

Decision Support Systems for Benefits: Framework and Evaluation

How to deliver the best combination of insurance and benefit plan designs for employees and their families through sophisticated decision support, technology and education.

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Introduction

Everyone likes having choices – from 31 flavors of ice cream, to the fit of their jeans. Why? Because [people have varying needs and preferences](#). The need for personalization holds true for benefits as well. When individuals, rather than employers, select the type of health coverage and ancillary products that are right for their particular needs and preferences, they can “right-size” their coverage to their situation, saving costs and insuring against the key risks in their lives.

Health and benefits online marketplaces are becoming increasingly available to individuals, either through the public health exchanges or through their employers. These marketplaces offer expanded choice, often containing dozens of health and other benefits plans. But critical to increasing choice in benefits is providing a way for people to navigate their choices. Just as a personal shopper or online user reviews help people make the right choices when shopping in a physical store or online, [tools known as](#)

[“decision support” can help guide individuals through the experience of choosing the right health insurance or combination of benefits that best fit their needs](#). Today, technology makes it possible for employers to offer multitudes of benefits choices to their employees with the personalized support to navigate them.

Liazon Corporation has been a leader in the private exchange marketplace since 2007 and a pioneer in developing decision support tools for benefits selection. [In this paper, we discuss the concept of decision support broadly, why it is critical to a benefits marketplace, and our view, based on 7 years of experience, of what makes decision support effective in this market](#). It is important to note that this paper focuses on decision support for the health and benefits market, and while it uses examples from other industries, it is not an all-inclusive assessment of decision support for all applications.

Specifically, we will examine the following questions:

- Why is choice in benefits important?p. 3
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- What are the different types of decision support?.....p. 6
- How do recommendation engines differ?p. 7
- How can we evaluate the success of a decision support system?p. 10
- What should you look for in a decision support system?p. 11

Why is **choice** in benefits important?

There is no one, single way to protect everyone against the multitude of financial risks in life. This is because every person is different, and therefore, an effective benefits package will vary based on three main factors:



Health – Individuals have different medical needs requiring different types of coverage.



Financial Status – People have different levels of income and savings to cover potential medical costs or loss of income.



Personality – Some people are more risk averse than others (i.e., they have varying degrees of concern about having money in place to cover unforeseen events).

Each individual has their own unique needs and preferences, and thus, requires specific insurance coverage to best meet them. For example, consider a young, healthy, single employee who has a few months of income in savings and a general comfort with risk. If he were assigned a high premium plan by his employer, he would be paying for coverage “just in case,” when in reality, the chances of him using all that coverage are very low. This scenario results in him being “over-insured,” essentially paying for benefits he does not need and will likely never use. However, if another employee has a chronic illness that requires an expensive brand name drug, but the employer only offers a generic pharmacy plan, she is effectively “under-insured,” or not getting

the coverage she truly needs. Either situation is ineffective – **having over-insured employees is a waste of employer resources, and being under-insured ends up costing the employee more in the end.**

As another example, consider a cost-conscious family of four that routinely receives medical treatment from a clinic in their neighborhood. They may prefer a “narrow network” plan as long as their local provider is included, so they can take advantage of lower premium costs. On the other hand, an older employee approaching retirement who does a lot of traveling to see her grandkids may prefer a health plan with an unrestricted network. She may not mind paying higher

premiums because she would prefer to have the ability to see any doctor or specialist she chooses while she is away, or in the event certain health conditions worsen over time. In this scenario, she might consider the extra cost worthwhile for the peace of mind of knowing she's protected.

For the system to work for employers (who reap the rewards in terms of employee loyalty and perceived value) and employees like these (who get the coverage that is right for them), **the employee should be offered a wide variety of health plan designs and ancillary/supplemental coverage so they can choose the plans/products that best suit their needs and preferences for accessing care.** Offering a sophisticated decision support system – along with innovative, interactive education tools – gives an employee the opportunity to choose a health plan and insurance package that is right for them.

Health insurance can be complicated for employees to understand. A 2013 study conducted by Carnegie Mellon University published in the *Journal of Health Economics* cites “strong evidence that consumers do not understand traditional plans and would better understand a simplified plan.”¹



In particular:

- Only 14% of respondents who had employer-sponsored coverage could correctly define these four essential terms: “out-of-pocket maximum,” “coinsurance,” “copay” and “deductible.”
- When participants were given a hypothetical insurance plan, and asked to figure out what a four-day hospital visit would cost, only 11% were able to figure out the price and just 14% were within \$1,000 of the correct answer.

Source: “Consumers’ misunderstanding of health insurance,” *Journal of Health Economics*, Volume 32, Issue 5, September, 2013.

When it comes to employer-sponsored benefits, simply offering a broad array of plan choices for employees to choose from is likely to be challenging. **The upside of having more options is realized when there is a way to help guide employees to make the best choices for themselves.** This is facilitated through the use of decision support, a method of guiding employees through the experience of making selections when it comes to the right coverage for themselves and their families – a choice only the employee, not the employer, is fully equipped to make.

¹ Various authors, “Consumers’ misunderstanding of health insurance,” *Journal of Health Economics*, Volume 32, Issue 5, September, 2013.

What is decision support?

The term “[decision support](#)” is widely used in a number of contexts and has roots in the business realm as a means of helping executives make important decisions that have a substantial impact on their companies. A report by Daniel J. Power, “Decision Support, Analytics, and Business Intelligence” defines decision support as “a broad, general concept that prescribes using computerized systems and other tools to assist in individual, group, and organization decision making.”² The same report defines a [decision support system](#) as “an interactive computer-based system or subsystem intended to help decision makers use communications technologies, data, documents, knowledge or models, to identify and solve problems, complete decision process tasks, and make decisions.”

With the growth in technology, decision support started to incorporate more sophisticated web-based applications in the mid-1990s. Today, many companies are not only using decision support to help drive smart enterprise-level decisions, but to help their customers make product decisions as well. [In this paper, we refer to decision support as a tool or a system that helps a consumer find the products that are right for them.](#)

A decision support system will actually organize the options into a manageable set of choices that typically match the consumer’s needs and/or preferences based on various inputs they provide

during the shopping experience. For example, some of the more basic decision support systems are available to consumers purchasing a television online or booking airfare and hotel accommodations through the Internet. In the case of purchasing a television, for example, checking off preferences in terms of TV size, price, manufacturer, and more, helps sort through the inventory. The same is true in the case of booking airfare and hotels, where the consumer identifies if he or she wants a non-stop flight or sorts hotels based on star ratings. Many of these decision support systems have been deployed by companies like Amazon, BestBuy and Expedia.

Technology has taken decision support to new levels. Sophisticated analytics and algorithms can now be incorporated into a decision support system to pinpoint a product that is the best match for a consumer, or even an individual that is the best match for someone else. For example, eHarmony asks its users a series of questions based on its “Compatibility Matching System[®]” and using their answers – in addition to other basic information such as preferences for height, age and geographical location – the analytics match the user with others that fit their personality profile.³ Math-based algorithms can be used to parse through millions of data points and consider thousands of permutations before recommending a particular product that best fits a consumer’s needs.

² Daniel J. Power, “Decision Support, Analytics, and Business Intelligence Second Edition,” The Information Systems Collection, Business Expert Press, 2013.

³ eHarmony, “Company Overview,” <http://www.eharmony.com/about/eharmony/> (Accessed 10/3/2104).

What are the **different types** of decision support?

There is a body of academic work on classifications of decision support that centers on how the decision is made or presented.⁴ The following overview is based on what we feel is the best way to classify the types of decision support for benefits selection. Specifically, these may include:



1. Education

General Information

Teaching the consumer about important factors to consider when making a decision. For example, Weber Grill's "Gas Grill Anatomy" tutorial in its "Grill Buying Guide."⁵ For benefits, education may provide information about the concept of insurance, how it works, different types of products (medical, life, disability), legal and regulatory updates, and what to consider when choosing a plan.

Product Information

Describing product characteristics to help people differentiate among the menu of products offered. In choosing a laptop computer, for example, this might include size and weight of the product, amount of memory, storage capacity, etc. For benefits, it may include premium, networks, out-of-pocket maximum, etc.



2. Tools

Comparison Tools

Interactive features that help to compare different products, such as side-by-side comparisons. Such tools are often available on investment sites like Vanguard, where a consumer can compare asset classes, risk potential, expense ratios, and more, for up to five funds at a time.⁶ For benefits, these tools allow users to compare different plans at a glance.

Customer Ratings

These may include numerical ratings or written reviews. Integral to sites like TripAdvisor, people can rate the hotels they have visited using a five point scale from "terrible" to "excellent."⁷ For benefits, ratings may be provided by third parties or users of an exchange.

Filtering Tools

Commonly used by mass merchandisers like Amazon, the field of choices for a flat screen TV might be narrowed through a system that restricts recommendations based on the consumer's desired attributes such as price, size, manufacturer, etc.⁸ For benefits, filters may be applied to plan characteristics such as premiums and deductibles.

Calculators

Popular on real estate sites like Zillow, consumers can determine what their monthly mortgage payments will be based on varying home prices and mortgage terms.⁹ For benefits, users may calculate expenses and debts when considering life insurance amounts, or calculate anticipated health care costs when evaluating medical plans.



3. Recommendation Engine

One of the more sophisticated forms of decision support is known as a "recommendation engine," which uses an algorithm to provide a recommendation for products based on user inputs.

⁴ Daniel J. Power, "Decision Support, Analytics, and Business Intelligence Second Edition," The Information Systems Collection, Business Expert Press, 2013.

⁵ Weber, "Grill Buying Guide," <http://www.weber.com/grills/how-to-buy-a-grill>, (Accessed 10/3/2014).

⁶ Vanguard, "Compare Mutual Funds and ETF's", <https://personal.vanguard.com/us/faces/JSP/Funds/Compare/CompareEntryContent.jsp>, (Accessed 10/3/2014).

⁷ TripAdvisor, "Write a Review," https://www.tripadvisor.com/UserReviewEdit-g147249-d150694-a_placetype.10023-a_referredFromLocationSearch.true-a_ReviewName, (Accessed October 3, 2014).

⁸ Amazon, search for "flat screen tv" in "Electronics," http://www.amazon.com/s/ref=nb_sb_noss_2?url=search-alias%3Delectronics&field-keywords=flat+screen+tv&rh=n%3A172282%2Ck%3Aflat+screen+tv, (Accessed October 3, 2014).

⁹ Zillow, "Mortgage Calculator," <http://www.zillow.com/mortgage-calculator/>, (Accessed October 3, 2014).

How do recommendation engines differ?

A recommendation engine is a distinguishing factor of decision support in that there are various levels of sophistication that can be employed.

Getting to a recommendation

Methodology:

There are many factors that can be considered when designing a recommendation engine. For benefit decisions, we believe it's important to distinguish between expert-based and preference-based systems.

- **Expert-based** recommendations utilize the knowledge of a third party combined with industry best practices to help make recommendations, as in the case of a financial advisor selecting a portfolio of stock investments, or a travel agent suggesting a particular resort for a vacation.
- **Preference-based** recommendations consider consumer preferences, as a movie site may ask for preferences among movie genres, actors, eras, and other dimensions, to recommend movies the viewer may enjoy.

Analytics Built Into the Engine:

The algorithm that is used to calculate recommendations can vary greatly based on factors including:

- **Averages versus scenario planning:** Some recommendation engines will rely on averages alone to project the chances of certain events happening to employees. However, this method leads to the false calculation that

A recommendation engine may combine the two methodologies to varying degrees.



When it comes to choosing benefits, for example, cost calculations of expected health care utilization from third party sources may be combined with a consumer's risk tolerance and network preferences to determine an optimal recommendation.

insurance is almost always unnecessary since on average, the probability of a catastrophic event is small. However, should one occur, the effects on a person or family can be devastating, so the financial risks must be considered appropriately. Using scenario planning, whereby the likelihood of different risks and the accompanying cost scenarios is assessed, is a more accurate method. One may think of this as using a weighted average calculation which allows the small but devastating risks to be accurately accounted for.

- **Specificity:** The more information provided about an individual's situation, the better the recommendation. There is always a trade-off between time required from the user to gather information and the level of accuracy of the recommendation – the key is to gather sufficient personal inputs in order to create a truly customized recommendation. A basic recommendation based on “people like you” is not sufficient to determine the risks faced by any one individual. Age and geography, for example, are a lot less important than health status and savings information in determining a medical plan recommendation.
- **Accuracy:** How smart and well-built is the algorithm? Has it been tested and honed through iteration and user feedback? Every engine has something different going on in the black box, and it's important to ensure algorithms are accurate and optimized (is it the right math equation and is the math accurate?).



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Displaying the recommendation

Recommendations may be displayed to the end user in various ways, both in how many products are recommended and how recommendations are shown. Regarding the former, systems may either narrow down the options available to the top recommendations (a “set” of recommendations), or present one “best” recommendation (a “discrete” recommendation). In benefits, a discrete recommendation has the advantage of effectively optimizing the protection scenario that results in the lowest total cost, considering both premium and out-of-pocket expenses, as well as an individual's projected risks and preferences.

In either of these paradigms, when there is more than one product type involved, the system may display recommendations as **singular choices**, where the consumer is able to choose products one-by-one (e.g., first a shirt, then a matching skirt, then the shoes, to create a total ensemble). Alternatively, products may come already combined in an **aggregated portfolio or package** in which the individual items work together to form a cohesive whole (e.g., a complete outfit already assembled, which you can purchase as presented or choose which items to buy individually, like shopping by pre-arranged outfits within different categories of style on Zappos).¹⁰

No matter the type of recommendation engine, its merit is in meeting the needs of the consumer. Filtering pre-supposes users know what features they want. Some decisions, such as booking airfare online, do not require more than a filtering tool for decision support (i.e., the most critical factors are time of travel, airline preferences, number of stops, price, etc.). For other decisions, such as benefits selections, users may require a recommendation engine that can take in inputs and provide a recommendation based on an analysis of those inputs. The difference is akin to filtering by age and height on a dating site (think Match.com) vs. filling out a survey about personality and having an algorithm match the user to people based on a formula using research and past success (think eHarmony.com). Recommendation logic is particularly useful when people don't know exactly what they want or how to make a good choice, which is often the case in benefits.



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¹⁰ Zappos, "Simply Chic," <http://www.zappos.com/ensemble/12451>, (Accessed October 3, 2014).

How can we evaluate the success of a decision support system?

It is one thing to make a recommendation to a consumer, and trust that the system is working properly. It is quite another to know that the recommendation is a good one, thereby instilling confidence in the system as a tool to help consumers. The following metrics can help to quantify the “best” outcome for each employee over the long term, including:



Protection-to-price Ratio

- Did the benefits portfolio provide the right level of insurance for the employee’s personal situation?
- Do they feel covered financially if something should happen?
- Do they feel comfortable with the amount they are spending on premiums?

This could be measured using employee surveys, focus groups and gathering individual case studies.



Happiness Rating

- Did the employee understand the coverage they bought so that there are no surprises when it’s time to get reimbursed?
- Does the employee value their benefits and appreciate their employer’s contribution?

As in the value ratio to the left, this could be measured through various means of direct employee feedback.



Utilization Optimization Rating

- Is the employee willing to adjust their utilization of health care in order to spend their money more wisely?
- Are they making smarter, more informed choices without skimping on health care?

This could be measured by looking at per capita claims (pre- vs. post-exchange), and also looking at trends in preventive care and ER visits, pre- and post-exchange.

An optimal decision support system will give the user the flexibility to take the recommendation, something close to it, or ignore it altogether. So the success of any methodology should also take into account how closely the consumer’s choice aligns with the recommendation provided. This is one immediate measure of success for any tool that helps guide decision making.

Private benefits exchanges exist to give employees the ability to choose their own benefits from an array of insurance providers and plan choices offered by their employer. But not all benefits exchanges are the same, and as such, **each benefits exchange should be evaluated largely on the breadth of meaningful choice in plan designs and the merits of its decision support system.**

What should you look for in a decision support system?



A checklist:

Every benefits platform utilizing decision support is different, and not every system can be expected to have every attribute. The following provides a checklist you can refer to when considering the merits of a decision support system for health care and other benefits:

Does the platform provide:	Yes	No	Need further info
• A wide variety of products, including medical, dental, supplemental health, vision, life, disability, money accounts, and more, to best protect the wellbeing of employees and their families?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• A broad range of plans that provide meaningful choice along a range of dimensions such as price, provider network, and deductible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Advanced decision support tools to help guide employees to a benefits decision that is right for them?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• A sophisticated algorithm that matches employees' individual needs and preferences to the best combination of benefits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• A recommendation engine that considers an employee's health status, plan preferences, financial situation, comfort level with risk, concerns for the future, and more, when recommending plans and products?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Education about insurance via different learning formats?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Side-by-side plan comparisons of key coverages, plan features and costs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Summarized plan information including deductibles, copays, prescription coverage, and out of pocket maximums?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Benefit summaries provided by the carriers of health and ancillary benefits offered through the private exchange, or a third-party administrator in the case of self-funded benefits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The more variety in products, and the better decision support a privatized exchange provides, the greater the likelihood that it will produce satisfying results for employees. If the information is not readily apparent from your early understanding of a proposed private exchange platform, it could be worth it to dig deeper to find out how the system fares on each of the measures above.

Conclusion

Employees value choice when given the right guidance to help them decide. People are smart and can and do make good choices when given the right tools, and they've come to expect this type of support in our technologically advanced world. In fact, a recent McKinsey & Company article predicts:

"...the time for widespread, profitable mass customization may finally have come, the result of emerging or improved technologies that can help address economic barriers to responding to consumers' exact needs in a more precise way."¹¹

Soliciting input about an employee's health, financial concerns, and personality, and using statistical modeling to estimate probabilities of expected utilization and cost of medical care, are key to delivering the best combination of insurance and benefit plan designs for the employee and their family. In addition, an employee should be offered education to evaluate the recommendation and ultimately make his or her own choices.

By providing a consumer-friendly way of purchasing insurance coverage and equipping the employee with the necessary knowledge to become a better consumer of health care, the benefits of a "right-sized" coverage portfolio are realized by both the employee and the employer.

¹¹ Anshuk Gandhi, Carmen Magar, and Roger Roberts, "How Technology Can Drive the Next Wave of Mass Customization," McKinsey & Company, February 2014.

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About Liazon Corporation:

Founded in 2007, Liazon Corporation operates the industry-leading private benefits exchange for businesses. Its flagship product, the Bright Choices Exchange, is an online benefits store that is changing the way employers and employees buy benefits. Bright Choices helps employers manage their health care costs by setting predictable budgets through a defined contribution funding strategy while guiding employees to purchase better coverage of health, dental, vision, life, disability and other benefits. Advanced cloud computing infrastructure and robust security protection ensures continual access and safeguards confidentiality of data transmission. Liazon works with top national and regional insurance providers and supports businesses nationwide through a distribution network of leading broker partners. Liazon was acquired by Towers Watson, a leading global professional services company, in November 2013.

To learn more about Liazon and the Bright Choices Exchange, go to www.liazon.com.

