Decision-making Problem of ISO 9001

Practical Work 1 (PW1, Individual work)

Umberto Salviati

In this exercise i will model a series of decisions related to addressing the decision-making problem of whether to implement ISO 9001 requirements and what the potential outcomes might be in a company. As I will explain in more detail later, in this problem, I also attempted to link the decision-making process with considerations of cost-effectiveness.

The model I have developed consists of 11 decisions and 7 uncertain events. To represent this problem, I utilized a decision tree.

Brief Information about the Domain of the Problem: ISO 9001

ISO 9001 is a globally recognized standard that primarily focuses on ensuring and improving the quality of products or services within an organization. It outlines requirements for establishing and maintaining effective Quality Management Systems, aiding organizations in delivering high-quality results, meeting customer expectations, and continually enhancing their processes.

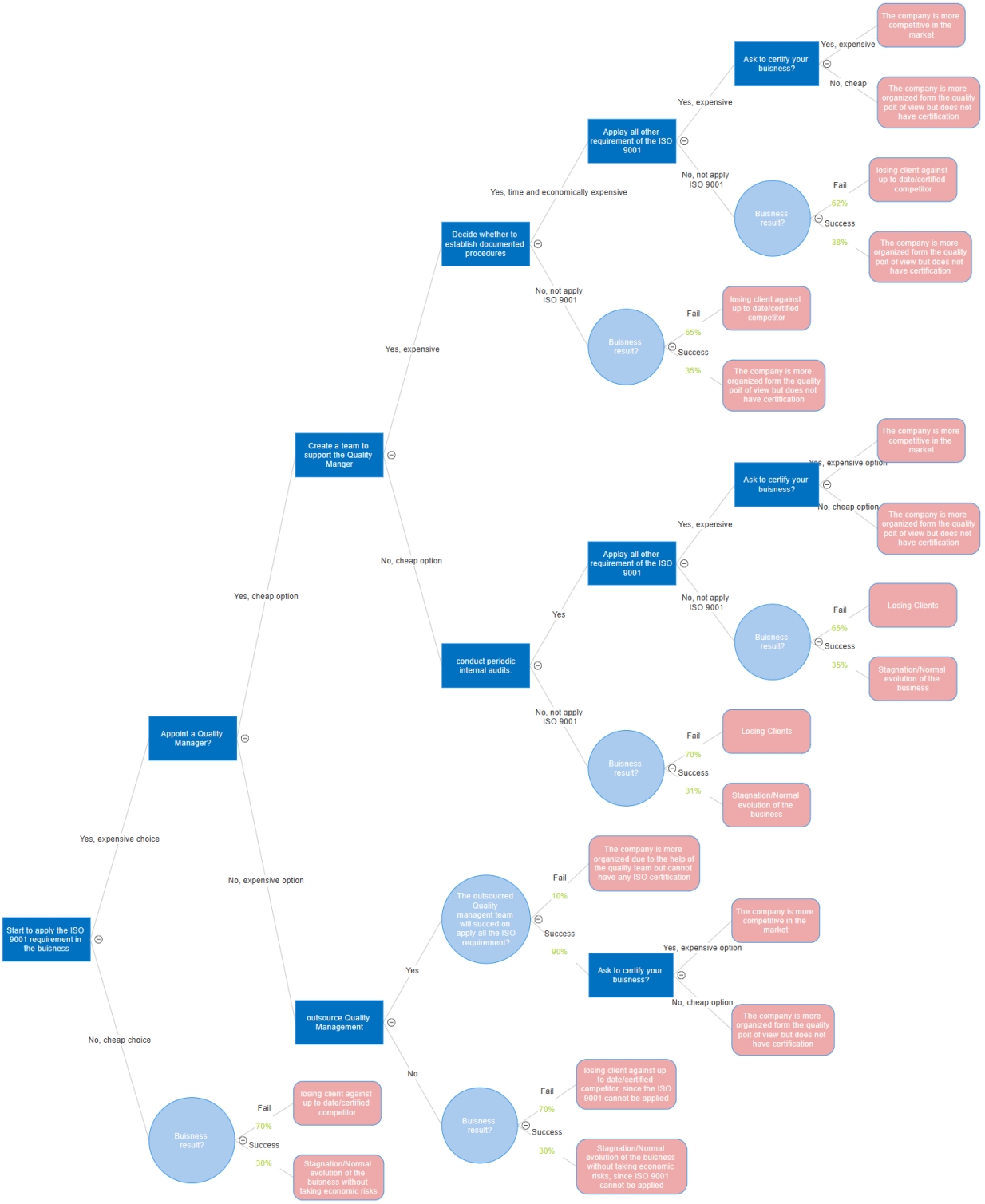
In this exercise, I am specifically concentrating on the perspective of a manager who must determine whether it is beneficial or feasible to implement and certify ISO 9001 within their company. The challenge is complex, as the requirements may vary when dealing with different aspects, especially in general terms. In this example, my focus is on the financial impact of the decision and how it can potentially affect the company's position in the market. As we will observe, not implementing ISO 9001 might be the cheapest choice, but it also has its drawbacks. As indicated in the decision tree, this choice can change the company's market position compared to its competitors.

As shown in the graphical model, I have not represented a numerical utility function because it is challenging to provide a precise evaluation. Instead, I have opted for a qualitative utility function that distinguishes between cheap and expensive choices. Another important aspect to note is that, given the multitude of decisions involved in the application of ISO 9001, this tree is a condensed representation of it. I have attempted to include the most critical decisions for the problem, such as outsourcing or insourcing the quality management team and whether to implement the documentation reports in the company. Since it would not be accurate to solely focus on the aspects I mentioned, in line with the complexity of the real problem, I have included more general decisions, such as "APPLY ALL THE ISO 9001 REQUIREMENTS." If further revision is needed, it would be beneficial to expand upon this decision tree in a more detailed manner. However, for the purposes of this exercise, I have kept it concise.

Additionally, I should mention that I did specify the probabilities associated with the causal events in the decision tree. Furthermore, I imagined that the business using this model

operates in an extremely competitive market. Following this idea I modeled the probability of having: if it chooses not to innovate or certify, there is only a 30% chance of not losing any clients.

It's worth noting that the decision to certify or not to certify ISO has two direct outcomes, rather than passing through an uncertain event. This simplification was made to enhance the clarity and readability of the graphical representation making it more concise.


Start to apply the ISO 9001 requirement in the buisness
Yes, expensive choice
No, cheap choice
Appoint a Quality Manager?
Yes, cheap option
No, expensive option
Create a team to support the Quality Manger
Yes, expensive
Decide whether to establish documented procedures
Yes, time and economically expensive
Applay all other requirement of the ISO 9001
Yes, expensive
Ask to certify your buisness?
Yes, expensive
The company is more competitive in the market
No, cheap
The company is more organized form the quality poit of view but does not have certification
No, not apply ISO 9001
Buisness result?
Fail
62%
losing client against up to date/certified competitor
Success
38%
The company is more organized form the quality poit of view but does not have certification
No, not apply ISO 9001
Buisness result?
Fail
65%
losing client against up to date/certified competitor
Success
35%
The company is more organized form the quality poit of view but does not have certification
No, cheap option
conduct periodic internal audits.
Yes
Applay all other requirement of the ISO 9001
Yes, expensive
Ask to certify your buisness?
Yes, expensive option
The company is more competitive in the market
No, cheap option
The company is more organized form the quality poit of view but does not have certification
No, not apply ISO 9001
Buisness result?
Fail
65%
Losing Clients
Success
35%
Stagnation/Normal evolution of the business
No, not apply ISO 9001
Buisness result?
Fail
70%
Losing Clients
Success
31%
Stagnation/Normal evolution of the business
outsource Quality Management
Yes
The outsoucred Quality managent team will succed on apply all the ISO requirement?
Fail
10%
The company is more organized due to the help of the quality team but cannot have any ISO certification
Success
90%
Ask to certify your buisness?
Yes, expensive option
The company is more competitive in the market
No, cheap option
The company is more organized form the quality poit of view but does not have certification
No
Buisness result?
Fail
70%
losing client against up to date/certified competitor, since the ISO 9001 cannot be applied
Success
30%
Stagnation/Normal evolution of the buisness without taking economic risks, since ISO 9001 cannot be applied
Buisness result?
Fail
70%
losing client against up to date/certified competitor
Success
30%
Stagnation/Normal evolution of the buisness without taking economic risks