

Consider these example :

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order 1: apple, egg, milk  
order 2: carrot, milk  
order 3: apple, egg, carrot  
order 4: apple, egg  
order 5: apple, carrot
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Calculate:

- a. Support for {apple,egg}
- b. the percentage of times that egg is purchased, given that apple was purchased is _____
- c. Calculate $\text{lift}\{\text{apple}, \text{egg}\}$.

Solutions:

$$\text{support}\{\text{apple}, \text{egg}\} = 3/5 \text{ or } 60\%$$

1.

$$\begin{aligned}\text{confidence}\{\text{apple} \rightarrow \text{egg}\} &= \text{support}\{\text{apple}, \text{egg}\} / \text{support}\{\text{apple}\} \\ &= (3/5) / (4/5) \\ &= 0.75 \text{ or } 75\%\end{aligned}$$

A confidence value of 0.75 implies that out of all orders that contain apple, 75% of them also contain egg. Now, we look at the confidence measure in the opposite direction (ie: egg->apple):

2.

3.

$$\begin{aligned}\text{lift}\{\text{apple}, \text{egg}\} &= \text{lift}\{\text{egg}, \text{apple}\} = \text{support}\{\text{apple}, \text{egg}\} / \\ &(\text{support}\{\text{apple}\} * \text{support}\{\text{egg}\}) \\ &= (3/5) / (4/5 * 3/5) \\ &= 1.25\end{aligned}$$