Business Continual Management System for Value Added Securing of Organization Readiness at its Predictable Perils

Olga Burianová

University of Finance and Administration, Estonská 500, 10100 Prague 10, Czech Republic.
E-mail: olgaburianova@email.cz

Jiří F. Urbánek

University of Finance and Administration, Estonská 500, 10100 Prague 10, Czech Republic.
E-mail: urjf@yahoo.com

Paper´s objective is an investigation of organization "business continuity management" in crisis situations. Although predictable every crisis or critical situations occurrences they relate to organizational or technologic processes continuity or dissonance influencing to operationally produced Value-Added fluctuations. "DYVELOP" (Dynamic Vector Logistics of Processes) methodology can identify problematic, accidental, critical and crisis zones, situations and functions, displaying critical or "crisis interfaces" among entities of organization´s models – "the blazons". Here emergency or "disruptive events" solutions in predictable pre-prepared crisis scenarios are resource for the models in business organizations processes in real time and environments with dependent economical variable parameter – "Operation Value Added". Crisis interfaces in the models of predictable crisis situations serve for the identification and location of the flags of special solutions of crisis situations successful coping, "continual planning" and management crisis processes in real organization. It is our contribution for emergency event mastering and for the mitigation of predictable organization´s damages.

Keywords: business continuity management, DYVELOP, crisis interfaces, blazons, disruptive events, Operation Value Added, continual planning.

1. Introduction, Terms and Methodology

An investigation in crisis situations of business subject's organization is this contribution objective. Although a predict of every crisis or critical situations occurrences they are connected with organizational or technologic processes dissonance influencing to operationally produced Value-Added fluctuations. This paper deals with crisis situations investigation and modelling in the organization. Every crisis has an origin in Graduated Disruptive/ emergency Event (GDE) occurrence here, which is gradually and predicative pre-prepared by Business Continual Planning / Management (BCP/BCM). Simultaneous and future security disruptive situations need suitable method of investigation and modelling for continual emergency planning and preparedness in the organization for defined crisis situations. Every crisis situation has an origin in the accident or incident occurrence, arising from relevant threats and perils in certain systems, processes, factors, environments and circumstances of each real organization. The accident or incident will be titled further as a Gradual Disruptive Event (GDE) in organizational context. Its crisis management needs operational coping of the crisis according in advance prepared scenarios by organization´s security department. The forms, characteristics, behavior and utilization of these crisis scenarios have various qualities and content, depending on real organization and crisis relevance, giving from risk management. They must be parameterized by real time in real environments in scenario´s model, using investigative, analytic, evaluative, modelling and simulative mathematic - graphic tools. Here we use the DYVELOP method (Dynamic Vector Logistics of Processes, Urbánek et al. 1999). But necessary, the operative problem solution needs the first investigative step in pertinent choice of dependent variable parameter. Our recent research finds this dependent variable parameter in organization easy detectable economical parameter – a Value Added (VA). The VA is simple recognizable in the accounting system of each company in real time continuously. A record at the end of each year / quarter / moon maximally. Second step is to find and investigate critical and crisis interfaces in crisis situations models of gradual arising crisis situations – the gradual elaborative cybernetic attack e.g.

The identification and location of modelled operative critical / crisis interfaces are the flags for crisis situation happening and course. In real organization of production organization must be crisis interface investigated at the cycling case and at its phases. It is condition for the crisis

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management successful coping of pertinent crisis situation. The definition of this cycling case is necessary condition for the encompassment of the both the sudden Disruptive Event (DE of Black Out type) and or Graduated Disruptive/ emergency Event (GDE of gradual elaborative cybernetic attack type) for the consequent mitigation of organization´s damages. Uninterrupted and continuous cycling processes bring crisis management fruitfulness and they are good indicators and controlling actors of organizational continuity ability and its sustainable development advanced possibilities, bringing challenge for consequent technological innovation and revitalization of organizational processes**.** Our aim is to incorporate to a revitalization new impulse arising from organizational reengineering (Hammer&Champy, 2000). It is special contribution of our paper, addressing to important industry challenge and report case applications with mixture of economic and crisis relationships, dependences and circumstances that have practice implicated GDE, evoking crisis situation especially. It shows that crisis situation must be generally modelled, operated and coped in cyclic threats / peril life cycle by means of ´blazonry´ (Penguin´s English Dictionary 2003) DYVELOP´s models. This cycle has several steps, formally allotted by time intervals and classified and blazonry demarcated by means of two-dimensional cases in the blazons (Urbánek et al. 1999) at next below figures. The operation of these cases is a condition for the encompassment of the DE by organizational crisis management finally. The solutions of these cases presuppose organization´s critical functions identification at the interfaces (Barta J. et al 2013) within their research reliable rules and algorithmic procedures. The interface represents outer contour (boundary) of entity´s symbol, expressing blazonry the relative roles or relationships on process scene model, symbolizing information change or transformation. Crisis interface needs at least two negative and just a two antagonistic entities occurrence. It is shown as a single line, shared by the both or more above entities in DYVELOP models. The entity´s negation (NOT function, relation or operator) have always character of the collision, conflict and/or problem. But crisis interface signalizes the strong crisis and/or even battle as a significant crisis interface. A typical characteristic for the crisis interface is that through themselves the critical functions are running or passing on relevant crisis situation or disruptive event. The controlling is generalized capability to have control over situational policy in relevant environment. Controlling actor is an executor of controlling functions. It brings new possibility for a displaying and exact evaluation of organizational security awareness. Special accent is put on computerized assistance for the both the crisis situation modelling and the situational estimation in real time with VA´s production. It allows modelling and simulation processes for better decision making of crisis / disaster management and for controlling actors of organizational continuity ability and its sustainable development advanced new opportunities. It brings an instrument for technological innovation, revitalization and even for reengineering of organizational processes**.**

1.1 *Methodology*

The objectives of our current research work reflect a requirement for exact evaluation of organization´s production abilities before, in and after predictable crisis situation. The method of Mind Maps (Buzan, 2005) are good for it and as the second inspire source can be used the Unified Modelling Language (Arlow 2004) also. But they are not enough for complex and exact reflexing of full organizational problem. Here is necessary to use Dynamic Vector Logistics of Processes (DYVELOP) method, using common and well-known computer software MS Word: Power Point^{MS}, Excell^{MS}, SmartArt^{MS} and Project^{MS}. They can model and simulate the majority of the systems & processes of qualitative and quantitative research by means of mutual relations in simple graphical record. The aims of our current research work reflect first and second steps, defined above.

Paper´s methodology utilizes DYVELOP method especially. This method can easily identify problematic, accidental, critical and crisis zones, situations and functions, displaying critical interfaces among entities of organization´s models. Emergency or disruptive events solutions in crisis scenarios are resource and base for the models in business organizations process's continuity. Their crisis managements need operational coping of crisis situations according pre-prepared crisis scenarios or plans in real time and environments with independent variable parameter. The forms, characteristics, behavior and utilization of these crisis scenarios have various qualities, depending on real business/ production/ service organizations. For this reason, the special focus of this paper is addressed to important development challenges and it reports case applications that have the practice outputs e.g. process reengineering and managing. But this procedure needs necessary the first investigative step in pertinent choice of dependent variable parameter. Our recent research finds this dependent variable parameter in the most suitable economical parameter – OVA (Operation Value Added). Second step is to find and investigate critical and crisis interfaces in

critical situations / scenarios models of predictable crisis situations. The identification and location of modelled critical/ crisis interfaces are the flags of crisis situations in real organization and in real time. They must be investigated in real environments (ENV) also. It is the condition for continual crisis management and for successful coping of pertinent crisis situations. The definition of special cases is necessary condition for the encompassment of the both the emergency event and for the mitigation of organization´s damages. Uninterrupted and continuous processes of continual planning and management bring crisis management fruitfulness for VA production and it is good indicator and controlling actor of organizational continuity ability and its sustainable development advanced possibilities, opportunities and new challenges. It brings technological innovation, revitalization, flexibilities and reengineering of organizational processes after predictable crisis situations course. Important is that this procedure open wide window for 4.0 industry concept i.e. automation, cybernetic, robotized workplaces, flexible automation of machinery, artificial intelligence, manufacturing industry and global competitive common production.

Fig. 1 ´Funnel´ model of Value Added for simple product

2. The Modelling of the Crisis

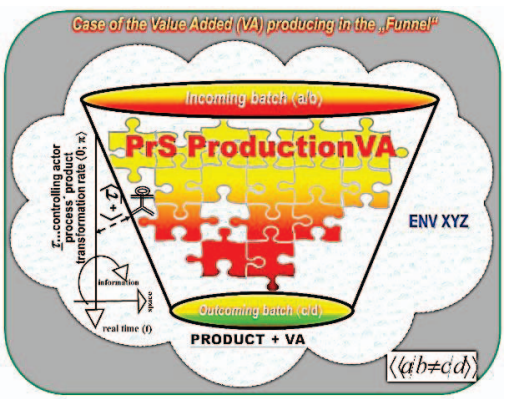

Fig. 1 ´Funnel´ model of Value Added for simple product

The Fig.1 blazonry displays the production scene for the Case of the Value Added (VA) producing in a ´nearly steady funnel phase´ without the crisis. In this economic application of nearly steady uninterrupted (stable, continuous...) phase of production type. Here the lead stars role plays relative quantity of the VA [%], which results from controlling´s function of virtual angle ⟨τ⟩ between real time vector titled ⟨t⟩ and the funnel ´side´. This angle issues above all from production, economic, financial and logistical processes. The blazon at Fig. 1. displays the production scene titled *⟨⟨Case of the Value Added (VA) producing in the „Funnel"⟩⟩*. This use case includes a meta-processor (PrS) titled ⟨⟨PrS Production VA⟩⟩, which has three-dimensional (3D - real time / space / cycled information) funnel´s shape on 3D defined ⟨⟨ENV XYZ⟩⟩, operating according ⟨τ⟩´s controlling. Here the is produced in the proportion to activity batches (cases) titled *⟨⟨Incoming batch ⟨a/b⟩⟩⟩* and/or *⟨⟨ Outcoming batch ⟨c/d⟩⟩⟩*. This is represented by Equation 1 (Urbánek, 2013).

$$a/b \neq c/d \qquad (1)$$

Then, the changes, developed by the processes, are possible evaluate by the help of the ⟨τ⟩, which is representative of the ´transformation rate´ in next Equation 2.

$$\tau = f(t) \qquad (2)$$

The funnel model serves as the modelling entity for quasi steady production processes without crisis.

2.1 *Value Added of Uninterrupted Production*

On the Fig. 2 is horizontally - graphically formulated mathematic dependence of simply operating organization economic product – the VA on real-time vector in the crisis. This VA forms in displayed logistic process system (in pentagonal „arrow" symbol at the top of the blazon), accompanying stable, continuous and undisturbed flow of product batches - the ´multiply funnels´ with a quantity *x/y*. But it is phase, when a reengineering (Hammer&Champy 2000) can prepared the interferences towards the known crisis for continuity organizational production. It is happened within its case *⟨⟨Undisturbed Production Batching x/y Case⟩⟩*, which is enacted in continual frame of VA production in the time period ⟨$t_{u\ start}$; $t_{u\ fin}$⟩. It is possible to derive that transformation angle (see Fig. 2 & 3) $\tau_u = 0°$, containing continual / uninterrupted direction vector of logistic flow batch quantity ***x/y*** with the real-time vector. This angle has zero value in above time period because it needs a balance between contracting outstanding's & liabilities plus organization´s fair profit. So that on upper part of the Fig. 2 is displayed fair logistical process, which produces steady VA, otherwise it to do operating with (maximum) "Operating Value Added" ⇒ ***+OVA ≈ 100%***. In a reality, the **OVA** present then horizontal (growing from the left to right) increasing information vector about the process. Gradual Disruptive Event – GDE´ enters expectedly signalized "Warning" use case to this process in time $t_{u\ fin} \equiv t_{d\ start}$, whose course is

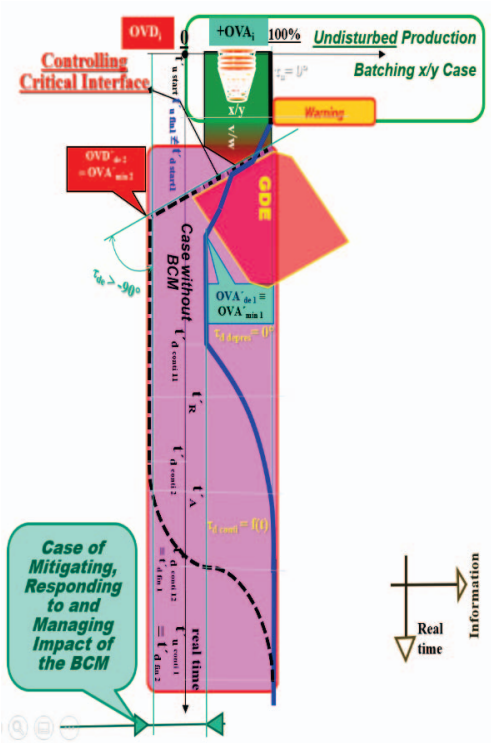

Fig. 2. VA process in the case of gradually disruptive event

slow acting. Then a consequence is instantaneous, it includes transformation minus angle with real-time vector $\tau_{de} \geq -90°$. Or more precisely, this angle is not parallel with information vector (+OVA). This GDE causes restriction of product flow on *z/w* magnitude. See Fig. 2 and 3 where is valid then

$$x/y >> z/w \tag{3}$$

The GDE also evokes regulative processes, leading to the depression and the OVA decreasing. But simultaneously, it creates the background for the resumption of rescue and settling works in the organization. Fig. 3 displays the cases *⟨⟨Undisturbed Production Batching x/y Case⟩⟩* and regulative *⟨⟨Case of Controlling Depression with BCM⟩⟩*. But they are the opportunity for organizational processes reengineering. Second named case full includes interface is titled ´Controlling Critical Interface´ and it is center of our research interest in this paper. This interface is controlling actor (Urbánek J.J. 2015) of the crisis processes. In the graphically formulated mathematic dependence plot of organization after GDE, the line of the depression passing through of the union of cases sets the *⟨⟨Case of Controlling Depression with BCM⟩⟩* (see Fig, 3) and also *⟨⟨Case without BCM⟩⟩*.

The OVA plot can proceed in two cases, which is manifested at Fig. 3:

1st the plot of continuous line representing process development can be managed within *⟨⟨Case of Controlling Depression with BCM⟩⟩*. However, herewith GDE impact in time period $\langle t_{d\ start};\ t_{d\ conti1}\rangle$ the OVA slumps on its minimum quantity $OVA_{min\ 1} \equiv +OVA_{de1}$. This depression is on Figure 3 illustrated by continuous (gray) line, having the angle $\tau_{d\ depres} > 0°$.

2nd The OVA plot process development isn't managed in the *⟨⟨Case without BCM⟩⟩*, then can it go down as far as to the OVA below zero. It means that value added is negative! The result is that OVA virtually becomes „detracted value" and in real-time proceed like -OVD ⇒ "minus Operating Value Detracted". It manifests accounting loss in the organization, due to catastrophic losses of the production capabilities, assets, possessions, even till the infliction of life and health of human sources of heavy injured organization. This functionality is blazonry formalized by (black) dashed line on the Fig. 3. If the organization copes the DE on acceptable level of the OVA´s losses inside acceptable time span, then the time period $\langle t_{d\ start};\ t_{d\ conti11}\rangle$ together with $\langle t_{d\ start};\ t_{d\ conti2}\rangle$ must be found and proceeded inside acceptable and executable time period $\langle t_{d\ start};\ t_A\rangle$.

If the organization derive benefit from business continuity management (see ***1st***) in crisis ⟨⟨Environment of effective BCM⟩⟩ (see Fig. 3), then time period of depression $\langle t_{d\ start};\ t_{d\ conti\ 11}\rangle$. It must be found and running over at the least to the "Target Resumption Time" t_R. It is evidence about successful GDE's encompassment and about successful employment of crisis management at resulting crisis situation in the "Point of Activities Resumption at Acceptable Level of OVA Loss Within Acceptable Time Frame". From this point, the processes of successful recovery with BCM are started and proceeded via controlling by common dependence of variable angle τ, which is demarcated between curve´s guideline of the OVA and between real-time´s vector according to Fig.3. The successful BCM causes a shortening of the time period $\langle t_{d\ start};\ t_{d\ fin\ 1}\rangle$ to the $\langle t_{d\ start};\ t_{d\ fin\ 2}\rangle$. If the Organization disuses efficient BCM, or if it hasn't crisis preparedness from BCP enough mastered, but if it ad hoc faces up to the crisis successfully, then depression time period

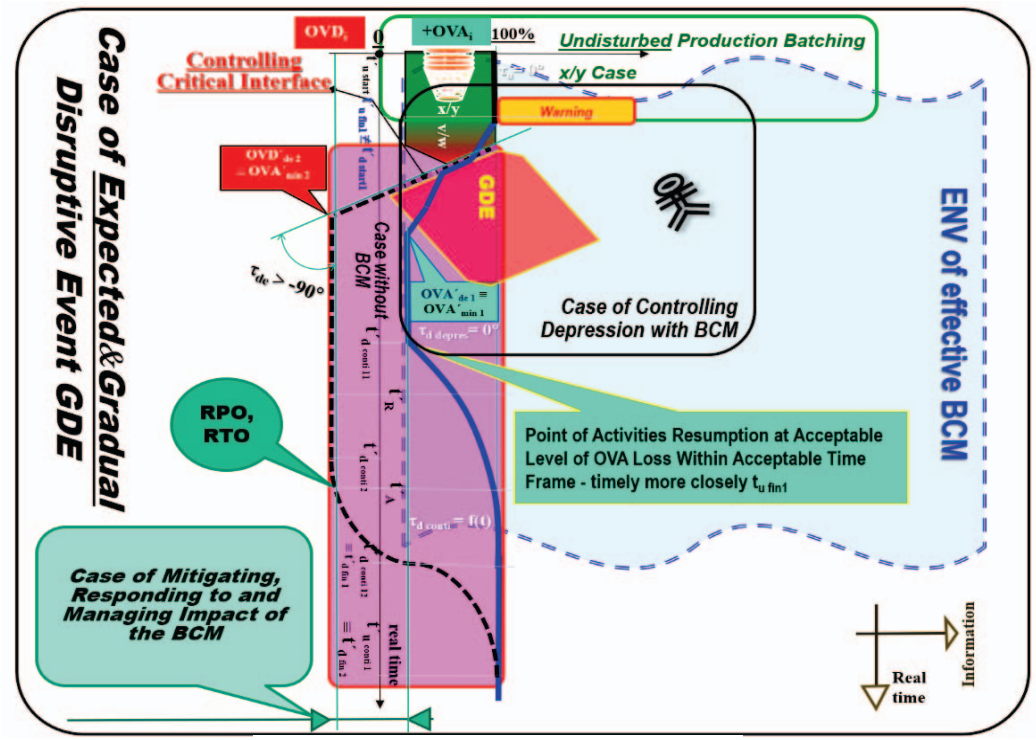

Fig. 3 OVA process of gradually disruptive event´

⟨$t_{d\ start}$; $t_{d\ conti\ 2}$⟩ must be found and proceeded inside acceptable period ⟨$t_{d\ start}$; t_A⟩. It is the evidence about this DE´s and subsequent crisis situation (Barta et al 2015) encompassment without a downfall of the Organization, or at least about not topical catastrophic peril of its existence, or its continuity. The recovery processes without BCM at least begins in the time cut $t_{d\ fin\ 2}$.

Important interfaces and points are displayed on Fig. 3. An RPO is "Recovery Point Objective", identifying maximum tolerable organizational operation functions loss, which cannot be exceeded. Further a RTO is "Recovery Time Objective", identifying acceptable amount of time to restore of organizational functions. A MTPD means "Maximum Tolerable Period of Functionality Disruption", where is valid the time period $t_{d\ fin\ 2}$ minus $t_{u\ fin}$.

If is achieved value added $OVA \approx 100\%$ in the both above-mentioned cases (1st and 2nd), and if the RPO is above $OVD_{de\ 2} \equiv OVA_{min\ 2}$, and if the RTO is before $t_{d\ conti\ 2}$, and if second condition the $MTPD > t_{d\ fin\ 2} - t_{u\ fin}$, than the sudden disruptive event do not causes of continuity injury and of production capabilities. On Fig. 3, the span between the values $OVA_{de\ 1}$ minus $OVA_{min\ 2}$ determines a contribution of successful business continuity management in the ⟨⟨*Case of Mitigating, Responding to and Managing Impact of the BCM*⟩⟩.

3. Conclusions

Paper´s objective was fulfilled by means of crisis interface investigation at the DYVELOP´s blazonry models of the organization. This crisis interface is put as a controlling actor to the time the case of sudden disruptive event, which evokes crisis situation. Important investigative step issues into pertinent choice of dependent variable parameter - Operation Value Added. The condition for the crisis management successful coping of pertinent crisis situation consists in operation value added recognition in dependence to real time cycle. The definition of this cycle case is necessary condition for the encompassment of the both the emergency event and for the mitigation of organization´s damages. Necessary condition for uninterrupted and continuous processes bring for crisis management the fruitfulness, but it needs the share of organizational processes reengineering, for the organizational continuity ability and its sustainable development advanced possibilities. Significant interfaces and points were displayed at the blazons, identifying maximum tolerable functions loss, acceptable amount of time to restore and maximum tolerable period of functionality disruption by means the gradual

disruptive event - without continuity injury of production capabilities of the organizations. The colour blazons are the most comprehensible, using live Power Point presentation. Therefore, they will be presented layer after layer in real time at the Conference.

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