Utilityprobability tree analysis

Figure A probability tree showing different probabilities of different s of actions P(R) = (All hostage will be save when being booby trapped) + (All hostages will be save not being booby trapped)

P(R) = 0. 9 * 0. 3 * 0. 2 + 0. 9 * 0. 7 * 0. 6

= 0. 054 + 0. 378

= 0. 432

If we are too search for terrorists we are 90% certain that we are going to reach their secret hideout. However, this is very certain and we should go and find their hideout. However, once we reach there we have 70% chance that the hostages will not be booby-trapped and only 30% chance that these hostages will be booby-trapped. Hence, it is more likely that hostages will not be booby trapped and hence we should continue with the excursion. However, if these hostages are not booby-trapped, we can be certain that there is a 60% chance that these hostages will be save and only 40% chance that either some or all of the hostage will be killed. However, if these hostages are booby trapped, there is 80% chance that some or all of the hostages will be killed and only 20% chance that all of the hostages will be saved. Considering both events, we can clearly see that in any event our chances of saving hostages are less than 50%. This means that it is more likely that all of the hostages will not be saved and hence we should plan our excursion in a way as to minimize the losses and to see if it is worth undertaking an excursion where all hostages cannot be saved. We should look at other alternative and make sure that if there are better options available where there are brighter chances of saving the hostages than the current situation. If there are other means and methods available then we should focus on the option where there is a most likely chance of saving the

hostages. However, if there is no other option available than this excursion is the best possible option, and our team should focus on minimizing the losses as much as possible.