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DEFYING PLANNED OBSOLESCENCE: PARADIGM CHANGE FOR MACRO LEVEL SUSTAINABILITY OF SUPPLY CHAIN MANAGEMENT SYSTEMS

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ABSTRACT

Planned obsolescence with products designed to fail has become the main drive of modern consumption based economies based on the paradigm promoting growth as an essential activity for survival. Engineers face nowadays a dilemma when concerning sustainability in problem solving during engineering applications. They are stuck between the growth, or survival of businesses through planned obsolescence and the sustainability issues.

For sustainability, majority suggests ways such as optimizing product life (meaning a delayed planned obsolescence), recycling through waste collection and reprocessing of the resultant products (reverse logistics), more efficient ways in supply-chain management systems etc. This is a paradigm paralysis and a paradigm shift is needed for really sustainable world and macro level sustainability of supply-chain management systems.

This paper analyzes the real root cause of the problem and shows how the unlimited growth paradigm promoted by the modern money creation called Debt Based Monetary System. It then suggests a paradigm shift towards defying planned obsolescence for macro-sustainability of supply-chain management systems.

Keywords: Planned obsolescence, sustainable supply chain management systems, reverse logistics, industrial design

WHAT IS PLANNED OBSOLESCENCE?

"Planned Obsolescence" is the term to define the design and production of goods with uneconomically short useful lives so that people keep buying them. It is an industrial design policy having potential benefits for producers since shorter life cycle of products guarantees new purchases and affirms continuous demand for their products, since other competitors also rely on the same policy. Other related term to stimulate demand of customers is the perceived, or desired obsolescence having almost the same functionality but this time, changing the perceptions of people towards new buying decisions through some indirect mechanisms such as frequent design changes, fashion, advertisements etc. Some related disciplines such as value engineering and innovative design help companies systematically apply Planned obsolescence for

sustainable growth of their businesses. In case of industries, where some monopolies are established the situation is much worse with customers more dependent on company products.

Origins of planned obsolescence go back to early 1932 with Bernard London who even proposed to government a plan to impose legal obsolescence regulations on consumer goods to end the depression by Planned Obsolescence [1]. Although the idea was initially rejected at least on a legal basis, the widespread use of planned obsolescence was acknowledged and became a common reality by the late 1950s.

We see the first detailed critics of planned obsolescence in *The Waste Makers* by Vance Packard [2] where he makes analysis of different types of planned obsolescence together with the consequences in societies.

"PLANNED OBSOLESCENCE" AS A PARADIGM

It is an engineering principle: You cannot propose a solution if you don't correctly define the problem. What is the real root cause that results in planned obsolescence? Unless the main cause is identified correctly, one cannot claim a real solution to the problem. When problems are addressed for solutions, often paradigms are in place from start.

The planned obsolescence is actually result of a paradigm with some assumptions, beliefs, and values. The most usual answer to why planned obsolescence is necessary when asked to people may be summarized as "*If goods do not wear out faster, factories will be idle, people will be unemployed*". It is not also a coincidence that the issue of a growth (often a perpetual one) need of companies and countries is directly involved in Planned obsolescence literature. Packard describes this as "*Growthmanship*" in his chapter titled as "*the Developing Dilemma*".

Hyperconsumerism caused by planned obsolescence results in increasing volumes and varieties of both solid and hazardous wastes requiring an effective waste management. Waste problems are aggravated due to globalisation which makes growth of international waste trade possible. Developing countries are often more vulnerable as the receiving end of all waste as being easy customer. Pollution of air, land and water have negative impacts on health. Loss of precious materials and resources is another fundamental problem. Despite the government policies and regulations, waste management becomes a very crucial issue on economies unnecessarily and often comes with failures due to additional costs to companies.

We see that a paradigm change is needed when defining the real problem. When people try to address the problem, they are confined to somehow a paradigm paralysis. Idea of collapse if an economy is not grown, is one of the main assumptions while defining this problem without usually realizing the fact that including assumptions in a problem definition makes it ill-defined one.

It is not uncommon that paradigms are interlaced meaning that one needs to understand existence of more than one paradigm when tackling real problems.

In case of planned obsolescence, we hereby identify two main paradigm paralysis issues causing an ill-defined problem definition. Both paradigms are defined in detail in "*Debt Based Monetary System (DBMS)*" [3]. The first paradigm paralysis involves a mechanistic approach to such complex problems of socio-economic systems engineering. The second paradigmatic problem is based on the lack of understanding the role of existing money creation system in societies.

In mechanistic approach of first paradigm, the idea is to decompose parts to more basic components then reassemble them and hence explain how things worked. A system approach, however, requires to explain first the behaviour or properties of the containing whole. Then the behaviour of the thing may only be explained in terms of its roles and functions is explained within its containing whole. Idea of the containing whole in some way is greater than the sum of its parts is known as holistic approach to solving problems.

The paper also proposes top-to-bottom approach when solving problems in the five-layer concept defined in detail. It explains the reason why industrial/systems engineers might fail in solving socio-economic systems engineering problems. Despite money creation is very important in socio-economic systems engineering affecting all other four layers, it is not well-studied area (if not studied at all) in Industrial/systems engineering schools. However, money creation, circulation and accumulation in a country is the solely financial base of the fifth layer systems engineering i.e. socio-economic systems engineering. Significant relationship is usually omitted between the two parts, money and production, in a socio-economic system problem definition on the fifth layer.

Planned obsolescence is a paradigmatic phenomenon occurring on the most top fifth layer and is difficult to defy without taking the holistic systems engineering approach and money creation into consideration. It is in fact a direct result of Debt Based Monetary System (DBMS) when carefully analysed.

The most significant problem about this monetary system is the nature of money creation process. It is created based on the debt and often by the banks out of "thin air" through Fractional Reserve System (FRS) of banking as described [3]. The equivalence of money is therefore a debt reflecting future deal of transactions by adding usually high amount due to compound interest. The physical money created by Central Banks is only a small proportion and accessed by other banks and governments by borrowing to pay later with interest. As in Turkish case (see Figure 1), currently the amount of physical paper money is around 70 Billion Turkish Lira whereas the money created by banks via Fractional Reserve System is more than 1 Trillion Turkish Lira.

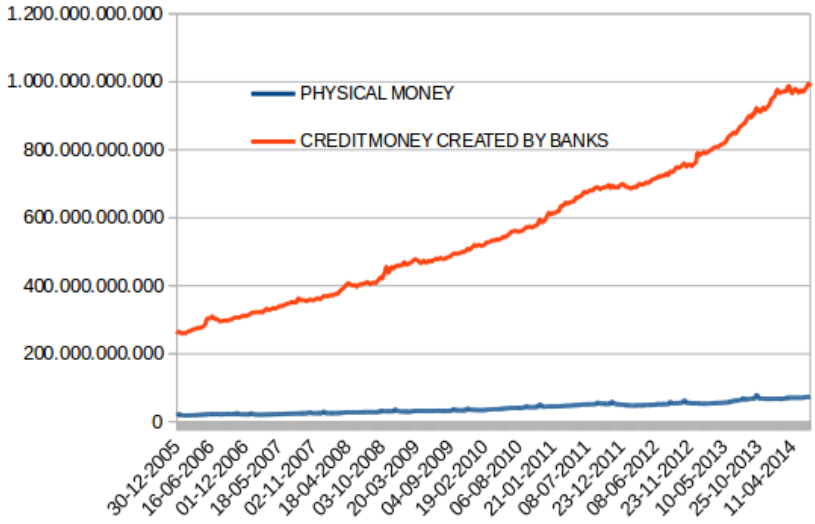

Figure 1: Physical money by Central Bank and credit money created by banks (* In Turkish Lira) (Data provided by Turkish Central Bank)

Since the money created comes into existence by debt only and presenting a future value with interest, the need for growth is a must for both economies in general and companies in specific. Furthermore, the amount required to pay the interest part of money is produced by nobody in economies, hence making new debts a certainty to pay debts. When banks make a loan, they actually create new money out of nothing. When credit money is paid back to bank, that is obliterated, i.e. diminished from economy. That explains the shrinkages of economies during financial crisis times where people cannot afford new borrowings while original debts are paid off by transfer of assets to banks. Otherwise, how could an economy shrink suddenly without a war or kind which actually destroys wealth? In fact, during crisis times the wealth is not destroyed, but mass transferred to usually banks which create money in the first place.

At the below levels of 5-layer model, all companies may access money only through loans to banks. The nature of money creation of banks puts a burden of interest and risks on shoulders of other bodies in economies. This is actually the root cause of planned obsolescence where all borrowers, whether states or companies must grow for the sake of growth of money (debt) which naturally follows an exponential pattern due to compound interest.

A paradigm shift is needed to be able to reject the planned obsolescence on a wide scale. This requires an understanding of socio-economic systems as biological organisms like human bodies as explained in Natural Economic Cycle (NEC) [3]. Planned obsolescence as an idea of "Economies and hence companies must always grow" is against the nature and is like feeding a body continually without applying any dietary plan. The result of planned obsolescence is mainly excessive artificial consumption for a purpose of aligning economic performance with perpetual growth of money.

Examples of paradigm shift in socio-economic systems level is given in [4] for a variety of areas including Agriculture, Foods, Healthcare systems.

PARADIGM CHANGE FOR MACRO LEVEL SUSTAINABILITY OF SUPPLY CHANGE MANAGEMENT

The five-layer model to systems engineering is described in [1]. The first layer is about product/subsytem engineering whereas the second layer contains parts related to corporate wealth creation. The third layer is the business/enterprise systems engineering that is to create industrial wealth. Many businesses make an industry. At this level, there are two integrated views. One is to design the process that is to be used to design, develop, create, test, integrate and prove the whole solution system. The second is to design the project that is done in conjunction with project management and takes into account business factors and the business environment in which the work is to be done.

A product that reaches a customer requires the cumulative effort of multiple organizations. These organizations are referred to collectively as the supply chain. A supply chain management problem in mechanistic approach involves the first three separate levels in a bottom-up manner. Supply chain management may be defined as managing supply chain activities effectively and efficiently to maximize customer value and achieve a sustainable competitive advantage for companies involved in the processes. Supply chain activities include everything from product design/development, sourcing, production, and logistics. The firms within a supply chain are linked together through physical flows of goods and materials, and information flows. The information systems provide core functions needed to coordinate the activities within a supply chain.

For sustainability, majority suggests ways such as optimizing product life (meaning a delayed planned obsolescence), recycling through waste collection and reprocessing of the resultant products (reverse logistics), more efficient ways in supply-chain management systems etc. This is a paradigm paralysis and a paradigm shift is needed for really sustainable world and macro level sustainability of supply-chain management systems.

A paradigm change is needed for macro-sustainability of supply chain that requires consideration of all five layers in a top-down approach. Sustainability in literature is usually analysed in terms of 3 factors, namely environmental, social and economic factors. It is obvious that it requires the 5th layer in systems engineering which is the socio-economic systems engineering level that is related to government regulations and control. It also includes legal and political influences. The money creation processes at this level affects the below levels as discussed earlier. Money created as debt restricts firms when solving sustainability issues due to the planned obsolescence paradigm still existent on a great scale.

Planned obsolescence cannot be defied without government involvement that requires first establishment of a sound monetary system where money is created, circulated as a measurement device only without a debt basis. The amount of money created by governments should be monitored and controlled on a continuous and dynamic manner as needed in a Natural Economic Cycle (NEC) accordingly defined in [3]. The money should measure and reflect what is

in economy rather than future transactions represented as IOU documents. Both credit money and interest added to it are not actually measure of value of existing goods or services. They are promises by borrowers to bring in a predefined period of future time to banks which creates money out of nothing. Interest part added to credit money (usually compound one) is not existing in economies and destroys the measurement feature of money since it does not really reflect the current goods and services. Other side effects are not discussed herein such as booming in prices of goods and services obtained through money created easily by banks. The money created in the current DBMS system bears a tremendous risk in borrowers' part and on overall economy.

As a result of current Debt Based Monetary System, planned obsolescence is unavoidable for production firms which can access money only by borrowing. A real macro-sustainability for supply chain management systems may only be achieved by defying planned obsolescence which requires macro level socio-economic systems engineering thinking.

CONCLUSION

Macro-sustainability for supply chain management systems requires paradigm change and rejection of planned obsolescence. The problem should be tackled in a holistic paradigm requiring top-down approach in five-layer systems engineering. Furthermore, rejection of planned obsolescence requires solutions on fifth layer which makes government intervention necessary in especially monetary system of which the planned obsolescence is direct result. Problems related to sustainability dimensions of supply chain management systems, then need to be redefined on different levels and directions since change of paradigm will make many problems disappear as a result of lack of planned obsolescence.

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