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LOGISTIC PROCESS REENGINEERING: A CASE STUDY

Abstract: The aim of this paper is to present the case study of business processes reengineering (BPR). Important part of the change was the logistic process. At the beginning, the literature review on process approach and BPR was presented. Next a BPR methodology was shown. The case study of the implemented BPR change consists of three parts. In the first part, the company's standing before the change was characterised. Next, the methodology of the project, based on the BPR approach, was defined. In the third part, the results of the BPR change were depicted. The article ends up with general conclusions.

Keywords: reengineering, business process reengineering, process innovation, logistic process, logistics.

1. Logistics and business process approach

According to J.G. Miller (Francios 1997) process means "any change over time of matter, energy or information". R.L. Ackoff (Francios 1997) defines process as "a sequence of behaviour corresponding to a goal-producing function in a system".

A business process according to GAO/AIMD-10.1.15 (Acka, Ilas 1997) is "the series of steps and procedures that govern how resources are used with the intent to create products and services that meet the needs of particular customers or markets". H.J. Harrington (Acka, Ilas 1997) defines business process as "a group of logically related tasks that use the resources of the organization to provide defined results in support of the organization's objectives". G.A. Rummmler (Acka, Ilas 1997) pointed out that business process is "a series of steps designed to produce a product or service. Most processes are cross-functional, spanning the 'white space' between the boxes on the organizational chart". S.L. Caudle (Acka, Ilas 1997) defines business process as "a collection of related, structured activities – a chain of events – that produces a specific service or product for a particular customer or customers [...] regardless of the hierarchy and vertical structural designs. For most managers, accustomed to functional units and activities which can virtually stand alone, this is a much different view".

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Logistics as a kind of business process means (Senge 1998) “the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements. This definition includes inbound, outbound, internal, and external movements”.

To succeed in today’s global economy, corporations must have organizational structures and business processes that: are fast, deliver high quality consistently, are flexible and are low cost. The reality is corporations cannot move into the highly competitive environment by adapting the old management methods. A complete and sweeping redesign is called for. Process approach and reengineering might be helpful in such a case (Hammer, Champy 1996).

2. Business process reengineering (BPR)

First time the reengineering was defined by M. Hammer in late 1980s (Hammer 1999) as a “fundamental rethink and radical redesign of business processes to generate dramatic improvements in critical performance measures – such as cost, quality, service and speed”. R. Manganelli and M. Klein (Manganelli, Klein 1998) call reengineering “rapid and radical redesign of strategic, value added business processes – and the systems, policies and organizational structures that support them – to optimize work flows and productivity within an organization”. J. Peppard and P. Rowland (Pawlewski 2010) point out that “reengineering aim is to achieve improvements in performance by redesigning the process through which an organisation operates, maximising their value-added content and minimizing everything else. Reengineering can be applied to an individual process level or to the whole organisation”. This kind of management practise consist in building completely new process, apart from old process, and starting from customer perspective and needs (Kupczyk *et al.* 1998).

Reengineering pioneers achieved radical change in: management cost (82%), production cost (57%), productivity increase (59%), quality improvement (45%), profitability (38%), etc. (Peppard, Rowland 1997). In literature there are many case studies with even higher results. Symbolic example is Taco Bell and its sales increase from 500 million to 3 billion USD after BPR change (Hammer, Champy 1996). BPR initiatives typically lead to a business organization with these characteristics (Hammer, Champy 1996):

- Business processes are simplified rather than being made more complex.
- Job descriptions expand and become multi-dimensional – people perform a broader range of tasks.
- People within the organization become empowered as opposed to being controlled.
- The emphasis moves away from the individual and towards the team’s achievements.
- The organizational structure is transformed from a hierarchy to a flatter arrangement.

- Professionals become the key focus points for the organization, not the managers.
- The organization becomes aligned with the end-to-end process rather than departments.
- The basis for measurement of performance moves away from activity towards results.
- The role and purpose of the manager changes from supervisor to coach.
- People no longer worry about pleasing the boss – they focus instead on pleasing the customer.
- The organization's value system transforms from being protective to being productive.

Reengineering is not solely about creating new business processes – it focuses on creating a new company. There are no hard and fast rules about what a reengineered business process will look like – simply because each will be individual and process-specific. There are, in practice, some recurring general themes most reengineered processes tend to align with (Hammer, Champy 1996):

- Several jobs are combined into one.
- Decision making falls to the workers, not the managers.
- Process steps are performed logically and naturally.
- The end of standardization – processes can have multiple versions of the same product fine-tuned for niche markets.
- The work is performed where it makes most sense.
- Checks and controls are reduced or eliminated.
- Hand-offs and reconciliations are minimized.
- Single points of contact (case managers) assume responsibility for the results.
- Centralized purchasing power and decentralized operations.

BPR needs process organisational structure. M. Hammer (Hammer 1999) has proposed a model of such structure (Fig. 1).

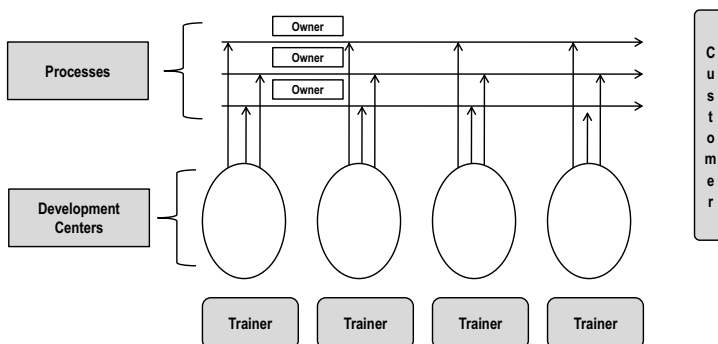


Fig. 1. M. Hammer's model of process organisational structure
Source: Hammer (1999)

On the basis of literature study six different approaches to reengineering can be identified (Cempel 2005, Mayer *et al.* 1995): M. Hammer and J. Champy approach (Hammer, Champy 1996), R.L. Manganelli and M.M. Klein approach (Manganelli, Klein 1998), N.M. Tichy and S. Sherman approach (Senge 1998), T.H. Davenport approach (Davenport 1993), J. Durlik approach (Durlik 1998). To systemise methods modified Le Chatelier’s cycle of organized actions can be used (Cempel 2005, Mayer *et al.* 1995): goal and qualification phase, research and optimal solution selection phase, realisation phase, inspection and evaluation phase (Tab. 1).

Table 1. *Reengineering methods according to the defined phases*

	Goal and qualification phase	Research and optimal solution selection phase	Realization phase	Inspection and evaluation phase
M. Hammer & J. Champy	1. Introduction 2. Process identification 3. Process selection for reengineering 4. Understanding of selected processes	5. Clean slate design of selected process	6. Implementation	
R.L. Manganelli & M.M. Klein	1. Preparation 2. Identification 3. Developing a vision	4. Solution design: a. technical aspect b. social aspect	5. Transformation	
N.M. Tichy & S. Sherman	1. Awakening 2. Developing a vision	3. Design and reconstruction	4. Implementation is part of phase 3.	
T.H. Davenport	1. Developing a vision and objectives 2. Process identification 3. Understanding and analysing processes	4. Use of information technologies 5. Creating process prototypes	6. Implementation	
I. Durlik	1. Setting a project task 2. Preparing a process map and setting the scope of further work	3. Radical redesign of selected processes 4. Simulation and option assessment 5. Selecting best option	6. Implementation	7. Controlling 8. Continuous improvement

Source: Cempel (2005), Pacholski et al. (2009)

Process identification (mapping as-is processes) and designing new solution (modelling to-be processes) needs specific modelling method. According to Pawlewski (Pacholski *et al.* 2009) IDEF0 is one of the 70 methods (ADELE-TEMPO, ALF, AMBER, APPEL, APPL/A, ARIS, Articulator, BAM, BPEL4WS, BPML, Chou-UML, CIMOSA, Converstion Builder, CSP, CSPL, E3, EAI, ebXML, EDOC, EEML, ENVI12204, EPC, EPOS, EVPL, FUNSOFT, GEM, GRAI, GRAPPLE, Hakoniwa,

HFSP, IDEF, IEM, ITM, JIL, LATIN, LOTOS, LSPL, MARVEL, Melmac, Merlin, MVP-L, OIKOS, OORAM, PADM, PEACE+, Petri Net, PMDB+, Process Weaver, Promenade, PSL, RAD, REA, Rosetta Net, SDL, SLANG, Socca, SPADE, SPELL, SPM, STATEMENT, System Dynamics, TEMPO, UEML, UML, UML2, UPM, Woflan, WPDFL, XPDL, YAWL) which fulfils the best 18th criteria (formality, expressiveness-information, expressiveness-actors, expressiveness-dynamics, expressiveness-process, expressiveness-real time, graphical, textual, abstraction and modularization, extendibility, executability, analyzability, evolutionability, multiple conceptual perspectives/views, computer support, availability, maintainability, standardization).

To reengineer, or not to reengineer – that’s the question. PricewaterhouseCoopers’ matrix is useful to select process to reengineering (Dunn 2007). We consider decision along two dimensions (Fig. 2).

	Strategic	Non-Strategic
Competitive	As is	Needs discussion
Non-Competitive	Reengineering	Outsourcing

Fig. 2. Reengineering decision matrix
Source: Dunn (2007)

The first, strategic-non strategic, considers how important the process proposed for reengineering is to the organisation in achieving long term strategic competitive advantage in its chosen marketplace. The second dimension, competitive-non competitive, relates to how competitively the process being considered for reengineering is currently being performed compared to the external competitive marketplace. This relates primarily to the cost of the process, but could also be extended to response time, etc. Putting the two elements together gives four possible outcomes: leave as is, needs discussion, outsource, reengineer.

3. External and internal customer

P. Drucker (1954) stated in *The Practice of Management* (Drucker 2007): “It is the customer who determines what a business is”. He stressed the importance of the customer, at the time when productivity and efficiency was seen as the industry priority. S. Walton, American founder of WalMart Stores, the largest retail chain in the

world, pointed out (Bergdahl 2006): “There is only one boss – the customer. And he can fire everybody in the company from the chairman on down, simply by spending his money somewhere else”. In our times quantity management has been replaced by quality and process management. The customer has been declared king. A seminar article, entitled *Marketing Myopia*, by Theodore Levitt warned of the dangers of product-led approach.

T. Levitt stated (Levitt 1975): “Industry is a customer-satisfying business, not a goods-producing process”. If an organisation is not customer-focused, and does not make efforts to find out what their customers need and expect, it may very quickly lose market share. Successful customer relationships are created by organisation that have actively developed a customer focus. This means that the process of production or provision of a service begins with the customer (from feedback and demand), with quality management techniques applied to every link in the internal customer service chain.

Five groups of customers can be distinguished (Allen 2001): external customers, shareholders, stakeholders in the community, consumer or end-users, internal customers. Internal customer is a term used in management science, popularized by J.M. Juran (Tichy, Sherman 1993). He defined an internal and external customers as anyone affected by the product or by the process used to produce the product, in the context of quality management. An internal customer may play the role of a supplier, performer and customer in the sequence of product development. Juran claimed that the organization must understand and identify both internal and external customers and their needs. The organization must focus on the primary task of satisfying the customer’s requirements and expectations.

The following diagram (Fig. 3) shows how inputs from the external supplier eventually reach the external customer by means of the internal supplier-customer chain (*Enhancing Operational... 2001*).

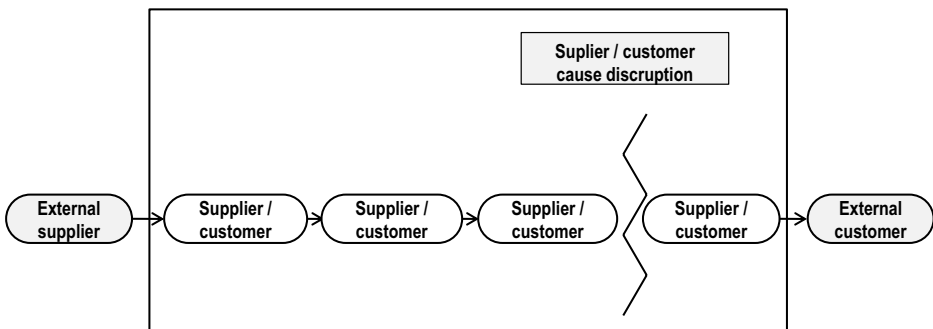


Fig. 3. Supplier-customer chain
 Source: *Enhancing Operational... (2001)*

Taking into consideration different organisational structures the best environment, for supplier-customer chain, might be the process structure.

4. Methodology

On the basis of literature study and above descriptions, methodology of logistic process reengineering was formulated:

A. Goal and qualification phase.

- 1) Understand current (as-is) state: analysis of financial standing, supply chain, customers' groups, IDEF0, formal and informal organisational structure, etc.
- 2) Identify the need for change.
- 3) Establish strategic level (board of directors) change team.
- 4) Introduce reengineering approach (training).
- 5) Reinvent or refresh organisation's mission and create vision.
- 6) Define goal of change.
- 7) Select process to reengineering (reengineering decision matrix).

B. Research and optimal solution modelling phase.

- 1) Establish operation level change team.
- 2) Model new process starting from customer perspective and abstracting from as-is state: internal customer approach, reengineering decision matrix, IDEF0.
- 3) Detail and realignment new (to-be) process (engage users).

C. Realization phase.

- 1) Create instructions, diagrams and characteristic of the new (to-be) process.
- 2) Project planning and realisation.

D. Inspection and evaluation phase.

- 1) Results measuring.
- 2) Comparing results with goal of change.
- 3) Anchor change in organisational culture (continuous process improvement).

5. Case study – Gift Ltd. before the change

The company GIFT Ltd. (fictitious name) offers wide range of decorative articles which can be grouped in six categories: Christmas, Easter, St. Valentine's Day, Halloween, Year-round, Year-round – Marine. GIFT Ltd. imports from Eastern and Southeast Asia and sells goods on Central and East European market. In 2003 profit radically decreased and this caused anxiety about the future and need for change (Tab. 2). The reason for additional manpower requirement in 2003 was sales increase.

Simplified supply chain of decorative market is shown in Figure 4. GIFT Ltd. plays importer role.

Table 2. GIFT Ltd. situation before the change (2002–2003)

	Y2002	Y2003
Income [thous. PLN]	26,142.5	38,109.8
Net profit [thous. PLN]	1,005.6	50.6
Employment	22	69
Equity capital	4,483.7	4,532.3
EBIT [%]	6.3	1.22
EBITDA [%]	10.9	6.12
ROE [%]	22.4	1.13

Source: Cempel (2005)



Fig. 4. Decorative market supply chain model

GIFT’s customers can be grouped in two categories: (1) retail customers (small decorative items shops, “all for 5 PLN”, networked, garden and florist shops) and (2) wholesale customers (points of sale on wholesale flower markets, other decorative items wholesales).

GIFT’s as-is process in IDEF0 notation at A0 level is depicted in Figure 5. This level of processes consist of: sales on order process (A0.1), sales from flower market point of sales (FMPOS) (A0.2) and sales from stock (A0.3).

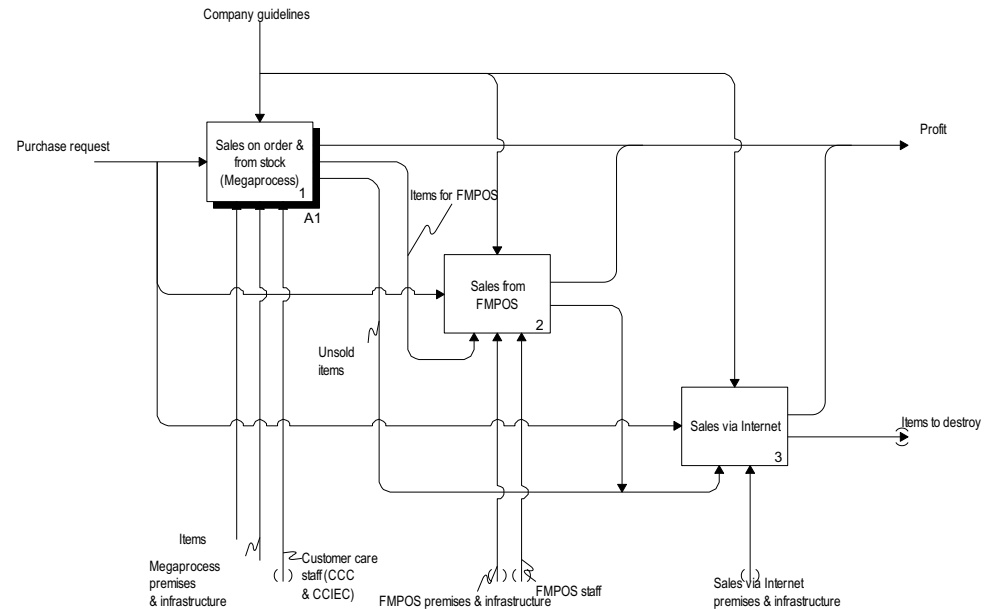


Fig. 5. GIFT's as-is IDEF0 A0 diagram

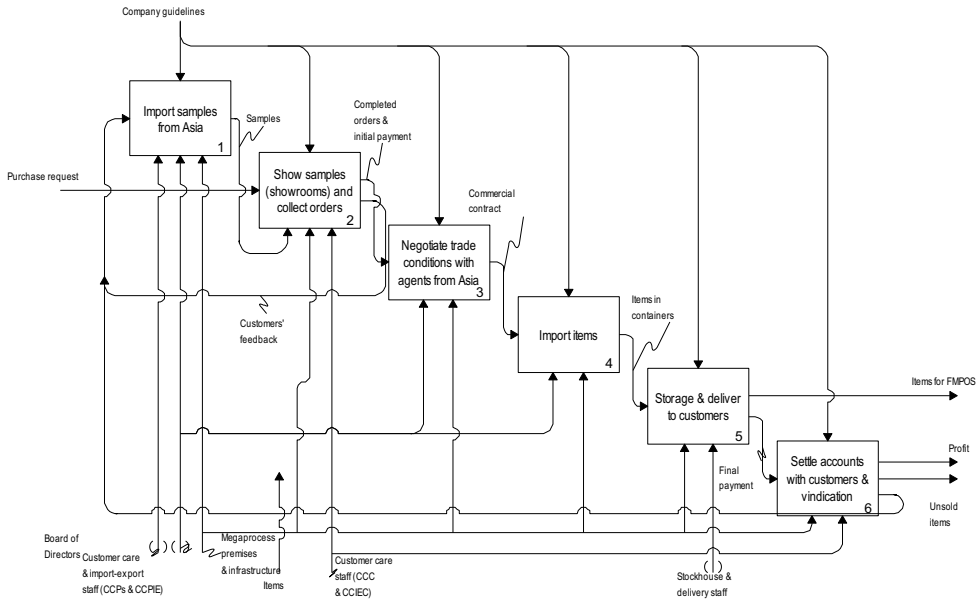


Fig. 6. GIFT's as-is IDEF0 A1 diagram

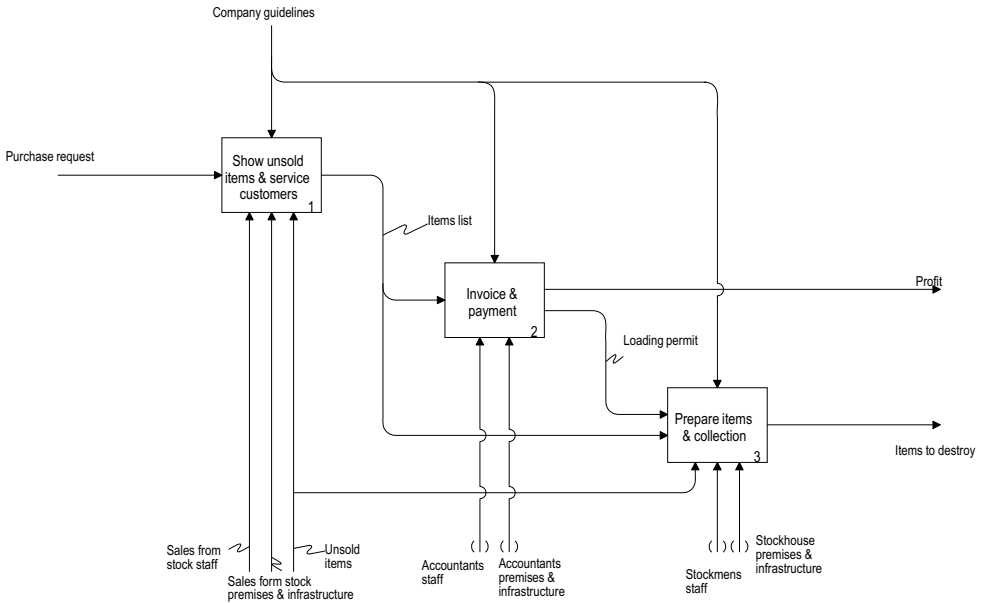


Fig. 7. GIFT's as-is IDEF0 A3 diagram

In GIFT Ltd. strategic level change team was established (Steering Committee: Board of Directors and external consultant). During reinventing organisation’s mission and creating vision, Board of Directors decided to create foundation for being market leader in standards of selling.

The goal of change was defined: improve profit and become market leader in standards of selling. Using reengineering decision matrix Steering Committee decided to reengineer order process (A1) and sales from stock (A3). Both processes (as-is state, child diagrams) were depicted in Figures 6 and 7.

Research showed that GIFT’s activities were more predictable and processual, than unpredictable and incidental. GIFT’s formal organisational structure was functional. Conducted studies discovered also informal connections within formal structure (Fig. 8).

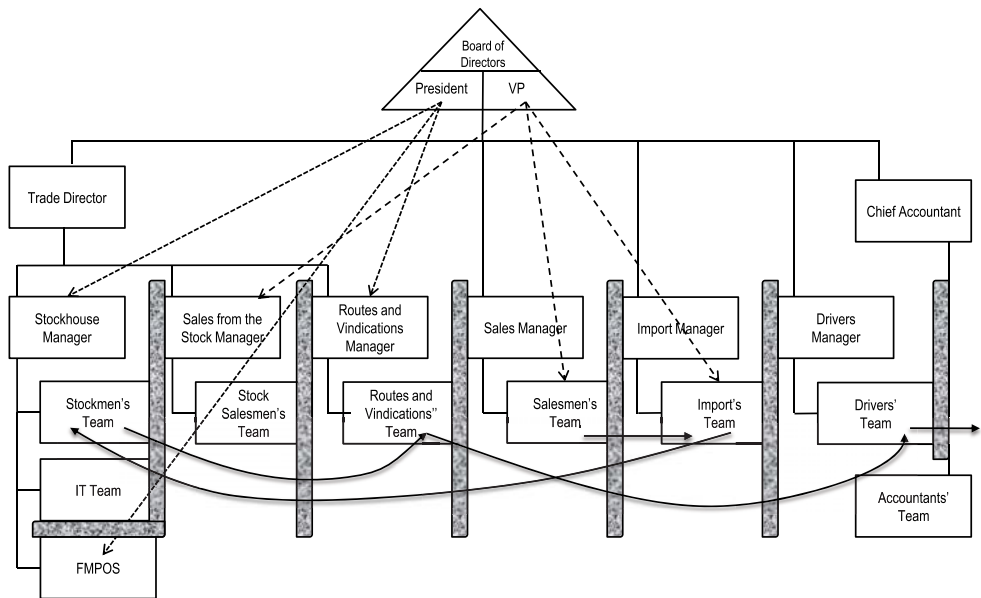


Fig. 8. Model of GIFT’s formal and informal organisational structure with department’s “walls”

The structure generated “walls” between departments which distort the information circulation, caused delays, etc.

6. Case study – reengineering intervention

Change team at operation level was establish. They modelled new process starting from customer perspective and abstracting from as-is state with use of internal customer approach and reengineering decision matrix.

Two processes: order process and sales from the stock were merged as well as teams and infrastructure. New way of selling unsold items was established – selling via Internet. New GIFT's to-be process in IDEFO is depicted in Figure 9.

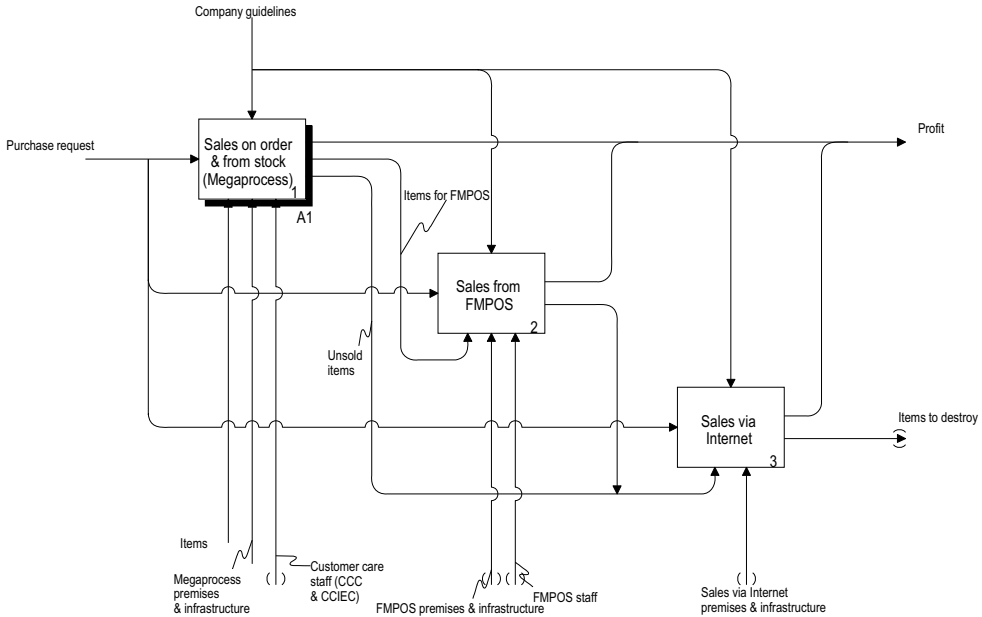


Fig. 9. The new GIFT's to-be IDEFO A0 diagram

New process rules were created:

- One contact person: salesman has customers' assigned, customer can change servicing salesman in league with megaprocess director.
- Salesman should coordinate whole process: salesman coordinate and is responsible before the customer for whole process (from sales to delivery and claims), salesman motivate to pay instalments to agreed date and is rewarded according to paid invoices (reward not for sales amount but amount on GIFT's bank account).
- Salesman advises customer regarding the orders made by local competitors, products, trends and styles: salesman becomes sales consultant (new name: customer care consultant – CCC, and customer care import and export consultant – CCIEC), CCP should participate in specific training programmes which can help to develop needed skills, CCC has customers form specific territory.
- Quick contact with salesman: each CCC has mobile phone and business cards.
- Reduce monotony and bursty traffic (simple shelves with thousands of items): items are exposed in rooms grouped in stylish sets (additional inspiration for customers).

In this case reengineering principles emerged as a result of building new process starting from customer perspective: one contact person, multifunctional job, responsibility for the whole process, enabling role of IT, customer perspective, building completely new process abstract from as-is state ("starting from the scratch", "blank sheet of paper"), focusing on real value added (Value-added Assessment), empowerment, focusing on results, etc.

New rules are also guiding principles for recruitment, training, technical infrastructure and even building architecture. Next stage was to make process more real and detailed using creativity. Beneath listed major improvements:

- New showroom: each room had exact style and colour and name (Marrakesh, rustic, etc.).
- Showroom had ability to change from season to season and had professional decorator.
- Customer as a human being uses senses to perceive the world (visioning, hearing, touching, smelling, tasting): each room had exact music, smell, etc. to enforce buying.
- Customer should be well serviced: CCC should have enough time, in case of simultaneous visit two of his customers this may create problems. The solution is to take the initiative and make appointment first with every customer and decrease level of disturbances.
- Above issues lead to new sales concept: decorative items seasonal show (fair). This concept is similar to Messe Frankfurt, but on smaller area and with one exhibitor.

Important change was implementing internal customer approach in last part of Megaprocess (delivery to customer):

- CCC/CCIEC choose driver.
- Driver chooses stockman who becomes stockmen's leader.
- Stockmen's leader chooses stockmen and they load lorries. Stockmen's leader has strong influence on stockman's reward (for compliance of items, amount, time and quality).
- CCC prepares documentation for delivery.
- Driver delivers items and documentation to customers. Driver collects information for CCC about customer (for future advisory). Driver checks customer's satisfaction. Drivers has influence on stockmen's leader reward (items, amount, time and quality compliance).
- Driver settles accounts with customer.
- In case of discrepancy (items, documentations, etc.) customers issue claims to drivers or CCC.
- In case of non-payment CCC request for payment. Customer's unresponsiveness results moving the case to external vindication company.
- In case of non-collection items return to warehouse.

The relations between internal customer and supplier after change had marketing foundations. Suppliers gained reward in case of fulfilling internal customers expectations. Thanks to such approach external customer's expectations were pulled into the organisation. Final, external customer's satisfaction was result of commitment of all suppliers engaged in the process starting from CCC to stockman (Fig. 10).

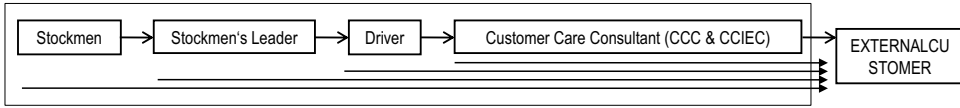


Fig. 10. GIFT's internal customer's model (added-value generating)

Based on to-be process a new organisational structure was established (Fig. 11). In most cases people in the process knew what to do because of goals they had but there were some places in the process which had to be managed solely by project approach (project management). Four project management initiatives were as follows: samples project management, sales project management, import project management, distribution project management. These projects needed to be managed by project managers responsible for results mainly based on "tell" interaction between project manager and project team members.

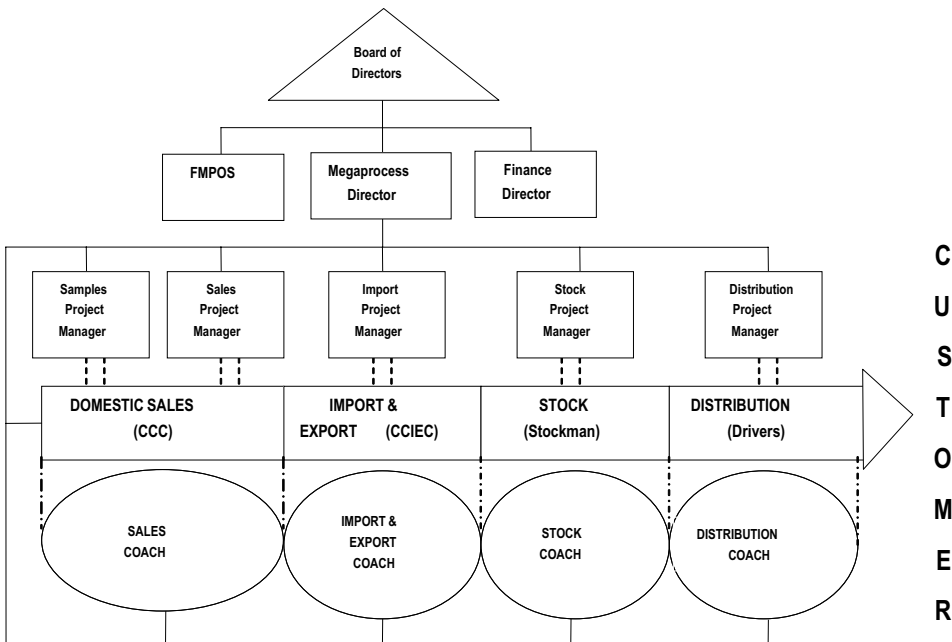


Fig. 11. GIFT's internal customer's model (added-value generating)

Employees knew what to do based on goals which were agreed with Megaprocess Director. They knew how to do thanks to process manual and coaching help system. They were also fairly rewarded in case of fulfilling the goals which were related to important business factors like: items amount, time and quality compliance, decrease of initial agents price, decrease of cash advance for agents, trade credit and factoring, real sales increase, customer satisfaction and activities in different projects in company. Coaches and Megaprocess Director helped to achieve goals and led personnel development in the direction of personal challenge (Schumacher 1997). Internal recruitment was preferred. The promotions led through all levels of company from stock house to showroom. Employees exchanged knowledge, experience and discoveries in *Searchers of the lost cheese club*. This club took its name from the S. Johnson's novel *Who moved my cheese* (Johnson 2000). This book is about dealing with change. The most constructive attitudes were promoted in internal newspaper "Dreams Sculpture". To enhance cooperation in process and projects, new ergonomic building for CCC and CCIEC together with showroom was designed and built.

7. Case study – results

After the change, qualitative and quantitative results were recorded. Regarding qualitative results – CCCs recorded outstandingly positive feedback from customers. Their reactions were recorded in new showroom on closed-circuit television (CCTV). Quantitative results contains Table 3. Some additional calculations: profit growth: 989% in 2004 and 6.027% in 2005, ROE growth: 975% in 2004 and 5.007% in 2005, EBIT growth: 173% in 2004 and 700%, EBITDA growth: 34% in 2004 and 117% in 2005, equity capital growth: 19% in 2004 and 87% in 2005.

Table 3. *GIFT Ltd. financial standing before and after reengineering (2003–2005)*

	Y2003	Y2004	Y2005
Income [thous. PLN]	38,109.8	39,485.50	48,590.0
Net profit [thous. PLN]	50.6	550.8	3,100
Employment	69	76	115
Equity capital	4,532	5,372	8,472
EBIT [%]	1.22	3.33	9.76
EBITDA [%]	6.12	8.18	13.29
ROE [%]	1.13	12.15	57.71

Source: Cempel (2005)

Exchange rate risk was transferred to customers, so exchange rate changes has not much influence on presented results. Moreover, no additional programmes were conducted during years 2003–2005. Therefore results may be linked to reengineering effort made in GIFT Ltd.

8. Conclusion

The goal “improve profit and become market leader in standards of selling” based on methodology of reengineering logistic process (depicted in methodology chapter) was achieved. Furthermore, profit growth level was similar to reengineering results characterised in literature.

New process-project organisational structure became beneficial. Three major factors were the most important during the change: top-level engagement, engage users into create real to-be process and first of all – benefits for users. In this case major benefits were: salary growth (mainly thanks to rewards), open and clear way to promotion in the future, monotonous work changed to more interesting (multifunctional), empowerment which gave more power, more independence, and help from Megaprocess Director and from coaches.

Reengineering and process approach in this case caused growth of knowledge, skills and experience especially in CCP and CCPIE’s group. Each of them knew and could manage whole process. This was solid foundation for opening and running own company. The most influential top-manager in GIFT Ltd. had autocratic management style and promoted passive/defensive culture. The question might be what will happened in this case in the future? This may be the theme for further studies.

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