

Time Roles in a New Approach

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The importance of time is more and more recognized in the societies and all of the sectors of the economy. Time appears as a value factor in the life of the consumer-society and more for the business actors of economy. Time plays a significant role in the life of companies, because a key factor of costs and the quality of services. Time is also a driver of efficient management in every functional field of an organization, also in external relationships in a supply chain context. The study presents the main trends of time in individual and company life. It analyzes the appearance of time factor in business customer needs, then it demonstrates and interprets important notions regarding to time, finally it gives some business related results of a time based empirical research has done among Hungarian industrial companies.

Field of Research: Management

1. Introduction. Time Dimension and Time trends in a Social Context

Keywords of today are novelty, temporariness, diversity and acceleration. Levine concluded interesting statements (1997, 1998) on research in different countries to see the relationship between time-relation, time and life-pace. The more efficient an economy is, the faster the life pace is. The more industrialized a country is, the less free time is available, and the more urbanized a country is (the more cities and towns present), the faster people move. The so-called Linder axiom is connected to it, which says: the more developed a country is, the bigger the pressure of time is perceived and for more precious people evaluates their time (Linder, 1970). The approach of time is determined not only by the history but by the place and there are large differences in different cultures even today (Bourdieu, 1990) (Hofstede, 2001). Hofstede and Trompenaars, two outstanding fellows of intercultural research also examined the differences of time-dimensions on the level of nations (Hunyadi, 2003). Hall (1984) goes even deeper in differentiating because he says each human being has a separate time concept.

A Hungarian monography – analyzing the information society and economy – (Hámori, Szabó, 2006) mentions typical time trends. The signs of acceleration – as one of the main trends – can be caught up everywhere, and they transform our structures – which we have considered as static so far - significantly (Adam, 2004). According to Adam if time is money, the best is the fastest. The challenges of our global world, the impacts of the developing technique, the priority-transfer of the changing trading channels make possible or even enforce the acceleration of life, and the transforming of needs. In the western societies the perception of time shows an accelerating world (Gleick, 2003). This is one reason for the appearance of a “time-sensitive” social group and its continuous growth (Hassan, Purser, 2007). Rosa (2003) identifies the *tendency of acceleration* in three different fields. The most measurable is the acceleration of traffic, communication and production, which she calls technological acceleration². The second is the acceleration of social changes,

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² According to technological acceleration Wajcman (2008) examines the effects of the spreading of mobile communication technology and urges empirical surveys to show the consequences, which could not be predicted

where the central idea is the change of the institutional stability (e.g., uncertainty of marriage, of the length of employment or the changes in system of the administration). The third factor is the acceleration of the rhythm of life, based on experiencing everyday life. Here one can perceive time as a strong external limit, or pressure, it is used like a product in short supply and spending it feels like a sacrifice because one has to give up other activities in exchange.

The lack of time has material reasons but how we perceive it depends on our subjective inner time consciousness (Klein, 2008). Also Klein mentions the research, which shows that the *contradiction between the available options and the time limit* influences the perception of the lack of time. According to American research non-working American women that have a very good living standard suffer the most from the lack of time among all the social segments (Klein, 2008). The sense of pressure grew significantly in America in the whole of society³ (Robinson, Godbey 1997). Similar data were measured in Europe: in 1990 49 % of the surveyed people felt they were under pressure because of tight deadlines, in 2000 it was already up to 60 % of people complaining about it⁴.

The disproportions of time utilization have consequences shown in the life style and in the structure of consumption. People who work a lot are time-sensitive and speed-dependent group is said to be unconstrained in regards to buying possibilities, a 24/7 (24 hours a day, 7 days a week) for continuous opening times or availability because of their special time schedule. This is the trend of *continuity*, which increases the inner sense of freedom because there are no external time limitations for the actions. Lewis and Bridger (2001) also define a new type of consumer in their model, who gives a more priority to time than money because time is one of the scantiest things for him. The extent of impatience is also influenced by the evaluation of personal time (Becker, 1965). Our impatience is not only fed by the pattern of the speed of information but processes in other fields of life affect our changed time consciousness. The fast services in several branches accelerate the demands. This causes the decrease of the demand-pulled product-life-cycle. From the other side the technology-pushed innovation shortens the product lifetime and this innovation is motivated by the time based competition (TBC – Time Based Competition) (Brewer et al. 2001).

2. Research Questions Related to Time in the Life of Business Actors in Supply Chains

There are many questions regarding to time notions. One of them is related to the notion of time-sensitivity, which is characteristic for phenomena, products and participants, who - for different reasons ever - cannot really tolerate waiting. I define time-sensitivity for business buyers as a characteristic to differentiate this sector. The differences in time-sensitivity can be seen in the attitude to time, in the behaviour towards time and they have an effect on the demands of logistical service, on the judgement of service. It is not proved how much the attitude towards time appears in business behaviour or how much it stays hidden, or how much does it remain on the

by theoretical prognosis. For example changing the micro-coordination of an individual timetable, doing activities at the same time, flexibility in connection with deadlines because of the possibility of change, or the intensifying time pressure because of the permanent availability or the turning away from using mobile devices.

³ U.S. General Survey 1996. Summary of Robinson and Godbey (2007).

⁴ <http://www.eurofound.eu.int/publications/files/EF00128DE.pdf>

level of opinions and revelations. It is also not clear how the consequences of subjective time-treatment appear in the needs of time. It is not proved either that the demands of time output appear in qualitative features, we do not know how they are to be translated into customers expectations or where these time-based features are in a preference scale and we do not know the sequence among them either.

Time-sensitivity is manifested in the willingness to wait. The notion of time-sensitivity is connected with the extent of the subjective value of time. Consumption in the operation of companies can be translated into assurance and utilization of resources. The importance of a quick and precise service is interesting, in what they are willing to offer for it, or how they tolerate waiting and delay. Time-sensitivity can be explained with time-preferences or urgency-preferences, which determine whether we value consumption of today more than the ones in the future or for which we are settled. Time-orientation or time-perspective is the other characteristic influencing time-sensitivity. The future or long-time orientation and present or short-time orientation cause different effects and consequences in behaviour e.g., in choosing, storing and acquisition policies but it also can determine how strong the operation is based on plans. Time-sensitivity can be measured by an elasticity index, which handles price as a dependent variable versus changing of lead time as a reciprocal of the classical elasticity index. Its content is the relative price-increment for one unit of relative shortening of lead time (Süle, 2008). I define supply chain as a chain between the exploitation of raw material and the final consumer – crossing even company borders - together with its participants and connections among them. In connection with the role and importance of time factor in supply chain among them the following research questions can be asked:

- How does the time factor appear in the needs of business customers?
- Where are the time-based characteristics among the preferences of business customers?

3. Some Results of an Empirical Research based on Time in Business Sector

I examined time-attitudes and behaviour using a sample with 207 participants of Hungarian companies in 2009 by a survey and a focus group interview. The quantitative part of the primer research was based on the internet, with an on-line questionnaire. I evaluated the results with a mathematical-statistical software-package: SPSS 14.0. The empirical research was based on and closed by qualitative research. The questions of the online questionnaire were created in a way that a logistics/acquisition manager of any company should be able to fill it in within 15 minutes without any difficulties. I used mainly closed questions with discreet scales, with both alternative and multiple-choice-questions, applying scales with several variates, sequential or evaluating scales. I used the 4 grade scale in order to make the respondent tell his/her opinion.

I found two ways to measure the importance of time. One possibility is to do it indirectly based on the judgement of time where it can be valued on the level of opinions, revelations but cannot be seen in behaviour and decisions. The other way is directly, which can be seen in managing time based on behaviour-characteristics connected to time (e.g., planning, measuring of time, quality expectations, etc.).

I informed them of the indirect role of time with attitude questions, which measured the attitude towards time based on the judgement of the value of time, of waiting, and on the attitude towards deadlines on an agreement-scale. The role of the time factor can be measured directly based on the temporal behaviour, which is hard to follow in an online questionnaire, so I examined time management through the usage and treatment of time. I assumed that the importance of one factor would show up both in application and in measurement, and with the evaluation these can be followed up later on as well. The indirect questions touched the internal usage of the time parameter within the company (evaluation of suppliers, motivation of purchasing, usage of JIT system, etc.) and they touched its role in the external (purchasing) connections reviewing the expectations, the service experiences and the contrast of punctuality-delay.

I examined the time-conscious attitude of companies based on their real behaviour (not opinions) as well. I saw features and their consequences, which are de facto present in the internal operation and external relations and can be measured. I wished to prove that most of all time-awareness influences the behaviour of time sensitive companies. This was the direct form – appearing in actions – of time management.

Answers to attitude questions showed that time is a valuable resource on the level of opinions, which becomes more and more important while waiting means loss and it can cost a lot, if something does not arrive at the expected time. The average of the statements about time was mostly around 1 “agree very much” measured on a four-grade scale and did not reach “2” anywhere, which was the weaker form of agreement like “would rather agree”.

Table 1 summarizes the averages and deviations of the agreement levels.

Table 1: Indicators of Agreement with Statements about the Role of Time

Attitude-statements	Average	Deviation
Time is a valuable resource.	1,12	0,37
Time is getting more and more important nowadays.	1,15	0,38
Waiting means loss for most companies.	1,28	0,47
Companies are aware of the costs caused by time-deficit/waiting.	1,77	0,72
Companies in our branch are especially sensitive to deadlines.	1,40	0,55
It costs a lot for our company if any of the materials/components/products is not available at the required moment.	1,43	0,66
Planning deadlines is important at our company.	1,32	0,52
Keeping deadlines is important at our company.	1,18	0,38
We react quickly to changes.	1,77	0,71

Source: Own Research

The situation was similar while judging the importance of time parameters as quality factors as well; quickness and punctuality were rated by many companies into the highest (4) category as the most important feature.

Almost 66 % considered delay as a significant or a very significant problem. One hour of waiting cost several hundreds of thousands of Forints for more than 20 % of those, who can express the value of time in money. The most important logistical expectations were rapidity, punctuality and price. These results show the very high appreciation of time.

Companies do not behave based on the revealed value of time. Although more than 90 % said that waiting costs a lot for their company, the proportion, who could express it in money, did not even reach 20 %. The valuation of time was based mostly on feelings or on elements, which cannot be expressed in numbers.

Time is thought to be an important and valuable thing on the level of opinions, although most of the companies are not aware of its real, numerical value. This fact does not assume a consequential behaviour from them, if something represents a value for a company, its price should probably be known as well. It is more likely that time is rather overrated by the individuals and they cannot adjust to the values at companies because they lack numbers. More than 50 % could not tell whether the cost of waiting is measurable in money as well, and almost 20 % of them claimed that the cost of waiting is not expressed in numbers at their company. Under such circumstances the individual relations to time of the decision-makers are more likely to be extended to the company level as well. This assumption is also supported by the fact that there were no high values for the importance and valuation of time in the time management of the company. I examined whether time factors had a role in the rating of suppliers.

More than 75 % of the companies' rates were based on price but punctuality and rapidity were not used so often as a qualifying factor. More than 30 % does not apply to the mentioned time parameters, 40 % of them do not rank their suppliers based on rapidity, and 60 % think there is no motivation for the purchasers to have shorter deadlines/notice.

Opinions on time showed a significant effect while judging the importance of delays. Also the judging of rapidity had a significant influence on the attitude to delays. Opinions on time showed a significant impact on endorsing the claims because of delays.

In comparison to these results it is worth valuing the judgement of purchasing time if we modify it to its half and to its double. I examined the change in utility on different price levels if the ordering time increases or reduces by 50 %. I expressed the customers' utility by the price paid for the given obtaining time (accepted price increment) because the value of time can be expressed by the willingness to pay. Participants had to declare on behalf of their companies about the length of lead time reduced to half – tied to differently increased prices – or regarding the doubled length of lead time - tied to differently reduced prices – using a four-grade scale, according to how they agree or disagree with the described solution.

I inquired about the acceptance of the 50 % reduced and increased lead time on five different price levels. I offered the half reduced lead time

- with the same price,
- with a slightly increased price,
- with a price increased by 20 %,

- with a price increased by 50 % and
- with a price increased by double.

I offered the doubled increased lead time (half as quick)

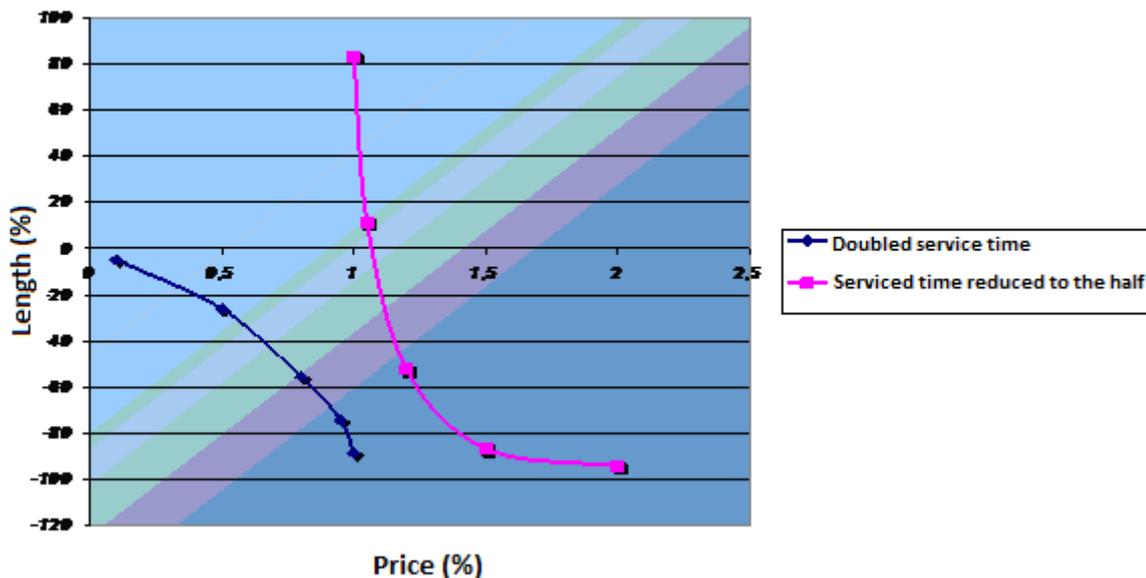
- with the same price,
- with a slightly reduced price,
- with a price reduced by 20 %,
- with a price reduced by 50 % and
- with a price reduced to its fragments.

Weighting the answers indicating the level of acceptance, I distinguished the acceptance and rejection with positive and negative signs/numbers, then I summarized the weighted frequency of answers on the given price-levels and I got the following result illustrated in Diagram 1:

- | | |
|---------------------------------------|----------------|
| • 4 answers of 'would like very much' | weight of 1 |
| • 3 answers of 'would like' | weight of 0,5 |
| • 2 answers of 'would not like' | weight of -0,5 |
| • 1 answer of 'would not like at all' | weight of -1 |

Diagram 1

Valuation of service time changed to the half and doubled on different prices



Source: Own Research

In Diagram 1 we can see that the 50 % reduced lead time is significantly more popular than the doubled one but only with a slight price-increase. On a higher price level – even at an increase of 20 % – the utility of greater speed ceases and it falls sharply until it reaches the double price. The reduction of the length of lead time does not go with a bigger willingness to pay, contrary to the revelations of the value and importance of time, and to that what we would expect based on the viewpoint of special literature. The result of the focus-group examination indicated the same as

well. Experiencing the subjective time relation as a strong external force on the individual level was justified contrary to the time relation at the company level.

In the company's behaviour it is reasonable to separate the business and individual relations to time and its effects on the company's behaviour. The rational company behaviour and the behaviour of the decision-makers reflecting their subjective relation to time are mixed in the decisions. It is useful to reckon with the following reasons in order to explain the reactions to change the lead time:

- The purchase division is usually interested in finding a lower price (more than a 60 % are not interested in a shorter deadline, and almost 60 % are interested in lower price).
- The status of purchasing directors is tightly connected to the "success" in price that is why an extreme price-increment in this position cannot be compensated with any other advantage.
- If the present lead time fits into the plans of the production-management or it works "just in time" anyway, there is no need to have an even faster obtainment.
- The trade-offs within the company cannot be perceived directly for the purchasing division (connection of inventory cost and transport time), so the preferences cannot be interpreted into paying willingness.

- The cost expressed in price is significantly more evident, than the – really existing, but perhaps appearing in other fields – indirect savings and advantages reflected in time-savings.
- If there is an agreement about lead time and price, which is good enough for the customer, the hypothetical treatment of the question does not really cover real needs.
- The hypothetical treatment can be maintained if the respondent thinks that a lead time shorter than the half can be achieved.

The opposite of the question discussed above analysing the relation to a service half as quick reflects the value of time much better. Even on a price reduced to the half, twice as many would reject the doubled lead time as desired.

The utility trend does not turn round even in case of a service time with a doubled length and on a reduced price. The doubled lead time would not be tolerated under any conditions at all (see Diagram 1). The doubled lead time does not have a positive utility anywhere that means this solution is not acceptable even at a very low price. The rejection can be explained with the following reasons:

- "Losing" the accustomed and "possessed" service time, agreed together with the supplier before, means a great loss because it has several negative consequences and psychological deficits
- Even a significant price reduction is not attractive enough to accept the doubled lead time, nor can an almost free transportation counterbalance the disadvantages of the doubled lead time.
- Losing the achieved rapidity seems more expensive than the new increased speed.

Previously I based self-developed theoretical functions (Süle, 2008) to describe the utility of time for obtaining material things through organized channels manifesting for individuals and business participants. I examined their practicality in an empirical way with business participants as well. I show the social approaches of time, the trends connected with time and the research possibilities of business time-approach and time-usage.

4. Conclusion

The attitude towards time, and the demonstration of behavioural-differences connected to time have an important role among the basic hypothesis of the study. There wasn't a significant deviation in opinions among the respondents, as time was considered as an important factor independent from branch, location, size and economic form. Time-sensitive thinking is characteristic in fact for those who were asked. The judgment of time is not always reflected in the practical handling of time. Significant deviations could be manifested here, which are to be described mainly by demographic features, but there are also other considerations in the background that have an influence on the external relations. The research proved the hypothesis saying that among the qualitative parameters of logistics the parameters based on time are the most significant, preceding even expectations of price.

No experiment has been done so far in order to survey the attitude and the way of thinking regarding time of the business participants. The determination of time-conscious thinking is a new result. There are differences in the way companies handle time even if they all consider time as very important. Time-sensitivity in behavior is typical for large-scale industrial firms. The business participants of the supply chain have different kinds of time-awareness concerning opinions and behavior.

An examination by sectors (primer, secondary, tertiary, quaternary) would provide an interesting research field and would give a chance for comparisons based on representative samples by sectors. The research could be extended to the behaviour of markets outside the market-sector and to compare their handling of time with those in the business sector. Future research could give a chance to make statements for whole structural markets, and this may provide a benefit both for market participants and for supplier-firms/service-firms as well, gaining more information about time-based expectations, behaviour and motivation of organizations, institutions, and firms.

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