– Knowledge –
SUCCESS

WHAT CAN BEHAVIORAL ECONOMICS TELL US ABOUT KNOWLEDGE MANAGEMENT?

A DESK REVIEW FOR THE KNOWLEDGE SUCCESS PROJECT

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Acronyms

Amref	Amref Health Africa
Busara	Busara Center for Behavioral Economics
BE	Behavioral Economics
CCP	Johns Hopkins Center for Communication Programs
CSO	Civil Society Organization
FP	Family Planning
FP/RH	Family Planning and Reproductive Health
GHeL Center	Global Health eLearning Center
K4Health	Knowledge for Health
Knowledge SUCCESS	Knowledge Strengthening Use, Capacity, Collaboration, Exchange, Synthesis, and Sharing
KM	Knowledge Management
URL	Uniform Resource Locator
USAID	United States Agency for International Development
VARK	Visual, Aural, Read/write, and Kinesthetic

Glossary

Behavioral Economics: A method of economic analysis that applies psychological insights into human behavior to explain economic decision-making.

Choice Overload: The effect of having too many choices leading to undesired outcomes, such as unhappiness and inaction.

Cognitive Overload: A situation where too much information is given simultaneously so that it exceeds an individual's cognitive processing capability.

Hassle Factors: Seemingly minor inconveniences to taking a desired action.

Inertia: The endurance of a stable state associated with inaction.

Knowledge Management: Systematic process of collecting knowledge and connecting people to it so they can act effectively and efficiently.

Learning Styles: How individuals prefer to receive information, which can influence how well they are able to internalize, understand, and even act on the information they receive.

Peak-End Rule: Psychological heuristic in which people judge an experience largely based on how they felt at its peak and at its end, rather than based on the total sum or average of every moment of the experience.

Primacy Bias: The preference for information that is presented first.

Pro-self: Behavior focused on the attainment of personal/career goals.

Pro-social: Behavior that benefits other people or society as a whole.

Social Identity: Perceptions of ourselves and our roles; our perceptions, choices, and actions are then made in accordance with this identity.

Social Norms: Establishing behavioral expectations or rules within a group of people.

Status Quo Bias: A psychological preference for the current state of affairs.

Executive Summary

The Knowledge SUCCESS (Strengthening Use, Capacity, Collaboration, Exchange, Synthesis, and Sharing) project, supported by the United States Agency for International Development, champions the strategic and systematic use of knowledge by individuals and organizations involved in voluntary family planning and reproductive health (FP/RH) programs. In addition to making critical, high-quality FP/RH information available and accessible, the five-year (2019–2024) global project aims to facilitate knowledge use by supporting and brokering meaningful knowledge exchange and collaboration and to strengthen lasting knowledge management (KM) capacity. A key strategy of the project is to develop knowledge products and services in collaboration with intended audiences while applying behavioral economics (BE), and more broadly behavioral science, approaches to make knowledge easy and attractive for people to use, as well as salient and timely.

The KM cycle consists of a series of key interconnected behaviors, including seeking, sharing, and using knowledge. Despite the fact that the value of knowledge grows when it is shared, individuals often do not fully engage in the cycle of knowledge seeking, sharing, and use. A BE lens can help explain why people appear to behave irrationally—in this case, not engaging in KM activities despite the added value it can provide—and identify solutions to mitigate these barriers when designing KM activities.

This desk review provides an overview of BE concepts that can help explain individual motivations and barriers when seeking, sharing, and using knowledge, thus serving as an initial review to help inform the design of KM activities under the Knowledge SUCCESS project. It then applies these BE concepts to a selected set of established KM products created or supported by the Knowledge for Health (K4Health) project, with the aim of identifying potential barriers to optimal use and opportunities for improvement.

Research Methodology

We used two methods to explore key BE principles and their application to the field of KM. First, we conducted a literature scan through Google Scholar for relevant and applied papers on BE applications to knowledge management, guided by insights from workshops with behavioral science technical experts. Rather than conducting an exhaustive search of all BE concepts, we prioritized BE concepts that are most likely to explain the behavioral barriers and opportunities at different stages of the KM cycle. Second, we reviewed existing FP/RH products established under K4Health that would likely be moving to the new Knowledge SUCCESS project or that could be reenvisioned into a different format. These products comprised the Global Health eLearning Center, the *Global Health: Science and Practice* journal, K4Health.org and K4Health Toolkits, the High Impact Practices in Family Planning website, K4Health social media platforms, and the website for *Family Planning: A Global Handbook for Providers*. For each product, we evaluated the number of users and sessions, the bounce rate, average session duration, and top landing pages over the previous 90 days. This product review served as a general framework

through which to assess the types of platforms and styles that may promote or hinder effective knowledge management.

Findings

We identified relevant BE concepts that actively influence individual information sharing, seeking, and use behaviors. In the case of **information sharing**, BE models largely highlight the importance of motivation and incentives, social influences, hassle factors, and inertia. In the case of **information seeking**, heuristics and biases highlight the importance of structural factors that may deter individuals from optimal access to information. Finally, when considering **information use**, the importance of learning styles comes into play as well as ensuring the content is relevant and accessible. The table on pages 4–5 summarizes each of these BE principles and provides implications when designing KM activities.

We then applied these BE concepts to existing K4Health products to identify KM barriers and opportunities that could help inform future activities under Knowledge SUCCESS.

- **Global Health eLearning Center:** The low bounce rate and relatively long time spent on the site suggest users are finding relevant information. Low completion rates of some courses, however, may point to lack of intrinsic motivation or perceived usefulness of the courses. Some organizations require employees to complete courses as part of ongoing professional development (extrinsic motivation), which may explain the geographical focus of users in Nigeria and the United States.

- ***Global Health: Science and Practice* journal:** The website is used frequently compared with other K4Health products, but time spent on the site is short, suggesting that either users quickly leave the site after not being able to find what they are looking for or they enter specifically to download one paper only. The free access to articles removes a common barrier to accessing formal academic knowledge, but since the language in the papers is generally highly technical, its ability to engage and inform action by time-constrained program developers may be limited.

- **K4Health.org and K4Health Toolkits:** There is relatively high use of K4Health.org, with Toolkits being the most-used resource. Users spend comparatively longer on Toolkit pages than elsewhere on K4Health.org, but then leave the site without navigating elsewhere. Because similar information is available across many Toolkits and resources, users may have to spend significant time searching for a specific piece of information, likely resulting in cognitive overload.

- **High Impact Practices in Family Planning:** Usage is lower compared with other products, with a very high bounce rate and short amount of time spent on the site, suggesting users skim the pages and leave without further engagement or leave immediately after downloading only the content they were looking for. Due to the detailed nature of the briefs and lack of interactivity, users may struggle to quickly identify the information they need.

- **K4Health social media:** The Twitter account has a relatively large following, indicating content distributed through this channel is relevant to the target audience. The new Knowledge SUCCESS project can benefit from continuing to leverage linkages to other forums or highly trafficked resources so that users don't have to make a choice in the context of many similar options. Incorporating contributors from a diverse range of fields and locations, or posing questions rather than providing content, may help promote information exchange rather than a one-way flow.

- ***Family Planning: A Global Handbook for Providers*:** The website has relatively high usage and relatively long visit times, suggesting it contains content that is relevant to users and that the style, language, and format are accessible. However, the site has a high bounce rate, which could be due to the laborious navigation between pages.

Conclusion and Recommendations

In summary, the following themes identified through this desk review will serve to guide future research and design of KM activities under Knowledge SUCCESS.

Relevance and Accessibility: While the purpose of K4Health products is to inform practical program design and implementation, the content is largely technical and lengthy, making it potentially challenging for users with time and resource constraints to find and use these resources. Short list-style guides, interactive features allowing users to ask specific questions, and systems of more refined search tags and filters could help to improve usefulness and accessibility.

Choice Overload: There is significant overlap between products. Faced with multiple options, potential users are likely to disengage, resorting to the status quo, which could be continued use of their own organization's resources or not seeking out resources altogether. Linkages to external sources could greatly reduce this choice overload and increase engagement.

Hassle Factors: Counterintuitive interfaces, error pages, and lengthy search processes are all likely to contribute to disengagement. Users across most products appear to use them for quick access to a specific resource and leave without further engagement—consistent with general web use trends. Thorough interface prototyping and testing can ensure that products are optimized for user-friendliness and more sustained interaction with the platform.

Motivation: Many of the products are passive providers of information. Features such as interactive forums may create the space and opportunity for information sharing and exchange. This may need to be coupled with built-in incentives or commitments to motivate sharing, such as tangible rewards or social recognition.

TABLE. BEHAVIORAL MAPPING OF KEY KM BEHAVIORS AND IMPLICATIONS FOR KM DESIGN

KM BEHAVIOR	RELEVANT BE PRINCIPLE	CONSIDERATIONS FOR KM	IMPLICATIONS FOR KM DESIGN
SHARING INFORMATION	Motivation and Incentives	• *Costs to sharing information include time and perceived loss of competitive advantage.* • *Individuals who consider benefits for other people are more likely to share information than those who are pro-self.*	• *Incorporate tools and techniques to foster intrinsic and extrinsic motivation for information sharing, for example, through social recognition, prizes, or rewards.*
	Social Norms and Coordination	• *Social norms can signal information sharing as an appropriate behavior.* • *Women and other marginalized groups may be less likely to share information if norms frown upon women in authority.*	• *Leverage social norms by integrating knowledge sharing platforms with social platforms where people can directly see others sharing information, or by publicizing peers' information-sharing activities.*
	Social Identity	• *If individuals perceive information sharing as part of their identity as good workers, they are more likely take actions in accordance with this identity.*	• *Incorporate messaging and techniques to prime the user's social identity as, for example, a Thought Leader or Collaborative Member, to encourage information sharing.*
	Hassle Factors (seemingly minor inconveniences)	• *A complicated review process, complex log-in system, or difficulties navigating a platform are examples of hassle factors.*	• *Ensure appropriate prototyping and testing of a platform with end-users to identify and remove hassle factors early in the design phase.*
	Inertia	• *Overcoming inertia of not sharing information may be challenging when there are competing demands and limited time and resources.* • *Commitments can be an effective tool to counteract inertia.*	• *Personalized and timely reminders to share information may help prevent inertia.* • *Asking users to commit to sharing a specific number of thought pieces in a certain time period, and making these commitments public, could encourage information sharing.* *(continued on next page)*

KM BEHAVIOR	RELEVANT BE PRINCIPLE	CONSIDERATIONS FOR KM	IMPLICATIONS FOR KM DESIGN
SEEKING INFORMATION	Choice Overload (inaction as a result of having too many choices)	• *Existence of similar knowledge platforms or overlapping sources of information in a single platform could result in the user discontinuing their search.*	• *Consolidate information types, styles, and content, and incorporate search filters, to limit the number of choices a user has to make.* • *Create linkages between platforms.*
	Awareness and Perceived Ease of Use	• *Since fully restricting choice between the many FP/RH KM platforms is not possible, engagement with a particular platform may depend on users' awareness and perceived ease of use.*	• *Use social networks to promote KM solutions.* • *Involve end-users in early design phases to motivate use of the KM solution.* • *Use push techniques, such as targeted emails, and link with other platforms.*
	Primacy Bias (preference for information that is presented first)	• *Providing people with the most relevant information up front makes optimal use of their limited time.* • *Being able to readily find relevant information is especially important for women since they often have less leisure time than men.*	• *Understand how people browse and search for information in order to optimize search engine results—for example, by using plug-ins to scan for words or phrases that can enhance search engine ranking and adding alt text for images.*
	Status Quo Bias (preference for the current state of affairs)	• *Understand and leverage the current status quo around information seeking, rather than attempt to go against it.*	• *Use similar channels that are well established.* • *Introduce tools and resources that complement rather than compete with existing ones.*
USING INFORMATION	Cognitive Overload (too much information is given at one time)	• *Information needs to be presented in easily accessible formats that don't require a heavy cognitive task for the user, especially when time or resources are limited.*	• *Package information in actionable, simple terms and ensure easy navigation.* • *Use interactive formats that allow users to ask questions (e.g., Q&A session with experts).*
	Relevance and Value	• *Content and format should be tailored to each audience segment's needs and preferences.*	• *Conduct research to understand needs and experience of different audience segments.* • *Update content regularly.*
	Learning Styles (visual, aural, verbal, physical, logical, social, solitary)	• *Individuals differ in the way they optimally engage with information.* • *An individual's preferred learning style could evolve over time.*	• *Identify learning styles among audience segments and tailor KM products and services accordingly to meet their needs.* • *Create and share content in a variety of formats to meet different learning styles.*

Introduction

Knowledge SUCCESS (Strengthening Use, Capacity, Collaboration, Exchange, Synthesis, and Sharing) is a five-year (2019–2024) global project that champions the strategic and systematic use of knowledge by individuals and organizations who design, implement, fund, and advocate for voluntary family planning and reproductive health (FP/RH) programs and policies, especially in low- and middle-income countries. Funded by the United States Agency for International Development's (USAID's) Office of Population and Reproductive Health in the Bureau for Global Health and led by the Johns Hopkins Center for Communication Programs (CCP) in partnership with Amref Health Africa, Busara Center for Behavioral Economics (Busara), and FHI 360, the project aims to meet the knowledge needs of its intended audiences by: (1) making critical, high-quality FP/RH knowledge and information available and accessible, (2) facilitating knowledge use by supporting and brokering meaningful knowledge exchange and collaboration, and (3) strengthening lasting capacity for knowledge sharing, collaboration, learning, and adaptation. To fulfill this mandate, one of the key strategies of the Knowledge SUCCESS project is to develop knowledge products and services in collaboration with its intended audiences while applying behavioral economics (BE), and more broadly behavioral science, approaches to make knowledge easy and attractive for people to use, as well as salient and timely.

This desk review, conducted by Busara to inform the design of knowledge management (KM) activities under Knowledge SUCCESS, serves as an initial review of the potential for BE to contribute toward project outcomes. It provides an overview of BE concepts as they may relate to behaviors integral to KM—that is, sharing knowledge, seeking new knowledge, and using found knowledge. It then applies these BE concepts to a specific review of established products created or supported by the Knowledge for Health (K4Health) project with the aim of identifying potential barriers to optimal use and opportunities for improvement under the Knowledge SUCCESS project. As the evidence regarding the application of BE to knowledge management is largely generalized rather than specific to particular audiences or products, this review serves as an initiation for further research with targeted audiences to gain an in-depth understanding of the behavioral considerations and needs in developing FP/RH knowledge management products with a BE lens.

Scope of Work

The Knowledge SUCCESS project at large will use methodologies, tools, and theory from the wider behavioral science field, incorporating elements of design thinking, sociology, anthropology, psychology, and behavioral economics. This initial desk review, however, focuses specifically on BE concepts, allowing a targeted and more technical angle prior to engaging in primary data collection, including a quantitative survey and in-depth interviews among key audiences to explore their behavioral journey in KM. Recommendations or insights arising from BE principles can serve as useful nudges or techniques to optimize the impact of targeted and well-designed KM tools.

Behavioral economics, the application of psychological insights into human behavior to explain economic decision-making, includes an extensive repertoire of theories, models, heuristics, and biases (for a comprehensive visual illustration of more than 180 cognitive biases, see the Cognitive Bias Codex on the TeachThought website). Rather than providing an exhaustive overview of all concepts, this desk review highlights the application of concepts deemed most relevant and useful in explaining behaviors with regard to knowledge management. Those selected represent biases and heuristics that: (1) can provide insight into KM behavior across a majority of settings and people, rather than specific to any particular sub-group or KM tool, (2) lend themselves toward practical and actionable insights that can be used to inform future product design, and (3) are relevant to the initial review of K4Health products conducted as part of this desk review. As we conduct additional formative research for the Knowledge SUCCESS project, we will continue to explore other behavioral barriers and refine our understand of those we currently believe to be in operation. At this initial stage of the project, we investigate those barriers that might operate to inhibit even the most basic KM activities. For instance, in this desk review we concentrate on hassle factors (seemingly minor inconveniences) that might disincentivize basic knowledge sharing activities. As we continue to refine our approach, we might begin to consider concepts such as self-efficacy, which might inhibit individuals from sharing content in deeper and more meaningful ways, for example at office brown bags or larger forums.

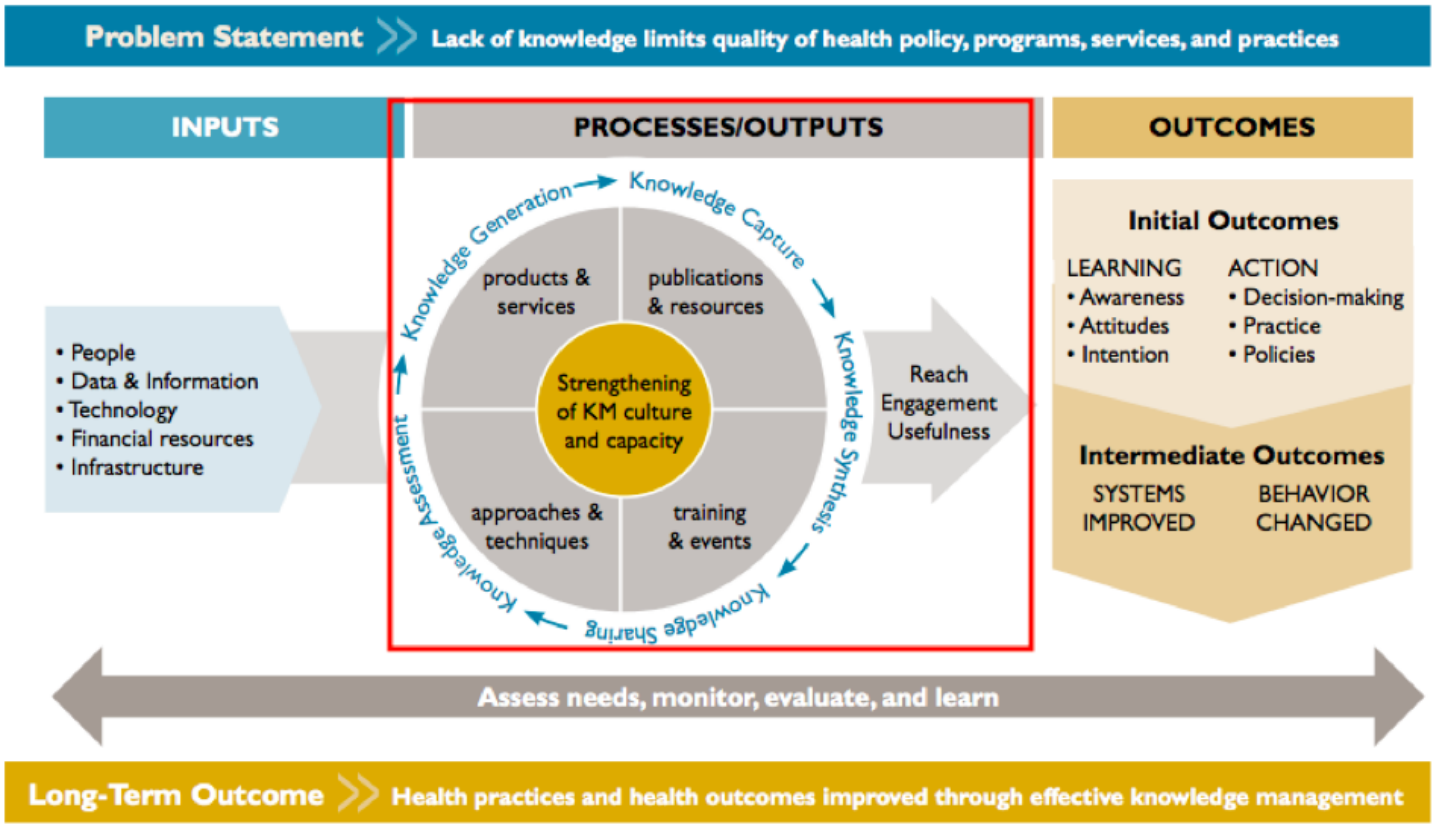
This desk review is framed primarily from the perspective of the end-user: the sharer, searcher, and user of FP/RH information. The identified biases, implications, and recommendations are therefore presented within this frame. As we continue to conduct our formative research, we will ensure that we take into account how aspects of the end-users' journey in KM might differ across genders. Although we are focused on the end-user, it is important to note the close relationship between the implications on the end-user and the curator of any KM platform. For efficient and effective KM, many of the identified concepts also apply to, and are relevant to, the curator. Firstly, the platform should be designed in a way that minimizes the identified barriers and maximizes the opportunities for the curator, making the curator's job easier according to the same principles. For example, an identified barrier to sharing information may be hassle factors in the form of a lengthy uploading process. If the curator is responsible for sharing information on behalf of users, this hassle factor is likely to equally apply to them and steps to minimize this should be considered when designing the KM platform. Secondly, the role of the curator of the platform should be designed so as to minimize the identified barriers and maximize the opportunities for the end-user, making the desired behavior easier for the individual user to complete. For example, the curator may provide a template, or take on the responsibility of entering information provided by the end-user into a uniform standardized format, so as to minimize the work required by the end-user. See recommendations for how this may work in practice.

Knowledge Management Framework

The Knowledge Management for Global Health Logic Model (Figure 1) is a framework developed by the Global Health Knowledge Collaborative (of which K4Health was a key partner) that represents the relationship between the resources, processes, and outputs and outcomes of KM

interventions in global health programs. For the purpose of this desk review, we draw our focus to the key KM processes—knowledge assessment, generation, capture, synthesis, and sharing, leading to knowledge use—that drive the desired outcomes that health programs are trying to achieve. This desk review covers knowledge seeking (incorporating assessment and capture), sharing (which could entail synthesis), and use (summarized in Figure 2), but it does not encompass knowledge generation. We believe that generation is a significant ask of individuals, especially where generation is not their sole responsibility. An effective KM system can function well when only selected players generate knowledge, but not so well when a majority of players do not engage in the other facets of knowledge management, such as sharing and usage. Although knowledge may be generated by a few, the majority of people to some extent do seek, share, and use knowledge. We therefore focused this desk review on exploring knowledge seeking, sharing, and use (of mostly explicit knowledge) in depth and developing solutions for these elements before turning to the larger questions of knowledge generation and tacit knowledge exchange.

FIGURE 1. KNOWLEDGE MANAGEMENT FOR GLOBAL HEALTH LOGIC MODEL



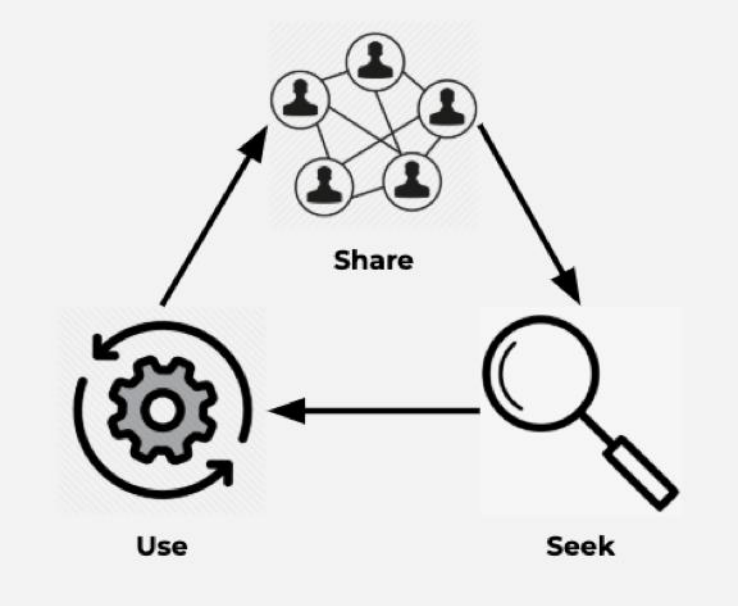
Source: Guide to Monitoring and Evaluating Knowledge Management in Global Health Programs

The process of knowledge management can be seen as a series of interconnected behaviors:

1. Seeking, finding, and acquiring knowledge
2. Sharing this knowledge with others, whether through articles, fact sheets, videos, images, or face-to-face interactions
3. Engaging with and applying that knowledge, possibly resulting in the generation of new knowledge and further sharing (Nohapiet and Ghoshal, 1998)

Rather than engaging in one of these behaviors in isolation, effective knowledge management and the creation of a 'community of learning' requires multiple actors to continuously engage through all stages of the process.

FIGURE 2. KEY KNOWLEDGE MANAGEMENT BEHAVIORS



In comparison to traditional economic transactions, Quinn et al. (1996) note that an interesting characteristic of knowledge is the fact that its value grows when it is shared. As one shares knowledge with other people, not only do those people gain information (linear growth) but the subsequent feedback questions, amplifications, and modifications also add further value for the original sender, creating exponential total growth (Quinn et al., 1996). In other words, unlike standard economic transactions, knowledge not only retains its value as it is shared—its value actually increases.

Despite this, however, individuals often do not fully engage in the cycle of knowledge seeking, sharing, and use. A BE lens can help to explain why, in this case, individuals appear to behave irrationally—not engaging at an individual level in knowledge management despite the added value that it can provide them—and therefore identify solutions in designing KM activities to help mitigate these barriers. Although the specific application of BE to knowledge management has

not been widely investigated and documented, principles within behavioral economics, psychology, and sociology can help clarify some potential biases, barriers, triggers, and opportunities that exist within this behavioral process:

- In the case of **sharing** information (and the requisite of creating information that demonstrates similar behavioral barriers and opportunities), BE models largely highlight the importance of motivation, social influences, and cost-benefit trade-offs.

- In the case of **seeking** and finding knowledge, heuristics and biases highlight the importance of structural factors that may deter individuals from optimized access to information.

- When considering knowledge **use**, insights from psychology and wider social sciences become important, including the importance of different learning styles and ensuring that the content is relevant and accessible to the audience. These learning styles are how people prefer to receive information, which can influence how well they are able to internalize, understand, and even act on the information they receive.

The desk review explores these concepts in more detail.

Research Methodology

Two key elements guided the development of this desk review:

1. Review of BE applications to knowledge management in existing literature and through consultations with behavioral science experts

2. Review of existing K4Health KM products to identify behavioral barriers and opportunities for improvement under Knowledge SUCCESS

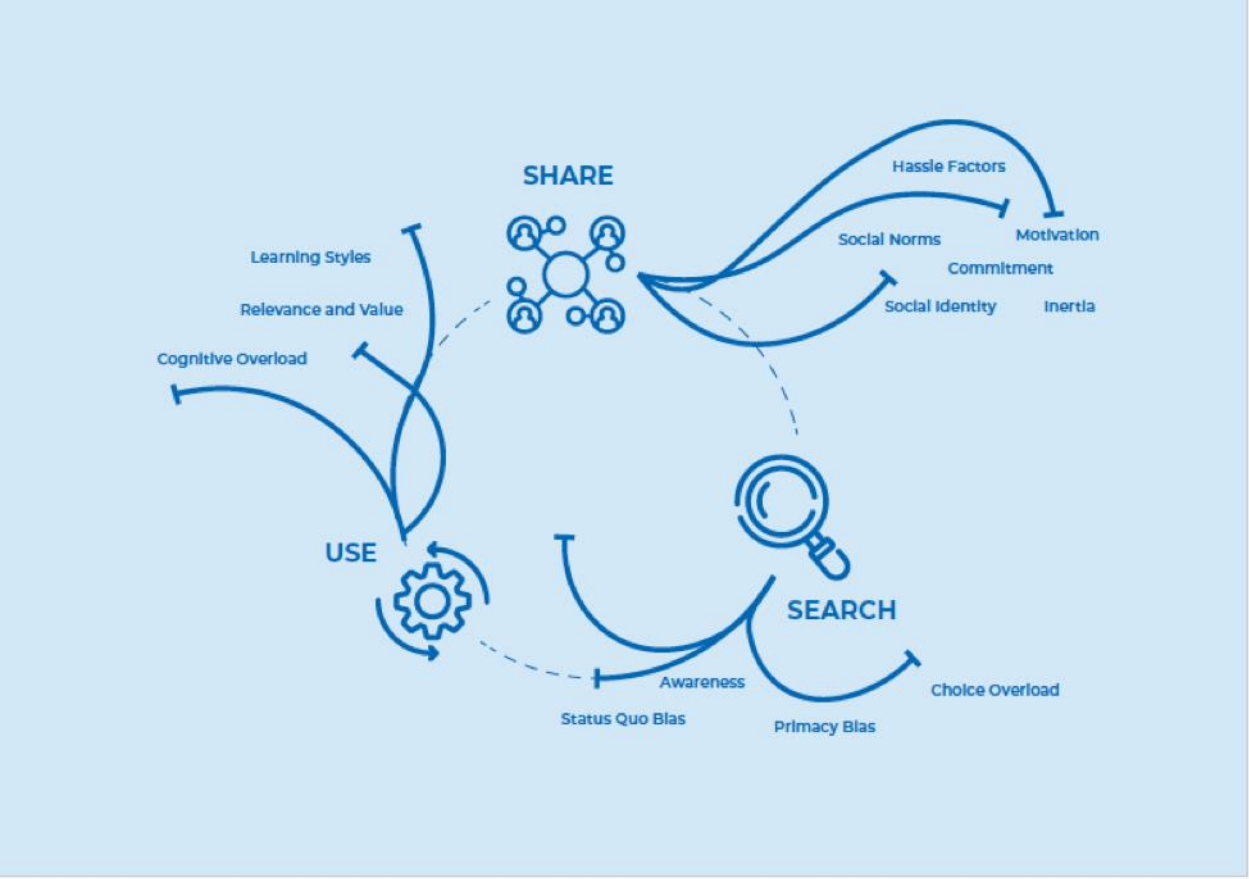
The researchers conducted a technical desk review to explore key BE principles and their application to the field of KM. The focus was on operationalized and applied insights rather than theoretical models and an exhaustive literature synthesis. Therefore, the information included in this report represents a combination of findings from literature searched through Google Scholar (a list of search terms used can be found in the Appendix), with a focus on the most relevant and 'real-world' applied papers, as well as insights from workshops with behavioral science technical experts. We filtered these findings based on the relevance of the research content in providing better context to the discipline of knowledge management and the behavioral barriers and opportunities that apply. Priority was given to BE concepts that are likely to explain the most behavioral barriers and opportunities at different stages of knowledge management. This ensured that insights drawn and recommendations made were actionable, relevant, and tangible.

The desk review considered the general applications of behavioral science to knowledge management at large, not only to insights around FP/RH knowledge, in order to glean learnings and insights from different fields. The review of existing FP/RH products, however, was focused exclusively on established K4Health products that would likely be moving to the new Knowledge SUCCESS project—*Family Planning: A Global Handbook for Providers*, Global Health eLearning (GHeL) Center, *Global Health: Science and Practice* journal, High Impact Practices in Family Planning website—or that could be reenvisioned into a different format (K4Health.org, K4Health Toolkits, K4Health social media platforms). Rather than provide specific recommendations as to how to improve and maximize these existing products, this review served as a general framework through which to assess the types of platforms and styles that may promote or hinder effective knowledge management.

Behavioral Mapping of the Knowledge Management Process

The following sections identify key behavioral principles that provide a better understanding of the elements of the KM cycle related to sharing, seeking, and using information. We examined each of these components and identified the relevant BE concepts that actively play a role throughout the user's decision-making process. Figure 3 shows an overview of the BE concepts driving and restraining each component of the KM process, which are expanded further in the following sections. We explain each BE concept with supporting literature and contextualize it within knowledge management. We also suggest implications for future KM activity design.

FIGURE 3. BEHAVIORAL MAPPING OF KEY ASPECTS OF THE KM PROCESS



Sharing information

Nahapiet and Goshal (1998) posit that new knowledge creation is often the result of combining previously discrete elements of knowledge. As these separate elements are often held by different people, information exchange is essential. This sharing of knowledge requires individuals to be aware of knowledge they hold, to transform it into a communicable format, and then disseminate it to others (whether remotely through technology, in written format, via video, or in person). This may be knowledge they have actively or passively acquired, or new knowledge that they have created themselves. Sharing information is unique among KM behaviors in that it requires individuals to engage in seemingly selfless behavior—an extra task perhaps viewed as not core to their function. This opens up the space for cognitive and behavioral barriers to easily inhibit this information-sharing behavior and places a strong importance on increasing motivation and incentives while reducing costs and 'effort' of engaging in the behavior.

Motivation and Incentives

The Sharing information, particularly in thoughtful and targeted ways, requires motivation above and beyond what is required for most health professionals' daily functions. Motivation can be either intrinsic (driven by internal rewards) or extrinsic (driven by external rewards). There is generally strong motivation for internal sharing of knowledge at the organizational level (with knowledge viewed as a key organizational resource to gain and sustain competitive advantage); however, in comparison to seeking and using knowledge, the intrinsic motivation for sharing information at the individual level is less evident.

Cabrera and Cabrera (2002) identify clear costs to knowledge sharing, including a potential loss of competitive advantage and the fact that creating and sharing knowledge consumes time that might otherwise be invested in tasks with clearer personal benefits. Effective knowledge sharing will therefore require that individuals perceive the benefits as outweighing the costs. From an individual standpoint, benefits—or intrinsic incentives—to knowledge sharing may include gaining expert status within an organization or network, receiving public praise, having expectations of reciprocity, or feeling personally fulfilled for having contributed (Wasko and Faraj, 2000). Relatedly, Balau and Utz (2017) found that individuals who exhibit pro-social characteristics (behaviors that benefit other people or society as a whole) are more likely to share information than those who tend to be more pro-self (focused on the attainment of personal/career goals (Belschak, 2010)).

Gaining expert status within a network or receiving public praise can serve as intrinsic incentives to knowledge sharing.

Implications. For those who are more pro-self, successful KM products may need to facilitate and promote these other benefits to knowledge sharing. Linking and acknowledging the

contribution that an individual has made through social or professional platforms such as LinkedIn, for example, could motivate sharing through enhanced social recognition (Ballard Sara, 2018). Similarly, integrating the experience and process of knowledge sharing with social platforms that create networks and communities could provide wider incentives and motivation for the individual, in the form of contacts or future opportunities and reciprocity.

Extrinsic incentives through the form of more tangible external rewards may also motivate individuals to commit the time and resources to create knowledge pieces and share them within networks. This could take the form of access to conferences or conditions for donor recipient funding. Platforms such as the *Global Health: Science and Practice* journal have built-in incentives to share information that are especially relevant to authors or contributors: the publication of an article can support professional development and recognition among the academic world. However, for other, less academic platforms and consumers of the information (i.e., the readers), this motivation may not exist and integrating other extrinsic incentives, such as providing unlimited access to tools or KM resources, may therefore be required. Given that consumers of the information make up a greater proportion of the target audience, the focus will be increasing the motivation among this group.

Social Norms and Coordination

Social coordination refers to the interpersonal matching of thoughts, feelings, and behaviors, as well as the synchronization of rhythms and roles, with other people (Bargh and Ackermann, 2010). As long as individuals are aware of others who have been invited to use and engage with a particular platform, social coordination is built in within many KM platforms, creating the space for multiple users to coordinate behaviors and knowledge. A related but distinct concept is that of *social norms* (both descriptive and injunctive), described as establishing behavioral expectations or rules within a group of people (Dolan et al., 2010). Social norms can play a strong role in promoting information sharing within a network by signaling it as the appropriate behavior (descriptive). Currently, this could take the form, for example, of senior leaders setting the 'status quo' with regards to sharing behavior. Our perceptions of social norms—what we think others are doing (injunctive)—are particularly influential, and normative feedback is often leveraged in behavior change programs (Allcott, 2001). Social norms can also take on a gendered aspect in certain environments and/or societies. Women and other marginalized groups may be less likely to share information (especially in face-to-face contexts) where norms frown upon women in authority or where women and other groups are raised in such a way that they have less confidence in their capacity to contribute to bodies of knowledge.

Implications. In the context of knowledge management, principles of social coordination and norms could be applied by informing users that, for example, 40% or 60% of users are sharing information regularly. Similarly, integrating knowledge sharing platforms with social platforms where users are able to directly see others engaging in the behavior may further promote the behavior. Social media platforms such as project or

Integrating knowledge sharing platforms with social platforms where users can directly see others engaging in knowledge sharing may further promote the behavior.

organizational Facebook or Twitter platforms can help establish this social norm of information sharing; if specific project articles or resources are linked to these existing social platforms, users are readily able to act on this through further sharing of information, promoting a community of knowledge exchange.

Social Identity

The concept of *social identity* is related to social norms. We all have perceptions of ourselves and our roles, and we make choices and take actions in accordance with this identity. When we are primed to consider a specific identity, we behave in ways that fit with its associated stereotypes. For example, Akerlof & Kranton (2005) found that a worker's self-image as a jobholder, and her idea as to how her job should be done, can be a major incentive in itself to perform certain job-related tasks.

Cabrera and Cabrera (2002) argue that knowledge sharing can be compared to a public goods dilemma or any *social cooperation*: individuals can maximize their own benefits by consuming others' information without sharing their own. But if everyone does that, all actors lose out, with no information being shared. Cabrera and Cabrera (2002) argue that establishing group identity and promoting personal responsibility are useful ways of establishing cooperation in a knowledge sharing cooperation dilemma.

Implications. Priming the identity of users, especially by defining social networks and interpersonal bonds, as Thought Leaders or Collaborative Members may therefore be required to promote knowledge sharing. Wasko and Faraj (2000) also found that users of information platforms reported participating because they wanted to feel part of, and promote, a professional community they valued. In addition, by engaging with the professional community, it helped them to stay up-to-date with current ideas and innovations.

Priming the identity of users as *Thought Leaders* or *Collaborative Members* may be required to promote knowledge sharing.

Hassle Factors and the Peak-End Rule

Even if motivations align, we often don't act in accordance with intentions due to seemingly minor inconveniences, known as 'hassle factors.' In the case of creating and sharing knowledge, this could come in many forms: a complicated review process that requires many rounds of revisions, a complex log-in system before being able to submit resources or other types of information, or difficulties in navigating a platform. These all serve to increase the costs (time, resources) in the cost-benefit trade-off of sharing information discussed above (Cabrera and Cabrera, 2002). The risk is more acute in settings where Internet connections are unreliable or come at a cost premium; in such settings, the smallest hassle factors can serve to direct users' attention to other pursuits.

Implications. Well-designed, user-friendly platforms simplify a task and reduce the time necessary to distribute information. Hassle factors can be minimized by providing clear channels for actions and steps for seeking assistance if needed and ensuring that users have the necessary training, skills, and resources to use the KM platform. For example, Medium, a popular online publishing platform, allows readers to highlight interesting sentences within articles and tracks the top highlights. This allows readers to quickly skim an article and identify its key points.

Removing frustrations stemming from hassle factors is especially crucial in promoting repeat engagement. Due to the Peak-End Rule, our memory of past experience does not correspond to an average level of positive or negative feelings, but rather to the most extreme point (peak) or at the end of the experience (Kahneman, 2000). This means that if we give up after feeling frustrated at trying to upload or share knowledge pieces, we will disproportionately associate the experience of navigating a KM platform with that feeling, and therefore most likely not return.

Removing hassle factors is especially crucial in promoting repeat engagement with a KM platform.

Inertia

Inertia refers to the endurance of a stable state associated with inaction and represents a key behavioral barrier that needs to be considered (Alós-Ferrer et al., 2016). Creating knowledge pieces and proactively sharing them with others requires the individual to overcome this state of inertia. This may be particularly challenging in a work environment with competing demands and limited time and resources.

Commitments can be an effective tool to counteract people's lack of willpower or natural inertia. As individuals are motivated to maintain a consistent and positive self-image, they are likely to keep commitments to avoid reputational damage (Cialdini, 2008). Commitments are particularly effective if there is a cost in breaking them (Dolan et al., 2010) and they are specific and tangible.

Commitments can be an effective tool to counteract people's lack of willpower or natural inertia.

Implications. Developing systems that ensure KM processes are as simple and effortless as possible is crucial to encouraging action. Tools such as simple templates to input and upload information or ensuring that submission of information needs to occur only once through one platform may promote the desired KM behavior. Personalized and timely reminders or warnings to members asking them to submit or upload relevant information may help prevent inertia. When users register for a platform, asking them to commit to sharing a specified number of thought pieces in a certain time period could serve to encourage the desired behavior change. Making these commitments public through social networks may be particularly effective.

RECOMMENDATIONS TO PROMOTE INFORMATION SHARING

BE PRINCIPLE	RECOMMENDATION
Motivation and Incentives	Incorporate tools and techniques to foster both intrinsic and extrinsic motivation: these could be social rewards, through recognition and appreciation, or more tangible, through prizes or rewards to appreciate high levels of sharing.
Social Norms and Coordination	Leverage social norms to encourage people to share information, either by explicitly asking them to do so or communicating to them their peers' information-sharing activities.
Social Identity	Incorporate messaging and techniques to prime the user's social identity to encourage information sharing.
Hassle Factors and the Peak-End Rule	Ensure appropriate prototyping and testing of a platform with the intended end-user to get feedback on design and ensure that hassle factors are identified and removed.
Inertia	Ensure sharing processes are as simple and effortless as possible, requiring little cognitive effort on the part of the sharer, in order to reduce the tendency toward inertia.

Seeking information

Once information is created and shared, its use by others requires them to identify the need for that information, look for it, and successfully find it. As long as the individual is aware of their need for information, motivation in general is stronger at this stage than in the sharing stage: there are clear intrinsic incentives. The level of success in turning this motivation into action may, however, be related to a number of behavioral biases and tendencies.

Choice Overload

The phenomenon of choice overload occurs as a result of too many choices being available. Rather than enhancing the desired behavior, too many options can be associated with unhappiness (Schwartz, 2004), decision fatigue, going with the default option, and choice deferral (avoiding making a decision altogether) (Lyengar & Lepper, 2000). A number of factors contribute to perceived choice overload: the number of options and attributes within a platform and across similar platforms, time constraints, and how well aligned the options are (Chernerv et al., 2015).

Implications. In the case of seeking information, this may manifest within a platform or across platforms. That is, the existence of similar knowledge repositories or many overlapping sources of information within the same repository will likely result in the user discontinuing the search for new information. There are currently a large number of KM products in the FP/RH space with similar and overlapping information. These include products offered by K4Health/Knowledge SUCCESS and other organizations (e.g., WHO, UNFPA, USAID and its various cooperating agencies). Identifying which KM product to turn to for a specific piece of information can be challenging, and once in a platform, conducting a search on a topic often returns many options, risking the user's disengagement altogether. Promoting the use of a knowledge platform may therefore require simplifying the choice attributes or the number of available options (Johnson et al., 2012). This may include limiting the amount of unnecessary information presented, decreasing the number of choices presented, and increasing the meaningful differences between them. Rather than multiple platforms or tools with similar functions, it may therefore be optimal to ensure that each resource is clearly distinct in purpose. Tools that limit the amount of 'choice' that an individual has to make, such as filters for preferences from the onset and highly effective search functions, may enhance use. Searching for information can be optimized by including filters such as for topic (e.g., contraceptives, advocacy, health systems, etc.), type of information (e.g., publication, announcement, blog, etc.), and country or region. This enables the information to be better oriented toward the user. Similarly, creating synthesis and connections between platforms, rather than recreating new standalone platforms, reduces the choice requirements for the user. The new Knowledge SUCCESS website presents an opportunity for this.

Awareness and Perceived Ease of Use

Fully restricting choice between platforms is unlikely to be possible with the existence of many different websites, toolkits, and apps outside the influence of the Knowledge SUCCESS project. A user's decision to engage with one particular platform may therefore depend on a number of factors related to awareness and ease of use (an example where hassle factors, as discussed above, can also impact searching behavior).

Implications. Leveraging social norms by widely promoting a KM platform among established networks and communities while providing strong incentives for initial users to engage can enourage others to follow suit. Hassle factors discussed earlier will also have a strong influence here: users are more likely to engage with tools that are simple, user-friendly, and well-packaged. The current high bounce rate (the percentage of visitors to a particular website who navigate away from the site after viewing only one page) of many K4Health products and the short time spent on sites suggests the existence of hassle factors that may currently deter users from deeper engagement.

Avoiding the search process entirely through the use of push rather than pull techniques (given to the user rather than requiring them to actively search for it) can also ensure use of a particular platform. Targeted emails and linkages with other platforms can help increase awareness and engagement with the platform of interest. Interestingly, Balau and Utz (2017) found that people who receive information through push techniques are more likely to subsequently share that information with others, perhaps because users feel less ownership over the information and therefore perceive reduced costs of 'giving it up.'

Targeted emails and linkages with other platforms can help increase awareness and engagement with a particular platform.

Primacy Bias

Primacy bias refers to our preference for information that is presented first. Listing a political candidate's name first on a ballot, for example, has been shown to increase their percentage of the vote by up to 5% in some cases (Chen et al., 2014). For individuals with limited time, the risk of primacy bias is especially high. Knowledge management, when not part of an individual's defined role, can be viewed as an extracurricular activity; therefore, providing people with the most relevant information upfront makes optimal use of their limited time, and giving them information that is more likely to resonate with them results in a greater likelihood that they will in turn share it. Gender is an important consideration here; many women have less leisure time than men and are therefore less likely to devote significant time to activities seen as extracurricular.

Implications. This phenomenon of primacy bias can be harnessed by ensuring that the most critical information appears first in any list. This can be applied both in terms of finding the initial tool (Google search optimization and high-flagged URLs) and in ensuring that the user engages with the information. Currently, many K4Health products are found through organic searches of specific terms such as 'K4Health,' 'family planning training' or 'reproductive health toolkit.' Having the Knowledge SUCCESS website and FP/RH-related terms come first in search results will continue to be an important factor for primacy as well as usage. Understanding how people browse for information

Understanding how people browse for information and the search terms they use is essential to ensuring they find relevant information and continue to engage with the platform.

and the search terms they use is essential to ensuring that searches are optimized, relevant information is found and displayed first, and users continue to engage with the platform. In practice, there are several ways to do this, such as using plug-ins to scan for additional words or phrases that can enhance search engine ranking, using alternative text for images that can be read by search engines, and updating the content regularly.

Status Quo Bias

Even with small transaction costs, people tend to prefer things to stay the same by doing nothing or by sticking with a previous decision (Samuelson & Zeckkhauser, 1988). If there is already a status quo, people are less likely to switch to an alternative, even if they would have chosen it in the absence of the status quo. This is particularly likely when choice overload is at play (Dean et al., 2017).

Implications. In a KM ecosystem with multiple options and platforms, it is therefore particularly crucial to understand the current status quo of intended users and leverage this, rather than attempt to go against it. Formative research plays an essential role in understanding how targeted audiences are currently consuming, sharing, and accessing information. Using similar channels that are already well established or introducing tools or resources that complement rather than compete with existing ones is likely to have the greatest impact.

RECOMMENDATIONS TO IMPROVE INFORMATION SHARING

BE PRINCIPLE	RECOMMENDATION
Choice Overload	Consolidate information types, styles, and content and incorporate highly efficient features within a platform that allow for reduction of choice, e.g., search filters.
Awareness and Perceived Ease of Use	Consider dissemination channels and design techniques for the new KM solution to ensure that end-users are aware of and motivated to use the platform, over and above alternatives. This may include the use of social networks to promote it, as well as ensuring that end-users are involved from the start in early design processes.
Primacy Bias	Incorporate techniques in design to ensure that the platform and relevant information is first on a search list.
Status Quo Bias	Leverage design on current status quo, rather than expecting deviation from it.

Using information

Once information is created and shared, its use by others requires them to identify the need for that information, look for it, and successfully find it. As long as the individual is aware of their need for information, motivation in general is stronger at this stage than in the sharing stage: there are clear intrinsic incentives. The level of success in turning this motivation into action may, however, be related to a number of behavioral biases and tendencies.

Cognitive Overload

Cognitive overload refers to a situation where too much information is given simultaneously, overwhelming a user's cognitive processing capability. This can be a key barrier to use of information, as it can inhibit engagement with new knowledge presented.

***Implications*.** Information needs to be presented in easily accessible formats that do not place a heavy cognitive task on the user (Kirsh, 2000). Cognitive overload is particularly likely to occur in time- or resource-pressed situations, where the individual is not able to sift through long documents or multiple resources. Ensuring that information is therefore packaged in very actionable, simple terms, as well as integrating easy navigation, is key to promoting use. Interactive formats, where individuals are not required to search through information themselves but are able to ask direct questions, is also likely to reduce the risk of cognitive overload by ensuring that the only information presented is relevant and targeted. This may take the form of interactive question-and-answer sessions with experts or forums that allow personalized engagement.

Interactive question-and-answer sessions with experts or forums could allow for personalized engagement.

Relevance and Value

Related to the concept of cognitive overload is the need to ensure that the information presented is relevant and valuable. Intended end-users are unlikely to engage with a platform if they do not perceive the end results or the information found to be relevant or of value—in other words, if they are not motivated. Each audience will have different needs and style preferences regarding the format and content presented, and tailoring material to reflect this can increase engagement and impact (Schmid et al., 2008).

Implications. It is essential to clearly understand the needs of the user and ensure that information is as tailored and relevant as possible. Academic papers, for example, may be used by researchers but are unlikely to be useful to on-the-ground implementers, who are more likely

to engage with simple fact sheets that they can read more quickly. The balance between limiting choice overload and ensuring relevance may require the provision of filters and easy-to-use option choices within one global platform or the clear differentiation between targeted platforms. The role of any managing or coordinating body should be to ensure that content is regularly updated, users are notified when updates occur, and the content is synthesized into actionable and digestible tools.

Learning Styles

Although common behavioral preferences can be identified, there also exist individual differences in how people optimally engage with information. There are seven unique learning styles originating from Neil Fleming's VARK (Visual, Aural, Read/write, and Kinesthetic) learning model (Fleming et al., 1992): visual, aural, verbal, physical, logical, social, and solitary. An individual may have one dominant learning style or a combination of learning styles. We are especially curious to examine, in the upcoming formative research, whether socially constructed differences such as job function and gender are correlated with learning styles and/or preferences. Similarly, an individual's learning style could evolve over time. For example, transitioning into a more senior position within an organization may require adjustments in a person's learning preferences. We define various learning styles below and contextualize them to how they can be applied to Knowledge SUCCESS.

TABLE. ILLUSTRATIVE KM FORMATS BY LEARNING STYLE

LEARNING STYLE	PREFERRED LEARING MODE	ILLUSTRATIVE KM FORMATS
Visual	Images and pictures	Videos Infographics Charts Graphics
Aural	Sound and music (e.g., listening and speaking)	Podcasts Audiobooks Share fairs Knowledge cafés
Verbal	Speech and writing (e.g., written and spoken word)	Blogs Journal articles Other publications
Physical	Sense of touch (e.g., direct experience, hands-on activities)	Role playing Scenarios Workshops
Logical	Logic, reasoning, systems	Categories Lists
Social	Group activities	Storytelling Webinars Share fairs
Solitary	Studying or working alone	Online courses

VISUAL

Visual learners prefer using images and pictures to access and understand new information. Visual learners benefit from charts and graphics, which use visual representation to show relationships between various points. Knowledge management platforms that allow users to share and access FP/RH information through videos and infographics will be particularly appealing to these individuals. The Global Health eLearning (GHeL) Center, for example, uses videos to communicate information as part of its courses.

AURAL

Aural learners prefer to use sound and music to communicate. They can learn new content through listening and speaking activities. Aural learners can benefit from the use of mnemonic devices to learn new information. For these learners, delivering new information through podcasts and audiobooks may be an area worth exploring, and continuing to use face-to-face KM approaches such as share fairs and knowledge cafés will be important.

VERBAL

Verbal learners prefer engaging with information through speech and writing. Verbal learning applies to both the written and spoken word: people with this learning style like reading and writing and find the use of words and language, such as through blogs, rhymes, and tongue twisters, the best way to learn. Verbal learners may, for example, find the K4Health Toolkits or articles within the *Global Health: Science and Practice* journal particularly useful, as they are largely text-based.

PHYSICAL

Physical learners use their sense of touch to learn new information. They learn and understand new concepts through direct experience and by doing things, such as through role playing or building models from scratch. GHeL promotes a blended learning approach, including face-to-face instruction and instructor-led and peer-to-peer interactions, although the platform itself focuses primarily on the delivery of online courses. This physical style of learning is particularly difficult to incorporate into knowledge systems for audiences that largely exist as virtual global networks. The use of scenarios to present new information and leveraging opportunities, such as annual meetings or in-person workshops, can be vital.

LOGICAL

Logical learners prefer logic, reasoning, and systems. Learners within this group tend to understand information when it is categorized, listed, or organized—as in the Family Planning Handbook, whose guidance is packaged into clear, actionable steps.

SOCIAL

Social learners learn through group activities or with other people. Social learners learn best when relating to others, such as by sharing stories or working in teams. Webinars and knowledge share fairs, as social platforms, are examples of environments that would benefit social learners.

SOLITARY

Solitary learners have a preference for studying and working alone. Online courses available through GHeL are products that solitary learners would be drawn to. It allows them the independence of learning new content on their own, setting their goals, and reaching them at their own pace.

Identifying general learning style trends within the target audience and tailoring respective products accordingly can help to ensure that products and information adequately meet users' needs. The table below provides examples of different channels and platforms that may appeal to different learning styles.

RECOMMENDATIONS TO PROMOTE INFORMATION USE

BE PRINCIPLE	RECOMMENDATION
Cognitive Overload	Present information in easily digestible and navigable formats. Incorporate an interactive element for quick information sourcing.
Relevance and Value	Conduct in-depth research to understand needs, motivations, and experience of different segments of the intended audience. Incorporate their input and feedback throughout the design process to ensure that any end product is relevant to their needs.
Learning Styles	Investigate implications and experiences of different learning styles through formative research, incorporating findings into product design and prototyping.

Product Review

In the final phase of the desk review, we applied the BE biases and concepts identified in the previous sections to specific, existing K4Health products to identify potential KM barriers and opportunities that could help inform future activities. Because our product review was not exhaustive, the recommendations for each product serve as a preliminary analysis by a new partner (Busara) with the specific application of a BE lens to the analysis.

This section lays out key engagement insights we identified through each product's analytics, as well as behavioral barriers and opportunities. We used a general time frame of the past 90 days to analyze each product. Although most products have been in existence for longer than 90 days, focusing on the most recent engagement rates provides more relevant insights to meet the objectives of the new Knowledge SUCCESS project.

For each product, we evaluated the following indicators, investigating further if there were distinct observations:

- **Number of users and sessions:** This shows the general website traffic and when the site is most active.
- **Bounce rate (%):** This provides insight into whether the user's requirements are being met. If a user visits a page, then leaves without further interaction, this is considered a 'bounce.'
- **Average session duration:** This tells us how long a user spends on a page. Bounce rates are correlated with average session duration. Lower bounce rates mean people are spending longer on a page.
- **Top landing pages:** These pages drive traffic to the website. This indicates how relevant the content is to the user and whether each product is meeting its objective.

Global Health eLearning Center

INSIGHTS:

- Low bounce rate and relatively long time spent on site.
- Low completion rates of some courses.
- Usage heavily focused in a few geographical sites, such as Nigeria and the USA.

Behavioral Barriers	
Motivation/incentives	Low completion rates of courses suggest potential lack of intrinsic motivation or perceived usefulness.
Accessibility	The course complexity or length may also explain low completion rates.
Lack of social regulation	Courses are conducted remotely with minimal supervision, which will likely have consequences for adherence and learning quality. Personal or social commitment devices could encourage users to complete courses.
Behavioral Opportunities	
Relevance and value	A clearly defined target audience allows for tailored messaging. Users likely enter the site for a specific purpose (such as finding a course) and are able to achieve that (supported by bounce rate and time spent on the site).
Extrinsic motivation	For some, the completion of courses is required by their organization as a part of ongoing professional development. This may explain the geographical focus of users.
Cognitive overload	The site includes interactive forums, which enable users to ask direct questions rather than search through passive information.

Global Health Science and Practice Journal

INSIGHTS:

- 40% of the users who accessed the website between March 2013 and April 2017 were from low- and middle-income countries, suggesting that the content is relevant and has the potential to reach regional implementers.
- Time spent on the website is short: average of 1m 38s in the last month (the majority less than 10 seconds). Considering the time it takes to navigate and read each article, this suggests that users quickly leave the site after not being able to find what they are looking for or enter specifically to download one paper and do not continue browsing through. This is supported by the high (60%) bounce rate. A study by Chartbeat of over 2 billion website visits revealed that 55% of users actively spend 15 seconds or less on a website (Haile, 2014). This suggests the design of the page needs to be optimized to help users find information in a short period of time.
- 60% of those who end up at the Instructions for Authors page exit the website after that page.
- The content and format is oriented for an academic audience, with technical language and formal peer review processes.
- 36,719 downloads over a period of 90 days vs. 400 published manuscripts suggests that the site is used mostly for accessing information rather than as a forum for sharing.
- Relatively well-frequented website as compared to other K4Health products: 71K users in the past 90 days.

Behavioral Barriers	
Motivation	The short amount of time spent on the site and high bounce rate suggest that users who end up on the site quickly leave. This may be due to motivation: the site is likely used to access and download a specific paper, with no pull to further engage.
Hassle factors and perceived ease of use	Short time on the site could also be due to more superficial usability or interface factors that pose an immediate barrier.
Lack of relevance	Users may quickly realize that the type of content on the site is not relevant to them. Ensuring that content is tailored to meet the needs of the intended user is essential.
Accessibility	As the language in the papers is generally highly technical, its ability to engage and inform action by time-constrained program developers may be limited. For sharing information, the process (i.e., submit a manuscript) is relatively extensive, requiring formal manuscript development and peer review. This is likely to deter those not familiar with such a process and who wish to quickly share field findings, supported by the high number of users who leave after reading the Instructions for Authors page.
Behavioral Opportunities	
Accessibility	For those able to engage with the technical language, open-source and free access to information removes a common barrier to accessing formal academic knowledge. It addresses a specific need within a targeted audience segment. Publication of a knowledge piece (i.e., an article) in a formal journal provides a strong incentive to share information.

K4Health.org and Toolkits

INSIGHTS:

- Relatively high use: 588K in past 90 days coupled with medium to high bounce rate (45%).
- Use not solely focused in the USA: high use in Indonesia as well as some use in Bangladesh and India.
- Very short average session duration: 15 seconds.
- Toolkits are the most used resource, but most users find these by going directly to a specific Toolkit rather than navigating from the homepage. Users spend comparatively longer on these pages than on others, but then leave the site without navigating elsewhere.

Behavioral Barriers	
Cognitive overload	Similar information appears to be available across many documents, Toolkits, and resources. Searching for a piece of information therefore requires significant synthesis and time from the user; even the search results reflect this. This is likely to result in cognitive overload, in which the user is no longer able to engage with the material.
Relevance and value	It is not intuitively clear from the homepage who the website is intended for, with a large range of material covering all potential audiences. Users may therefore experience difficulty finding relevant material. Orienting the user to the platform, such as providing filters so that it is user-centered rather than content-centered, could help overcome this barrier.
Hassle factors	The focus of the homepage is on understanding the K4Health project rather than practical navigation to find information. For example, the most-used resource, Toolkits, cannot easily be found from the homepage. This may cause users to rapidly give up and search elsewhere, potentially explaining the short session duration (unless users have arrived directly at Toolkits). Improving the interface could promote sustained engagement. It will be important to address these issues as part of the new Knowledge SUCCESS platform.
Behavioral Opportunities	
Choice overload	Brings together all K4Health products under one roof, providing potential for the individual to search and potentially share information across platforms. The search function, however, does not facilitate easy access to information across all the K4Health platforms. Improving the connectivity between information sources and the interface and refining the search function could greatly enhance engagement as part of the new Knowledge SUCCESS website.

High Impact Practices in Family Planning

INSIGHTS:

- There is a relatively small but highly detailed set of topic briefs, in addition to two Planning Guides.
- Very low usage as compared to other products: 12K in the past 90 days.
- Extremely high bounce rate (75%) and short amount of time spent on site (1m 40s).

Behavioral Barriers	
Choice overload	There are many other sources that provide similar briefs. Users may struggle to identify the added value of these unless they are particularly aware of the High Impact Practices partnership and come searching for these briefs specifically.
Cognitive overload	Due to the detailed nature of the guides and lack of interactivity available on the platform, users may struggle to quickly identify the information they need within the guide. The most commonly viewed pages of the site were the briefs, but high bounce rates for these pages and relatively short amounts of time spent on them suggest users skim the pages and leave without further engagement or leave immediately after downloading only the content they were looking for.
Relevance and value	Due to the small number of topics available, a possible explanation for the high bounce rate is that users do not find the topic they are searching for. The high bounce rate and short amount of time spent on the site support this, suggesting that users come to the site and quickly leave, either not able to find the topic they are looking for or after being faced with long articles to search through. Another explanation for this behavior, as mentioned above, is that users may have found the information they are searching for and downloaded it.
Behavioral Opportunities	
Motivation	A space that brings together all the evidence regarding a particular practical question could be highly valuable. There would be strong intrinsic motivation for use by practitioners. User-centered interface design is key to ensuring that content is accessible and easily found.

K4Health Social Media (Facebook and Twitter)

INSIGHTS:

- The content on the two social media platforms, understandably, is quite different: the recent posts on Facebook focus more on success stories in the field, while the Twitter posts focus on the latest research findings.
- Twitter has a relatively large following, potentially indicating that the content distributed through this channel is relevant to the target audience. The number of "likes" and "retweets," however, suggests that the platform is not generating the level of interactivity that it could.

Behavioral Barriers	
Choice overload	In an age of social media, there are endless pages and resources to follow. In order for the new Knowledge SUCCESS project to position itself as a high-value resource among these, it will likely benefit from continuing to leverage linkages to other forums or highly trafficked resources. 'Joining the conversation' rather than competing with other resources removes the need for the user to make a choice in a context of many similar options.
Motivation	Social media provides an opportunity for high engagement and interactivity by leveraging social norms and social recognition. The limits lie in the ability of the wider network of targeted audiences to also contribute and share information. A project's social media manager primarily determines and drives its content. For social media to be a motivator and launchpad for further discussion and contributions requires particularly targeted and linked social media strategies. Incorporating contributors from a diverse range of fields and locations, or posing questions rather than providing content, may help promote an exchange of information rather than a one-way flow.
Behavioral Opportunities	
Motivation	Social media platforms often come with strong motivation to use them, thanks to social recognition. Social media communities are driven by approval and acceptance among their peers. Having content on the new Knowledge SUCCESS social media pages that shows engagement with highly regarded experts or influencers within the FP/RH space will give more authority to the new Knowledge SUCCESS brand.
Relevance and value	The audience seems to be drawn to the @K4Health Twitter page, most likely because the content feels relevant and is presented in a salient manner: the tweets clearly and rapidly highlight topics and key messages, allowing the user to identify relevance without having to search through a lot of text. For the new project, alignment of the content and style used on Twitter on other Knowledge SUCCESS social media pages may improve engagement among the target audience.
Cognitive overload	The push nature of information shared through social media platforms reduces the effort required by the user, and the interactivity allows for quick and targeted information sharing.

Family Planning: A Global Handbook for Providers

INSIGHTS:

- Relatively high use: 125K in past 90 days.
- Majority of users in USA, but also significant use in the Philippines, India, Kenya, and Nigeria.
- Users arrive directly at a technical page rather than navigating from the homepage.
- Large majority of users come to the site through organic search.
- High bounce rate.

Behavioral Barriers	
Motivation	Users are entering directly at a specific topic and engaging with that topic; however, they are not further engaging with the site. Users are going to the Family Planning Handbook to access technical information on specific topics.
Hassle factors	Visuals and navigation from the homepage or the side panel are not overly user-friendly or intuitive, including the absence of a clear search function. Similarly, navigation between pages is laborious. This may explain the high bounce rate.
Behavioral Opportunities	
Relevance and value	In general, users appear to be searching for a specific topic or technical question through a search engine and directly entering the site at the resulting page. This suggests the Handbook contains, and is successfully flagging, material and content relevant to users. This is supported by the relatively long time spent on each technical page as compared to other sites.
Accessibility and cognitive effort	The content is packaged into short and clear messages without dense text or excessive technical jargon. The style, language, and format are accessible to practitioners: finding relative content may be challenging (see above hassle factors) but once found, it is accessible and actionable.

Conclusion and Recommendations

Existing literature has yet to explicitly map behavioral economics concepts to specific knowledge management stages and products; this exploratory review therefore consists largely of the informed application of general BE concepts to the KM process, along with a review of existing K4Health products. In order to further test and verify these assumptions, further in-depth targeted user research and human-centered design is required. This will ensure that new products, or adaptations to existing products, specifically reflect barriers and opportunities relevant to targeted audiences. The following themes identified throughout the desk review will serve to guide further research and design.

RELEVANCE AND ACCESSIBILITY

The style of content in existing K4Health products is largely technical and lengthy, yet the stated purpose is to inform practical program design and implementation. Considering the cognitive and time constraints of those engaged in such activities, findings and applying the required information through these resources may be challenging. Techniques such as short '10 things you need to know' guides, interactivity allowing direct engagement on specific, targeted questions, and systems of more refined tags and filters by topic and audience could all help to improve usefulness and accessibility. Here, there is an important role for the KM curator to play in ensuring that information is synthesized and presented in a relevant and accessible manner. Further user research can help to understand in greater depth the needs of the intended audiences with regard to optimal search and presentation of information. Investigating the relationship between learning styles, particular audience profiles, and knowledge management needs can help build out targeted and tailored products for optimized use.

Techniques such as '10 things you need to know' guides, targeted Q&As, and refined tags and filters can help improve the usefulness and accessibility of information.

CHOICE OVERLOAD

There is significant overlap between product content and objectives. This is likely to reduce use due to the connections between choice overload, decision paralysis, and inaction: faced with multiple options, potential searchers of information are likely to disengage, resorting to the status quo. Depending on the audience, this status quo could be continued use of their own organization's resources or not seeking out new resources altogether. Linkages to outside sources could greatly reduce this choice overload and increase engagement. There is also an important role for the KM curator to play here in providing quality control, ensuring that information is not replicated, and is tagged or categorized appropriately to enable efficient and high-quality search.

Linkages to external sources could greatly reduce choice overload and increase engagement.

HASSLE FACTORS

Counterintuitive interfaces, error pages, and lengthy search/upload processes are all likely to contribute to disengagement with the material due to hassle factors, or seemingly small operational barriers that cause a user to stop using the platform. Users across most products appear to use the products for quick access to a specific paper or brief, entering the site directly at the desired resource and leaving without further engagement, which is consistent with general web use trends. Thorough interface prototyping and testing can ensure that the tools are optimized for user-operability and more sustained interaction with the platform. Establishing fast and responsive support services can also reduce the likelihood of immediate disengagement. An effective KM platform should therefore be designed to not only enable end-users to easily navigate to the desired information, but also for the curator to be able to support and manage the platform with reduced time, energy, and frustrations. Design sessions and prototyping should be conducted with end-users as well as curators to incorporate diverse needs and feedback.

MOTIVATION

There is a need to ensure clear motivation or opportunity to share information across the platforms. Many of the products are passive providers of information, and in the case of those that do provide the opportunity to contribute information, the incentives to do so are unclear. A number of devices, such as interactive forums or simple upload templates, may create the space and opportunity to share information. This may need to be coupled with built-in incentives or commitments in order to motivate sharing, such as tangible rewards or social recognition related to user profiles within or beyond the platform. Facilitating quick and easy access to relevant information through the creation of an interactive social platform or ‘learning community,’ rather than a repository of information held in passive briefs or papers, may in turn increase the motivation for users to share and contribute information to the platform.

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Appendix

LIST OF SEARCH TERMS		
Behavioral economics OR science Best practice transfer Expert directories Learning styles Learning design Learning process Knowledge fairs Knowledge management Knowledge mapping Knowledge sharing Knowledge repository Knowledge transfer Information search Storytelling Health care decision making Content management Content strategy Content curation Information dissemination	Knowledge translation Evidence to action Knowledge to practice Research utilization Research utilisation Data for decision making Knowledge Explicit knowledge Tacit knowledge Knowledge dissemination Knowledge exchange Knowledge capture Knowledge collection Knowledge synthesis Knowledge generation Knowledge assessment Knowledge production Knowledge brokers Information flow Communication Learning Collaboration, learning, or adaptation CLA	Learning agenda Health information Technology ICT Information, communication, and technology Information technology Competitive intelligence Organizational development Organizational learning Information sciences Information systems Information management Library management Team management Project management Virtual learning Share fair Fail fair Websites Databases Knowledge repository Publications Communities of practice Community of practice COPs


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