic libraries, institutional libraries, personal collections,

Table 7. Use of library by type.

		Do not use library (%)	Departmental library (%)	Institutional library (%)	Academic library (%)	National library (%)	Personal collection (%)
All		45.2	6.8	15.1	21.9	1.4	9.6
Category	Policymaker	72.7	0.0	9.1	0.0	0.0	9.1
	Planner	35.7	28.6	7.1	28.6	0.0	0.0
	Influencer	41.7	2.1	18.8	22.9	2.1	12.5
Country	Barbados	40.9	13.6	18.2	22.7	0.0	4.5
	Belize	56.5	0.0	13.0	4.3	4.3	21.7
	Trinidad and Tobago	39.3	7.1	14.3	35.7	0.0	3.6

$n = 73$.

Notes: (1) Usage is not mutually exclusive. (2) Regarding use of the departmental (Ministry) library: In Barbados, the library is in the same compound; in Belize, there is no functional library (just a room with some documents on shelves) at the headquarters; and in Trinidad and Tobago, the library is several miles away from the agriculture Ministry's headquarters.

departmental library, and national libraries, respectively. Policymakers were the largest category of nonusers (72.7%); in terms of countries, Belize had the highest percentage of nonusers (56.5%). Of significance is that a high number of respondents (67.1%; Table 6) did not use their own Ministry of Agriculture's library, albeit in Belize the Ministry had no functioning library and in Trinidad and Tobago, the Ministry's Planning Division Library was moved more than 20 miles away. However, Trinidad and Tobago had the highest percentage (35.7%) of users of academic libraries, while in Belize many (21.7%) relied on personal collections. There was a positive correlation which was statistically significant between use of libraries and the degree of competency in using online resources, implying that persons who may be more information literate valued libraries more.

When asked what they would do when they could not find information, none cited going to a library. This study did not pursue why libraries were not used nor what libraries were doing to address this. Nevertheless, these results are similar to the findings of a survey of policymakers in Nigeria where Anyanwu, Zander, & Oparaku (2011) revealed that most policymakers were "not aware of the places where they can get information for decision making and they do not recognize the role of government libraries in information dissemination. Most policymakers do not go to the library for information needed in decision making" (p. 7). One also may wonder to what extent, if any, library anxiety (Mellon, 1986) contributes to this finding, creating a barrier to information access.

Information seeking behavior regarding local information

The interviewees responded to open-ended questions about the following concerns:

1. Concern: Problems accessing local information and data. Response: Timeliness and non-availability of data

2. Concern: Problems with the information collected. Response: Reliability, missing data, accuracy, datedness, and the format of local data found
3. Concern: Next steps when information cannot be found. Response: Data made up; stopped searching; kept looking; did own research; continued searching; changed approach; and contacted someone (the most popular option). Only one person suggested "contacting a librarian."

These responses may be explained by the phenomenon of *information withdrawal* (keeping the number of sources considered to a minimum) as well as more nuanced filtering strategies, with a rapid weeding of material of limited use (Savolainen, 2007). Herbert A. Simon, in 1976, proposed an economic theory of decision making related to information called satisficing. He explicated that people make decisions which are good enough to meet their needs and do not necessarily consider all possible options (Simon, 2008, p. 243).

> Simon maintained that individuals do not seek to maximize their benefit from a particular course of action (since they cannot assimilate and digest all the information that would be needed to do such a thing). Not only can they not get access to all the information required, but even if they could, their minds would be unable to process it properly. The human mind necessarily restricts itself. It is, as Simon put it, bounded by "cognitive limits". Hence people, in many different situations, seek something that is "good enough", something that is satisfactory. (Hindle, 2009, p. 1)

Bates (2005, p. 6) likened Simon's position of doing only what is necessary to that of Zipf's "Principle of Least Effort," which proffered that people naturally adopt a course of action which allows them to take the path of least resistance—such as asking other people for information or using a few keywords when searching the web—even if it means compromising on quality or quantity (quoted in Case, 2002pp. 140–143; 2005, pp. 289–292). Fundamental to making decisions for food security is the appropriateness and timeliness of the information.

Importance and use of online resources to decision making

The majority of respondents (80.0%) indicated that online resources were essential (Table 8). Only 1.2% of participants felt that online resources were somewhat important, and no one expressed that online resources were not important. Across categories of persons, online resources were essential or very important (influencers, 94.4%; planners, 81.3%; policymakers, 80.0%). By country, online resources were essential, with respondents indicating very important or essential approximately 90% of the time (Table 8).

There was a negative correlation which was statistically significant between gender and use of online resources, reflecting a major difference

Table 8. Importance of online resources.

		Not important (%)	Somewhat important (%)	Important (%)	Very important (%)	Essential (%)
All		0.0	1.2	9.4	9.4	80.0
Category	Policymaker	0.0	6.7	13.3	6.7	73.3
	Planner	0.0	0.0	18.8	18.8	62.5
	Influencer	0.0	0.0	5.6	7.4	87.0
Country	Barbados	0.0	0.0	10.0	6.7	83.3
	Belize	0.0	0.0	12.0	4.0	84.0
	Trinidad and Tobago	0.0	3.3	6.7	16.7	73.3

$n = 87$.

in the use of online resources between men and women. A significant positive correlation existed between education and use of online resources, implying that the higher the level of educational achievement, the greater the use of online resources.

Use of e-resources on the web

Using a Likert scale, responses to questions about the use of web services indicated the following:

- e-mail and search engine—100.0%;
- online databases—74.7%;
- institutional/association websites—83.1%;
- online journals—80.3%;
- regional/international organizations websites—80.3%;
- Ministry of Agriculture's website—55.0%;
- Google books—32.4%; and
- e-books—28.2%.

Participants were familiar with the various e-resources available, although e-books were relatively unused (49.3%), as were Google books (40.8%) and, surprisingly, the Ministry of Agriculture's website (45.0%). There were interviewees who were unaware of e-books and Google books.

There was a significant negative correlation between age and use of e-books; apparently, younger persons used more e-books. There was a significant positive correlation between education and use of regional and international organizations' websites; the higher the level of education, the greater the use of regional and organizations' websites.

Use of social media

More than half of the respondents (59.5%) used social media. Influencers reported the highest level of use (67.3%), with planners next (57.1%), and policymakers using social media the least (27.3%). Interviewees in Barbados (73.9%) were the highest users of social media, followed by Trinidad and

Table 9. Use of specific social media services.

	Daily (%)	Sometimes 2-4x a month (%)	Rarely (%)	Never (%)	Do not know it (%)
Professional networking (*e.g., LinkedIn*)	13.5	6.8	16.2	23.0	**40.5**
Research networking (*e.g., ResearchGate*)	2.7	4.1	2.7	21.6	**68.9**
Social networking (e.g., *Facebook*)	27.0	9.5	16.2	12.2	**35.1**
Blogs	14.1	12.7	21.1	**49.3**	2.8
Podcasts	4.1	6.8	5.4	18.9	**55.4**
Social video casting (*e.g., YouTube*)	23.0	12.2	5.4	15.9	**44.6**
Social bookmarking	0.0	0.0	1.4	8.1	**90.5**
Social referencing	0.0	0.0	1.4	6.8	**90.5**
Document and presentations sharing	13.5	6.8	5.4	18.9	**55.4**
Micro blogging (*e.g., Twitter*)	4.1	0.0	2.7	**48.6**	44.6

$n = 73$.
Note: Highest values are bolded.

Tobago (67.9%) and Belize (34.8%). In the case of Belize, social media were blocked in government offices. Those 35 years old and under had the highest usage (80.0%), while those over 60 years of age had lower usage (41.7%). Female respondents used social media more than their male counterparts (71.4% and 52.2%, respectively).

The main reasons provided for nonuse of social media were: "No time," "it was a distraction," "not familiar," "do not like it," "it was addictive," "don't expect it to be useful," "irritating," "of no consequence," and "there were privacy issues." Reasons for use were: "The institution has a Facebook page," "use daily to get ideas," and "to keep up-to-date."

The use of specific social media for professional work is detailed in Table 9. Some of the more popular services illustrated the type of service, as there was unfamiliarity with the generic description. There was fairly regular use (daily and/or 2–4 a month) of social networking (36.5%) and videos (35.2%). For those who knew of but never used specific social media tools, the ranking in ascending order was: social referencing (6.8%); social bookmarking (8.1%); social networking (12.2%); social video casting (15.9%); document and presentation sharing (18.9%); research networking (21.6%); professional networking (23.0%); micro blogging (48.6%); and blogs (49.3%). Respondents who did not know about a service indicated these types: social referencing and social bookmarking (90.5%); research networking (68.9%); document and presentation sharing (55.4%); social video casting and micro blogging (44.6%); professional networking (40.5%); social networking (35.1%); and blogs (2.8%). There was a significant negative correlation between age and the use of social networking, social video casting, and document and slide sharing, implying that younger persons tended to use these services more often.

Competency in use of online resources

Of the respondents, 84.7% felt they were very comfortable using online resources, with 64.7% rating themselves as competent, 14.1% very good, or

Table 10. Competency rankings of use of online resources.

	Beginner	Somewhat competent	Competent	Very good	Expert
All	5.9	9.4	64.7	14.1	5.9
Policymakers	0.0	31.3	37.5	25.0	6.3
Planner/Technical Advisors	12.5	6.3	75.0	6.3	0.0
Influencers	5.7	3.8	69.8	13.2	7.5
Barbados	0.0	6.7	63.3	26.7	3.3
Belize	4.0	8.0	68.0	12.0	8.0
Trinidad and Tobago	13.3	13.3	63.3	3.3	6.7

$n = 87$.

5.9% expert (Table 10). The rest rated themselves as beginners (5.9%) or somewhat competent (9.4%). Influencers rated themselves most competent, with planners/technocrats next and then policymakers. Participants from Barbados considered themselves most competent, followed by those from Belize and Trinidad and Tobago (Table 10).

Most ranked themselves as competent or better at using online resources; but could this be a result of the Dunning-Kruger effect where, for a given skill, incompetent people think they are more proficient than they actually are (Kruger & Dunning, 1999)? This conclusion may be supported by the fact that many respondents still wanted information literacy training to identify and use the best online resources to support their decision making (see below).

There was a significant positive correlation between age and competency rating, such that with increasing age persons felt more competent. There was a strong positive association between higher educational level and an increased self-rating of competency in using online resources. It is worth noting that there was a moderate positive correlation between (1) age and use of libraries (older persons were more inclined to use libraries) and (2) use of libraries and competency self-ratings (those who used libraries had higher ratings).

Trust in information sources

Relevance of information from international institutions

The study investigated whether interviewees considered information from international institutions, such as the FAO, relevant to their regional/local situations. Overall, slightly over half (56.0%) felt that information emanating from international institutions was relevant to the circumstances in the Caribbean; about one third (33.3%) were partially convinced of the relevance, and 10.7% felt that this information was irrelevant. Although the thinking was fairly similar across the various categories of respondents, more persons from Barbados (53.6%) were partially convinced of the relevance, and most (77.3%) in Belize considered the information relevant. However, Trinidad and Tobago had the highest percentage (16.0%) reporting no relevance to the regional/local circumstance.

Forty-four percent of participants were skeptical that information from international institutions was relevant to regional and local circumstances, as were up to a half of the policymakers and more than half of the Barbadians. Some cited inadequacies of institutions in treatment of Caribbean information, e.g., not trusting the statistics provided by FAO. A study by the Center for Global Development corroborated this view; Ramachandran, Timmer, and Friedman (2013, p. 22) stated that at FAO "statistical capacity remains inadequate following more than a decade during which agriculture received little attention within the development field." Nevertheless, for those who value the FAO, it does

> offer legitimacy, convening authority, and the trust of developing-country governments. Moreover, it is the only entity that can provide many of the needed "global public goods" in the area of its mandate (such as basic research, global analysis, statistics, international standards, and advocacy). And historically, FAO has proven to be a valued repository of knowledge and capacity for national development efforts. (Ramachandran et al., 2013, p. xii)

This example illustrates the dichotomy in perception that users must resolve when deciding whether to trust an information source.

Evaluation of online resources

Interviewees responded to closed-answer questions regarding their assessment of online resources. Table 11 shows the degrees of evaluation and the response of those doing evaluations. Only 37.2% of the participants evaluated e-resources most of the time, 47.7% indicated occasional evaluations depending on the purpose of the search, and 15.1% did not. Of those who evaluated e-resources, authoritativeness was the criterion most checked (79.7%). The other criteria in descending order of importance were currency (65.8%), accuracy (64.4%), objectivity (52.1%), coverage (32.9%), audience (27.4%), and maintenance (8.2%). Several persons were unaware of the meaning of the criterion of maintenance.

Table 11. Evaluation of online resources.

	Most of the time (%)	Sometimes (%)	No (%)
All	37.2	**47.7**	15.1
Policymaker	23.5	**41.2**	35.3
Planner/Tech	18.8	**62.5**	18.8
Influencer	11.3	**45.3**	34.4
Barbados	10.0	**53.3**	36.7
Belize	26.9	26.9	**46.2**
Trinidad and Tobago	10.0	**60.0**	30.0

$n = 87$.
Note: Highest values are bolded.

Table 12. Importance of socio-personal factors.

	Rank						
		Category			Country		
Socio-personal factors	Overall	Policymaker	Planner/ Tech	Influencer	Barbados	Belize	Trinidad and Tobago
Age	7	6	7	7	6	7	7
Life experience/Maturity	5	5	5	6	4	5	6
Education level	4	7	3	4	5	2	5
Practical agricultural experience	2	3	3	2	2	3	2
Having lived in rural areas	6	5	7	5	7	6	4
International experience	3	2	4	3	3	4	3
Information literate	1	1	1	1	1	1	1

$n = 87$.

Note: 1 is the highest rank and 7 is the least rank. Point Score Analysis was used to calculate ranks (Ilbery, 1977).

Keeping up-to-date

Generally, RSS feeds, alerts, and listservs were some of the more popular and long-standing tools to keep up-to-date, although there was low usage. Even though 90% of the respondents felt that keeping up-to-date was important by using current awareness information they did not use or recognize other social media services, like research or social networking.

Socio-personal characteristics in a decision-maker

Respondents ranked, on a Likert scale, seven possible socio-personal characteristics which affect decision-makers' abilities to make decisions: essential, very important, important, not really important, and irrelevant. Using PSA, these ranks were scored and ranks for all respondents, by category of persons and by country, were calculated (Table 12).

Information literacy was the most important socio-personal characteristic of a decision-maker in food security. Age was the lowest-ranked characteristic, suggesting that the oldest is not necessarily considered the wisest. The results may imply that with age one might be less-inclined to attend training; however, with increasing levels of education, there was an increase in positive responses towards attending training.

Information literacy issues

Information literacy training

Many of the participants (89.3%) agreed that they would attend this type of training; others (9.5%) said they would not, and 1.2% were unsure. There was a significant negative correlation between age and the need for information literacy training; older persons indicated a greater need for training. There was a positive correlation between education and the need for

information literacy training, leading to the inference that persons with higher levels of education desired more training. Most (95.4%) of the respondents felt that a qualified food and agriculture information professional would be an asset to the decision-making process. However, upon this suggestion to participants, it was clear that many were considering it for the first time.

Responses to concerns about local data also reveal a high level of distrust for many reasons. If there are fundamental concerns about the quality and/or lack of data from local, regional and international sources, there are also serious questions about how decisions are made. It seems that lack of available local material, incomplete and outdated information, as well as a relatively low level of information literacy, may be contributing factors to the sense of food security as an insurmountable problem.

These issues underscore the need for information literacy training, with its focus on knowing what information is needed, and how to find and use the best resources. Answers to the question "What is done next when you cannot find information?" revealed some of the coping mechanisms that respondents use, which included "make up data." Nahl (2005a, 2005b) explains that affective load (AL) can be used to examine the influence of affect in cognitive operations like searching for information. The theory of AL examines the thoughts and feelings of persons who are looking for information:

$$\mathrm{AL} = U\ (\mathit{irritation} + \mathit{frustration} + \mathit{anxiety} + \mathit{rage}) \times \mathrm{TP}$$

where TP = Time Pressure.

Feelings of irritation, frustration, anxiety, and anger multiplied by time pressure can result in a high level of affective load which in turn reduces the efficiency of cognitive functions. Thus, uncertainty, cognitive ambiguity, and information overload can result in behavior which defeats the goal of the person seeking information. Therefore, studying information behavior along these lines assists in developing instruction which reinforces self-efficacy and other positive mechanisms.

Other characteristics

Practical agricultural experience and international experience ranked second and third, respectively, with age the least important (Table 12). There was a high level of agreement about characteristics among policymakers, planners/technical advisors, and influencers, more so than across countries. It was illustrative that in the sample for this study approximately 50% had an agricultural educational background; approximately 43% had no agricultural experience yet agricultural experience was the second most important and desirable socio-personal characteristic in a decision-maker in food security.

As a final observation, it appeared to the researcher that the conduct of the questionnaire and type of questions resulted in an appreciation by and a new perspective of the participants regarding information issues and information literacy. Indeed, the survey itself appeared to serve as an educational tool.

Conclusion

The findings about food security decision-makers' information usage revealed that current awareness/international events news was the type of information most used. Although online sources of information were most important, policy makers depended on people most. There was a great deal of inadequate knowledge of specific social media services, a lack of trust and time, and unfamiliarity and concerns about possible addictiveness regarding use of social media.

Almost half of the interviewees did not use libraries. However, there are qualified librarians (possibly over 150) in Trinidad and Tobago, and there is a government network of agricultural libraries with a qualified professional in charge. Barbados has several qualified librarians, but the Ministry of Agriculture does not have a qualified professional in charge. Belize has even fewer qualified library professionals, with none at the Ministry of Agriculture. Qualified librarians in the Caribbean may have been educated internationally or at the regional library school at The University of the West Indies, Mona, Jamaica, receiving at least a Masters in Library and Information Studies. Respondents would welcome assistance from a qualified professional and information literacy training. There also was a significant positive relationship between the degree of competency in using online resources and use of libraries. These results support the need and appreciation for qualified librarians and the services and resources they provide. Unfortunately, throughout the Caribbean there are few librarians with a science background, and only about two or three with agricultural information as a subject specialty, indicating a need for subject specialist/training librarians.

In terms of accessing and using local data, there were a myriad of problems with lack of availability, timeliness, reliability, accuracy, currency, formatting, and missing data elements. In order to cope, respondents indicated that they made up data or contacted someone, among others things.

Of significance, there was a positive correlation between levels of education and use of online information, use of international and regional websites, competency in using online resources, and desire for training. Also, there was a negative correlation with age and the use of documents at Ministries, national statistics, international, and regional organizations, social

networking and video casting, and document and slide sharing, as well as training. There was however, a positive correlation between using libraries and wanting information literacy training. In terms of characteristics for the job of decision-maker, being information literate was most important. There was acknowledgement of the need for improved systems to manage information flows, a need for improved information management systems, and a better understanding of the information environment in the workplace.

Governments, especially Ministries of Food and Agriculture, must recognize and provide resources towards the identification of relevant indicators, collection and analysis of data, organizing, storing, archiving, and making such available and accessible to relevant decision-makers in a timely manner. The identification, training, and use of relevant information professionals with subject expertise to enhance the process would be prudent.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

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