MASS CUSTOMISATION AND THE DESCRIPTIVE MODEL OF ONLINE RETAILING

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ABSTRACT

In the paper authors present the idea of descriptive model of online retailing to show the importance of mass customisation from a point of view of theory of economics systems. Treating retailing market as a complex system, the authors built a model of B2C and C2C electronic commerce. In the very model the importance of online retailing (IOR) depends on three groups of factors: market factors group (MFG), technology factors group (TFG) and human factors group (HFG). Factors influence in IOR throw usability of retailing internet (URS) sites on "black box" mode. TFG has a positive influence in opposition to HFG, and mass customisation is an positive factor along with personalization, propagation of information and interactivity. The TFG factors have a positive influence on IOR throw URS according to increasing technological possibilities in making retailing easier.

KEYWORDS

Mass customisation, online retailing, electronic commerce, internet, descriptive modelling

1. INTRODUCTION

The idea of mass customisation is not only a logistics approach but a method of thinking in relationships between marketing, information technology and social sciences. The effect of mass customisation was predicted by Alvin and Heidi Toffler in 1970. They examined the effects of rapid industrial and technological changes upon the individual and society in their book entitled "Future Shock". In that and future books "The Third Wave" and "Creating a New Civilization" they describe the coming age in terms of style of life converting from mass to individualism.

Mass customisation in economy is base on limitation of time and distance between both demand and supply. Companies can realize the paradox idea of products' customisation on a massive scale. They can be close to customers and their needs through web-based technologies, so information technologies can make mass customisation possible.

This is the reason of authors' developing an idea that mass customisation is a one of the technology factors in the model of online retailing because there is a significant influence of the mass customisation processes on market share and sales structure of online retailing.

2. THE MODELS OF RETAILING

As we wrote in previous papers there are three types of every retailing:

- classic-direct model,

- classic-home-shopping model
- non-classic-home-shopping model.

Every model can be described by relations between four elements:

- buyer,
- seller,
- product,
- payment.

There are direct relations between a seller, product and a buyer in the **classic-direct** model. The payment can be realized directly or by institution: credit card, check, post, bank etc. This model describe a typical face-to-face selling. There are no direct relations between elements in the **classic-home-shopping** model. There is a material medium between a buyer, a seller and product as leaflet allowing the mail ordering. The payment is always realized by institution. In the **non-classic-home-shopping** model there is a non-material medium between a seller, a buyer and a product as TV, phone, WAP or the Internet. Payment is realized always with the help of financial or postal institution. The differences between above-mentioned models are shown on figure 1.

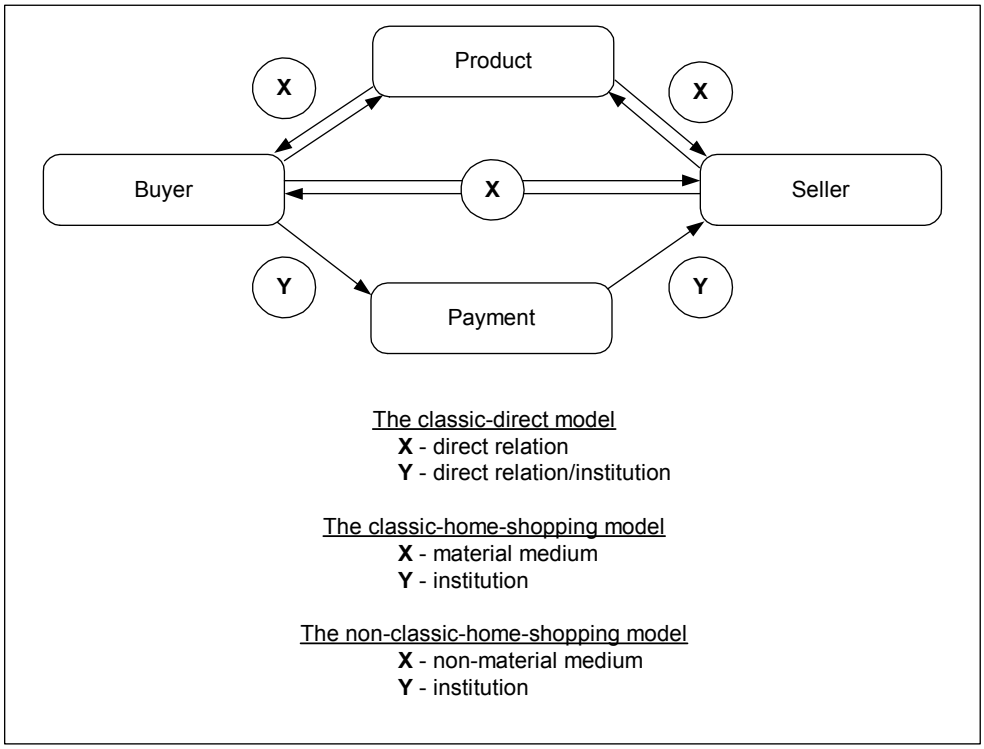

Figure 1. Relations between elements in the three types of every retailing.

Selling by the non-classic-home shopping model is interesting due to the fact that we can rate online retailing among this type. Intangible relations between a seller, a offer and a buyer determine specific situation because in virtual space there are limited possibilities of built trust between transactions' sides. Human factors play a more important role than in real world and its influence is often underestimated. This is the reason we built model of online retailing in which human factors are as important as technology factors.

3. THE MODEL OF ONLINE RETAILING

Onine retailing is a complex system because it consists of subsystems, for example: geographical e-commerce environment, transaction sites or society as bidders at auctions or sellers in shopping malls. Moreover, it is purpose-driven on financial results, its overall purpose realization efficiency depends on the efficiency of its subsystems, it has feedback loops and it has hierarchical structure of control.

The complex systems as the objects of economic research can be described through a modelling process. On the grounds of general methodology of science, the stages of system decomposition and qualitative description of the modelled system including economic systems are indispensable in the modelling process. Such an approach can help explain a system even when information regarding system's functioning is partial, uncertain or incomplete. The description of a modelled system should be maximally detailed and comprehensive, yet not deprived of elements of abstraction and schematisation. Therefore the authors built a descriptive model of online retailing trying to show real factors' influence on this system.

The discussed model assumes that there are three groups of factors as input to the model: market factors group (MFG), technology factors group (TFG) and human factors group (HFG). These groups of factors influence usability (functionality) of retailing sites (URS) which is a regulator and it equals in importance of online retailing (IOR) that means: market share and sales structure of online retailing. The feedback is between IOR and groups of factors. It is very important that the two specified groups TFG and HFG are contrary and rival to each other in the presence of the third MFG as shown on figure 2.

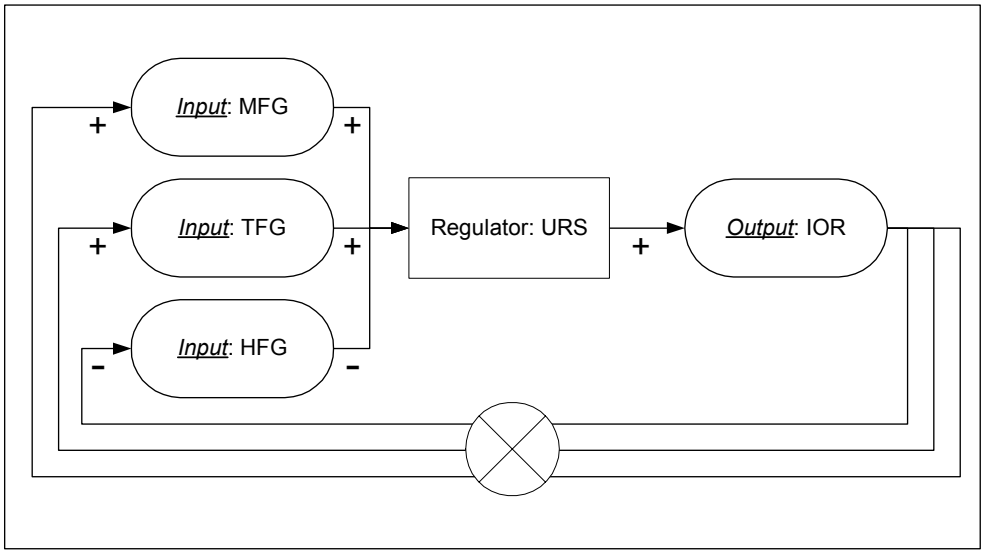

Figure 2. The descriptive model of online retailing.

We have been changed graphic illustration of the very model in the descriptive stage from last publications. The figure has not only horizontal align but we have signed positive or negative influence of the factors on the regulator and through regulator on input of the system. It means that high value of MFG and TFG factors has a positive sense and high value of HFG factors has a negative influence on that system.

The basic rules of above process are in general:

RULE 1

IF MFG change (increase or decrease)

	AND	TFG and HFG are constant
	AND	there is correlation between MFG and URS
	THEN	URS's change is positive correlated to MFG

RULE 2

IF	TFG change (increase or decrease)
AND	MFG and HFG are constant
AND	there is correlation between TFG and URS
THEN	URS's change is positive correlated to TFG

RULE 3

IF	HFG change (increase or decrease)
AND	MFG and TFG are constant
AND	there is correlation between HFG and URS
THEN	URS's change is negative correlated to MFG

RULE 4

IF	URS change (increase or decrease)
AND	there is correlation between URS and IOR
THEN	IOR's change is positive correlated to URS

RULE 5

IF	IOR change (increase or decrease)
AND	there is an feedback between IOR and MFG
THEN	MFG's change is positive correlated to IOR

RULE 6

IF	IOR change (increase or decrease)
AND	there is an feedback between IOR and TFG
THEN	TFG's change is positive correlated to IOR

RULE 7

IF	IOR change (increase or decrease)
AND	there is an feedback between IOR and HFG
THEN	HFG's change is negative correlated to IOR

The factors groups in the above descriptive model of online retailing are built with particular factors. Also usability of the transaction sites consist of particular functionalities and importance of online retailing is made up of variables. Those elements of the model will be dealt with the next chapter of the paper in which we will place a mass customisation in between.

4. THE FACTORS AND CONSEQUENCES IN THE VERY MODEL

The significance of MFG factors lies in the creation of proper surroundings for the occurrence of market transactions. They may evolve such transactions if positive, for example the high level of GNP per capita stimulate the most comfortable ways of consumption purchases. On the other hand, providing the law

regulations in some African countries forbidding the usage of the Internet preclude the development of the online retailing. The MFG embraces six following components:

- market conditions (MC),
- competition (CO),
- law regulations (LR),
- penetration of computers (CP),
- internet accessibility (IA),
- number of internet users (UN).

Since our last publications the authors have added a new factor called "competition". In general, we can distinguish internal and external competition. For example, if we describe online auction market we will include global online auctions' turnover and eBay.com position as an internal component of that market. On the other hand, we will include traditional auctions' situation and possibilities of mobile auctions' development as external components of the market.

The TFG contains of four components which stand for the most important practical consequences of common application of new technologies:

- the propagation of information (PI),
- mass customisation (CU),
- interactivity (IN),
- personalization (PE).

Each of these factors influences the growth of retail transactions in a positive manner. The Internet has spread through out the World from Paul Baran's idea of distributed communication network to nowadays. These four mentioned factors are synthetic effects of the Internet technology possibilities important from the economics point of view. Information about products and sellers is available through out the world. Logistics and marketing change under the pressure of mass customisation and interactivity ideas. Users can not only personalize interface style but information content can be fitted to individual preferences, too.

The components of the HFG are:

- abstraction (AB),
- transience and no durability (TN),
- anonymity and enigmatic character (AA),
- human habits (HH).

These factors slow down the development of the Internet retailing because they follow from such elements of the human nature which are in opposition to virtual obstacles. Transaction sides are not in face to face contact with each other and both a seller and a buyer remain anonymous. Product descriptions are available through out the world but their simple forms make them abstract for human mind. The offer is not durable because if we turn of the computer, the offer will disappear. In the USA home-shopping has been well known for about one hundred years because of long distances in that country, and in Poland from nineties because of communism. Americans are accustomed to home-shopping not Polish whose habits are different. The problem of trust is the most important.

We can distinguish such thirteen groups of the Internet transaction sites' usability as the regulator of online retailing:

- general (GF01),
- navigation (GF02),
- search (GF03),

- registration (GF04),
- the product presentation (GF05),
- promotion (GF06),
- advertising (GF07),
- transactions (GF08),
- payments (GF09),
- extensions (GF10),
- personalization (GF11),
- advisory (GF12),
- administration (GF13).

Such enumeration is performed to bring closer general usabilities. If we would like to research usability we can enumerate ninety three particular usabilities and more. Usability of the transaction sites is an regulator of the model because it equals from input factors that means general market conditions, technology possibilities and human limitations.

The model results in importance of online retailing as:

- market share (MS),
- sales structure (SS).

The first consequence gives us the ratio between online retail turnover and whole retail turnover in. The second one describes the most popular online products' categories in comparision to the most popular real products' categories. All factors as input and consequences as output is shown on figure 3.

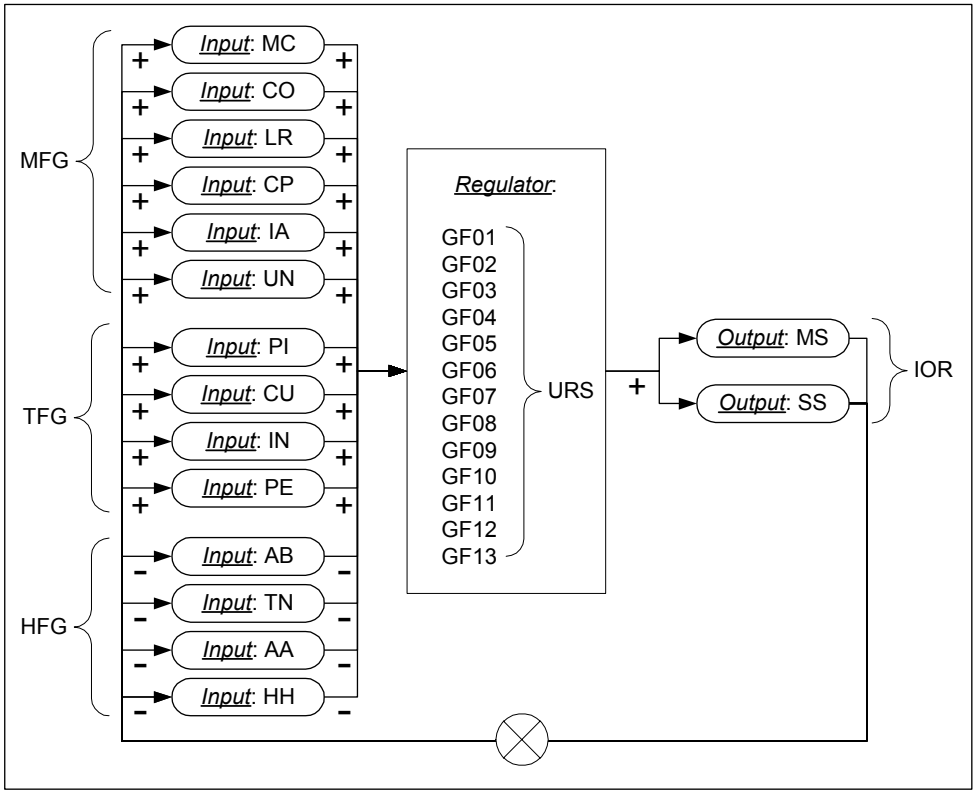

Figure 3. Input factors and output results of the model of online retailing.

As we can see, the mass customisation plays a significant role in the model of online retailing and is one of the fourth important factors of technology factors group. Mass customisation derives from the Web possibilities and this idea is integrated with the Internet development. In the Introduction to this paper, we mentioned that the idea of creating of unique products on massive scale is combined with logistics and marketing. The authors do not conclude whether it is possible to develop mass customisation outside the Web. This question is out of our focus but researching the Internet we place mass customisation in between the important factors influencing on e-commerce development.

5. CONCLUSIONS

Michael Dell implemented the idea of mass customisation in electronic commerce as a pioneer. For four years from 1993 he multiplied his revenues by a four and inventory stayed at the same level. His success shows us the logistics purpose of mass customisation although this idea has a marketing and social meaning, too.

During e-commerce research the authors placed mass customisation in built model of online retailing as an important input factor deriving from technological possibilities of the Web. That factor influences usability of retailing sites on positive way, and through usability the importance of online retailing on global and local markets. The authors did not answer if it is possible mass customisation without the Internet but develop an idea that B2C electronic commerce would be less important without mass customisation.

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