# Research Proposal for the Semester Project in the GESS Course Modelling and Simulating Social Systems with MATLAB

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## Introduction

Selling products is the fuel and engine for our economy and hence our existence. Studying mechanisms of the distribution of products is therefore of tremendous importance. Nowadays, people do not only buy a product because of its usefulness. Especially in social sectors such as fashion and lifestyle, people seem to be willing to spend more money for a product than simply paying the actual physical value that such product possesses. Obviously there are other important factors than price and functionality which influence the selling ability. We call them "soft" factors. For instance trendiness or uniqueness could be such factors. In this work we want to take these soft factors into account and simulate the distribution behaviour of a product. For this reason we aim to explore the following statement:

> In order to optimize the profit of selling a certain product in a social system, what marketing parameters have to be implemented and adjusted to achieve this goal?

## Model Structure and Methodology

In order to obtain a model characterizing fashion trends spreading within a society, several parameters will have to be considered. These will be representative of interpersonal relationships in a society, choices made by the individual sellers, and the effect such parameters have on the target group, the consumer. Each of the parameters we currently regard as interestingly relevant will now be explained in more detail.

1) Pricing: Sellers determine pricing of their products such that market attractiveness is sustained as long as possible and that the barrier to spreading a certain trend is low enough to address the most possible members within the desired target group. Interestingly, although the price of a product typically exceeds its physical value, people tend to buy something "fashionable". This barrier of making a product "fashionable" will also be addressed and quantified in our model.
2) Time in trend: The time a certain product is regarded as "trendy" is highly influencing revenues. Thus, modeling the "trend-time" sellers aim at will give us valuable information. Time in trend will depend on many interpersonal relationship factors between people of all classes and will be modeled by means of a simple matrix, in which human interactions will be broken down and simplified.
3) Sales number: The actual number of sales of a certain product will be directly proportional to revenues from that product. Thus acquiring this model parameter will be useful for potentially predicting sellers' behaviour regarding optimal production numbers.

4) Quantification for trend: As mentioned previously, the term "trend" will need to be quantified so that it can be put in relationship with all other parameters mentioned. It will be extremely insightful for society understanding, by means of our model, how trends evolve through time.

Methods initially used to visualize model parameters will be the matrix as shown in figure 1. With this matrix, human interactions can be broken down and simplified. Additionally, interactions do not only have to be viewed between two people only, but can be extrapolated further to secondary and tertiary interactions. Correlations as shown in the sketched graphs next to the matrix can then be modeled, where $\phi$ corresponds to 'trendiness'.

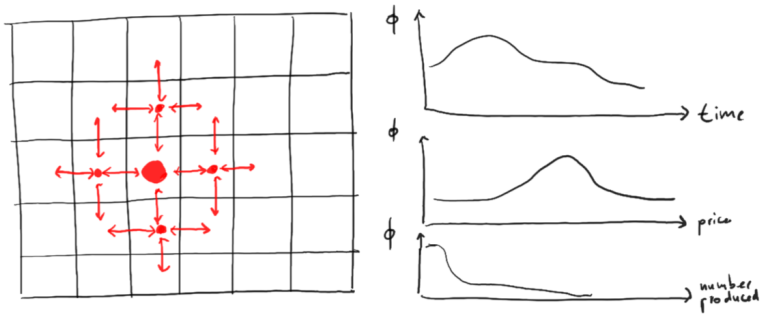


**Fig. 1:** Interaction matrix of consumers showing primary and secondary relationships. Graph sketches show correlations between 'trendiness', $\phi$, and some of the parameters to be investigated.

## IMPLICATION

This model will equip society with tools to comprehend the trends of fashion. In turn, it empowers us to determine exactly what strategies sellers need to implement to optimize their products' profit. The choice of buying a certain product can, with the knowledge our model will provide, can be controlled and assessed more easily by the consumer. In conclusion, a simple correlation drawn from the indicative parameters chosen for this model will potentially allow people to differentiate between actually needing a product and simply wanting a product which in future will create enormous financial surplus to society.