Real option contracts in supply chains: a literature review

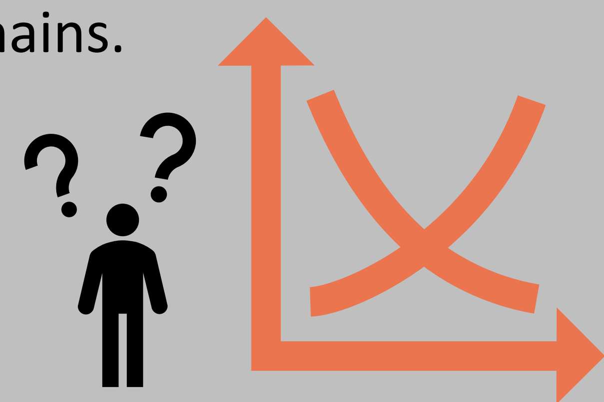
1 Introduction

The increase in globalisation and technological development has given organisations many opportunities and growth possibilities. However, the business environment has also become increasingly competitive with a lot of uncertainty.

Companies often have to deal with:

- Market demand uncertainty
- Production yield uncertainty
- Price fluctuations on the market

These factors make it difficult to match demand and supply, which leads to suboptimal supply chains.



2 Option contracts as a solution

Options contracts can help companies manage the risk that comes from uncertainty, by adding a level of flexibility to their ordering strategy. An option contract has two distinct features: the option price and the exercise price. The buyer of an option receives the right, but not the obligation, to buy or sell the underlying asset. The option price is the payment made by the buyer to the seller to obtain this right. If at a certain point in the future the buyer wishes to exercise the option, he will pay the seller the exercise price. Both the option price and exercise price have to be approved by both parties beforehand.

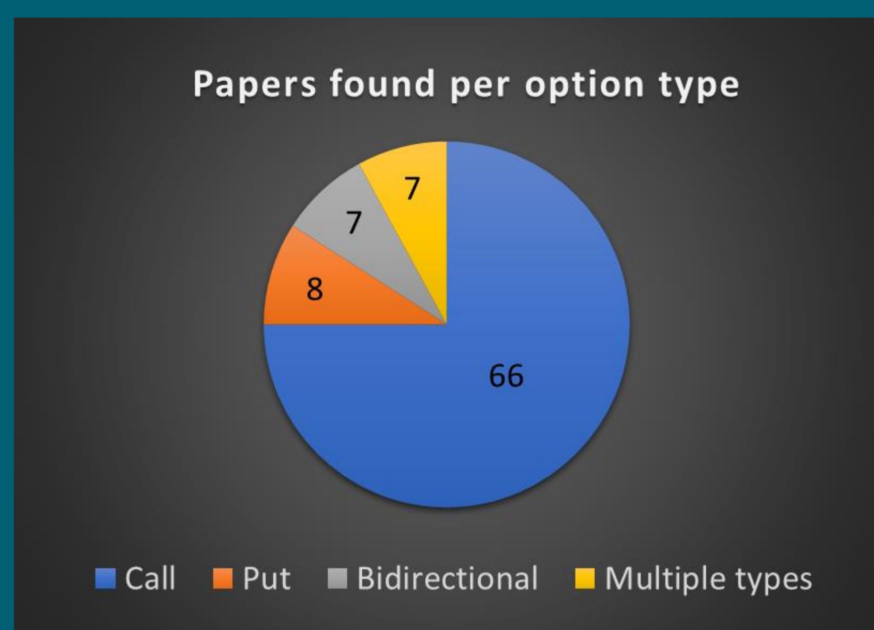
Types of option contracts

Option type	Symbol	Explanation
Call	↑	Adjust order upwardly
Put	↓	Adjust order downwardly
Bidirectional	↑↓	Adjust order upwardly or downwardly

3 Classifying the literature

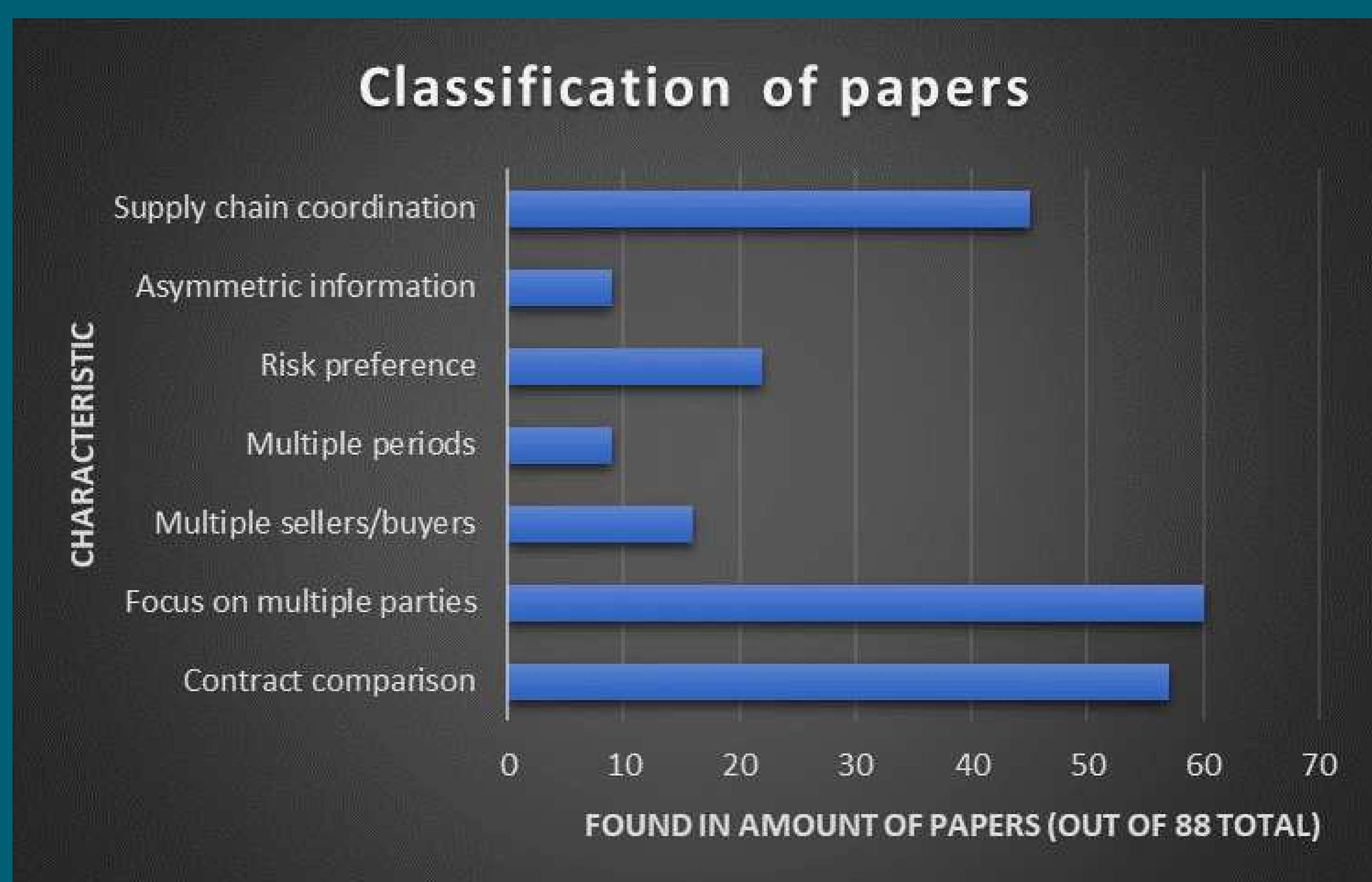
This master thesis aims to provide a comprehensive overview of recent literature on the topic of real options in supply chains. The selected papers were grouped together based on specific characteristics that were researched. This will help researchers find articles related to their work, as well as show where literature is missing.

The characteristics that were defined can be found in the graphs. An important one is *contract strategy.* In a pure strategy, only the option contract can be used to obtain a good. In a mixed strategy the option contract is used in combination with either the spot market, a wholesale contract, or both.



4 Conclusions and insights

Research into real option contracts has risen considerably in the last 5 years. Both pure and mixed strategies can coordinate the supply chain. Furthermore, real options are being studied under specific conditions such as bankruptcy risk, inflation and service level requirements. However, there exists a gap in the literature regarding the use of option contracts in more realistic settings. For example, no research was found that combines several characteristics such as risk preference, asymmetric information and multiple period option use.



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