

Istvánné Vajna, Anita Tangl-István Vajna

Szent István University Gödöllő, Hungary

CORRELATION OF QUALITY DEVELOPMENT METHODS  
TO EFFICIENCY AND COMPETITIVENESS IN AGRICULTURAL  
COMPANIES AND THEIR APPEARANCE IN THE ACCOUNTING SYSTEM

ZALEŻNOŚĆ POMIĘDZY METODAMI OCENY JAKOŚCI ROZWOJU A  
EFEKTYWNOŚCIĄ I KONKURENCYJNOŚCIĄ PRZEDSIĘBIORSTW  
ROLNYCH I ICH UCZESTNICTWIE W SYSTEMIE RACHUNKOWOŚCI  
ROLNEJ

*Key words: quality development methods, productivity, quality, TPS, competitiveness, costs, profit, accounting system*

**Słowa kluczowe: metody oceny jakości rozwoju, produktywność, jakość, TPS, konkurencyjność, koszty, system rachunkowości**

**Abstract.** The quality development methods (QDM) are one tool to decrease the company loss and increase the company productivity and profit. The reducing the loss of the production system decrease the costs of the product, increase the output and in this way the profitability of the company will be higher. A new concept of the quality and productivity development methods could be a paradigm shift in the agriculture production system. It means that the automotive QDM as the TPS (Toyota Production System) can be extended to the agricultural production. The effect of the QDM appear in the accounting system and the annual report.

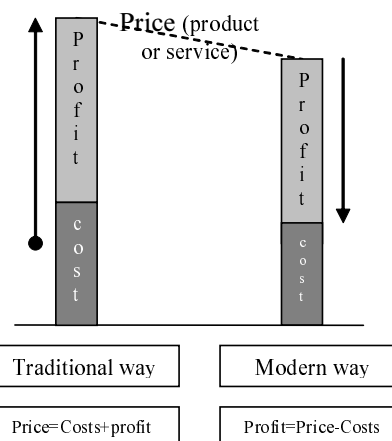
### Introduction

The quality development methods are uniform methods to eliminate the loss of the production flow. These methods are used in the industrial sector widely since 70 years. Some elements of the TPS are already applied in the agricultural sector also in Hungary – Bábolna – since 50 years. Namely the methods nowadays are known as 5S (the quality shopfloor management). The quality development methods can be a part of the enterprise economy system and this way influence the cost accounting an annual report system.

### The quality development methods

There are different quality development methods as 5S(Visual Management), Total Quality Control (TQC), Total Productive Maintenance (TPM), Single Minute Exchange of Die (SMED), Fool Proof System (POKA-YOKE), Just in Time (JIT), People and Tem Work, KAIZEN. Toyota Production System is the logical system of the methods mentioned above. The TPS is a philosophy to approach the productivity and quality development based on the quality of the people. The method itself is very simple and involves all staff of the company including physical workers to the top management [Tapping, Luyster, Shuker 2002].

The TPS is universal and economic sector neutral (sector free). The TPS can be used not only in the industrial production but in the service sector (health care) and in the agricultural sector, too. TPS mean that every



**Figure 1. The traditional and modern way of the getting profit**

Source: own study.

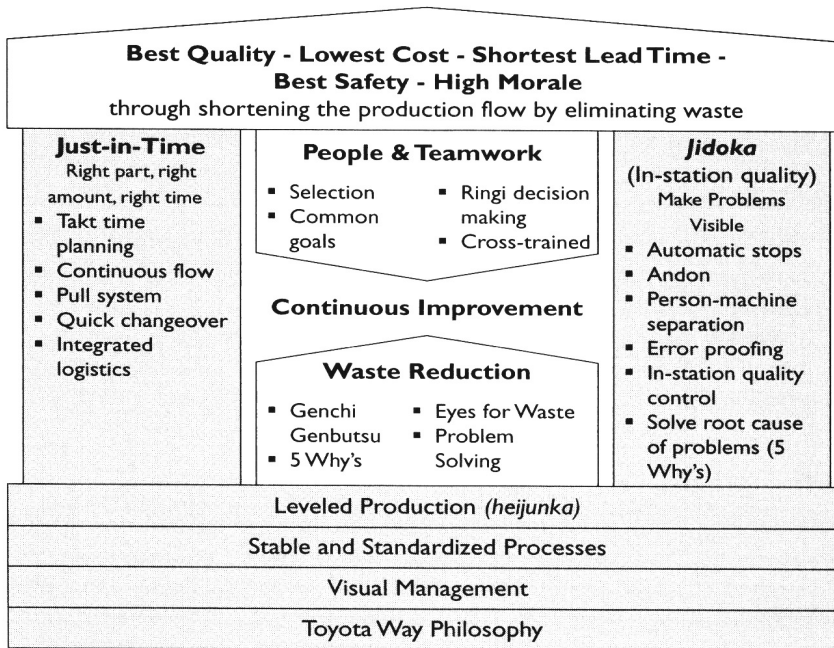


Figure 2. The TPS system  
Source: Jeffrey, Liker 2004

company can build up its own production and information system which focus on the customer satisfaction.

The entire paradigm shift is an economic need consequence. The difference between the traditional and modern way of getting profit is shown in the Figure 1.

The modern way of getting profit is based on the market price because the market price varies. The production system has to work with so low cost what can generate the expected profit.

The Toyota Production System like a house and its elements are logically and functionally set and cover the total process flow and quality control (Figure 2.)

### The accounting system

The basic role of the accounting system is to register the economic events of the company to register the company property and property changing and to make the annual report. The continuous records give continuous information (about property, costs, income, expenditure, result etc.) for the management for the decision making and for revision the activity [Kaplan, Cooper 2001].

During the production period the accounting system registers the economical event. The Hungarian bookkeeping system registers the cost of the production in 5<sup>th</sup>, in the 6<sup>th</sup> and 7<sup>th</sup> section of accounts. The type of cost appears in the 5<sup>th</sup> section of accounts. The 6<sup>th</sup> section of accounts is the cost centre and 7<sup>th</sup> of accounts is the Cost bearing (Cost of the product or service). Actually we get the cost of a product from the 7<sup>th</sup> section of accounts. This section of accounts collects all types of costs which are related to the product.

The product cost does not include the cost of the administration the selling cost the other overheads the other expenditures the expenditures on the financial transaction and the extraordinary expenditures. These expenditures appear in the enterprise activity and have to be covered by the revenues.

The balance sheet and the profit and loss statement are two main parts of the annual report. The balance sheet contains the property of the enterprise. The profit and loss statement shows the revenues and the expenditures of the accounting (economical) year based on the issue of the activity (product or service). The profit and loss statement calculates the profit of the year by the opposing the revenues and the expenditures. The expenditures are the next:

- cost of the issued product or service,
- indirect cost of sales,
- other expenditures (reject or scrap, damage, deficiency, loss of value – based on the quality or market price of asset),
- expenditures on the financial transaction (interest, loss on foreign exchange and currency, loss on sale of investments and securities),
- extraordinary expenditures (related to the non regular activities).

### The economic effect of the quality development methods

The economical effect of the quality development methods is complex. We can approach it mainly from three point of view:

- input,
- output,
- quality.

These three factors influence the costs the expenditures the competitiveness and the revenues. If we thinking forth we can say that these factors have effect on the solvency and on the investment of fixed assets. These connexions are appeared in the Figure 3.

The cost of the product is influenced by the next:

- quality of the row material – the better row material makes better quality,
- staff costs (wages and seleries) – by the effect of the quality development methods the same production could be made with less labour force. The aim of the QDM is not these. The result of QDM can be more output during the lead time then the specific cost of the staff will decrease. The other advantage can be the time gaining. In that time the labour force can do other activities,
- using the equipment and machinery – the TPM short the maintenance time and expenditures. The equipment can be used for more production period and foolproof. The depreciation will be less. It is influence the returning of the investments and the new investment of fixed assets.

The QDM have influence on expenditure:

- reject or scrap and damage – the QDM increase security of the production flow. The QDM increase the quality of the human resource and machinery. The decreasing the reject or scrap and damage spare the waste of the product (row material ect.) and the time,
- loss of value – with the QDM help to set up and keep the standard. In this way the stock quality can be stabile from the row material side and the finished product, too.

The increasing the output is also one result of the quality development methods because the productivity flow is stabile the production is levelled and by product mix the producer is flexible. By the flexibility the company can serve more customers in the same time and can accommodate to the customer requirements (QCD).

The quality improvement also increase the diversity of the product palette. This means direct advantages against the competitors and positive customer service.

### The quality development methods in agriculture

Every company has own philosophy own strategy and own production system including machinery and human resource. Every company has to build up his own „TPS House” and this is specifically typical in the agriculture.

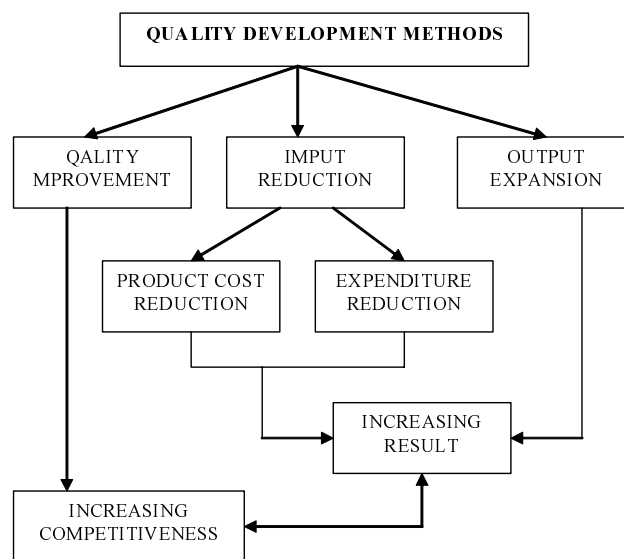


Figure 3. The effect of quality improvement methods  
Source: own study.

**Table 1. The QDM effect in the agriculture**

Activity in Agriculture	QDM effect to the process	Result effect
Standardisation of the technology	Stabile basic production process, less raw material, and energy	Production cost and scrap decrease
Standardisation of the shopfloor, installing the hygienic quality workplace (animal hygienic and pest control)	Stabile basic process, visual management, motivated employees, willingness to change, grounding for continuous improvement	Administration and production cost and scrap decrease
Continuous material flow	Stabile output, deadline keeping, customer satisfaction	Increase income (more costumers)
Machinery and equipment operation and maintenance	The net output in operation time increase, maintenance effectiveness enhance, OEE increase (Overall Equipment Effectiveness)	Income increase (more output, better quality), maintenance cost and depreciation decrease, energy saving (environment protection) investment time longer, ROI is higher (even more than 55 %)
Change over effectiveness (in production and office)	SMED, shorten the change over time (less than 10 minutes), leadtime decrease, people involvement increase, specified scope of activities,	Production cost decrease, more output- income increase, staff cost decrease, damage decrease
Train and motivate of people	Better and higher skilled employees, value and waste approach change, devoted employees	Staff cost, damage, scrap decrease, income increase
Built in quality	In production and administration processes implementing the quality, separation the people from machines, error proofing zero defect quality	Production cost, equipment cost, staff cost decrease, income increase (higher quality, more output)

Source: own study.

The agricultural production factors have two types by point of view of the quality development methods. The QDM can have effect on it or not. The effect of the quality development methods appear in longer time because of production time period speciality.

The un influenceable production factors are caused by the agricultural specifications. The raw material and the finished product are living organisations. The keeping methods the types of organisations the keeping time are determinate. The production process depends on the weather. The quality is determinate by the outside factors, too.

The influenceable production factors could be developed by quality development methods. The usable QDM in the agriculture and their effect to the result or profit is shown in the Table 1.

### Bibliography

- Robert S., Kaplan R.S., Cooper R.** 2001: *Költség és Hatás*. Panem IFUA Horváth & Partner, Budapest, 30.  
**Liker J.K.** 2004: *The Toyota Way*. McGraw Hill, New York, 33.  
 Tapping D., Luyster T., Shuker T. 2002: *Value Stream Management*. Productivity Press, New York, 10.

### Streszczenie

*W artykule przedstawiono możliwości zastosowania metod oceny jakości rozwoju jako narzędzia ograniczenia strat przedsiębiorstw rolnych i podniesienia ich zysków.*

#### Corresponding address:

Istvánné Vajna, Anita Tangl-István Vajna dr Ph.D.  
 Szent István University Gödöllő-Hungary  
 Department of Finance and Accounting  
 2103 Gödöllő  
 Páter K. u. 1.  
 Tel: (+3628)-522000/1747  
 e-mail: tangl.anita@gtk.szie.hu