ASSESSING THE FUNCTIONAL ALIGNMENT OF A BUSINESS PROCESS

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ABSTRACT

Researchers are increasingly interested in developing methodologies for verification, validation, and compliance of business process models. We extend process assessment to aspects outside the immediate area of process architecture by considering the correct alignment of a business process within its operational context. Business process alignment is defined as the synchronization of process strategy, functioning, coordination and objectives with organizational strategy and objectives, so as to maximize its integration and effectiveness within the organization process suite. Correct alignment of a business process implies (a) harmonization of its functioning with that of interconnected processes, external events and stakeholders; (b) the capability to function continuously in adverse situations; and (c) recognition of restrictions on organizational resources, infrastructures and practices. We present a methodology to help determine whether a process is adequately aligned with its operating environment; and to help formulate modifications in both these domains in order to achieve this goal.

We detail a template comprising a list of 50 determinants of process and context attributes and capabilities categorized under five headings (the “five Cs"): (1) Content – scope, rationale, relevancy, consistency, transparency and traceability; (2) Continuity – completeness, fault tolerance, empowerment; (3) Constraints – viability, compatibility, recognition of stakeholder involvement, moderation of customer contact; (4) Conformance – security, compliance; and (5) Communication – networking, auditing. The left-hand column of the template, a "Business Process Alignment Checklist", is filled in by the process modeller when a process is designed or reviewed. The right-hand column, a "Business Process Alignment Analysis", is filled in by the process analyst in response to the checklist, and provides remarks and recommendations intended to improve the functional alignment of the process and its operational context. Finally, a joint study of the two columns serves as a powerful stimulant for discussing organizational strategies, policies, procedures and standards, and "out of the box" thinking surrounding the process. The discussion involves six prime areas essential to process alignment and quality: stakeholders, coordination and transfers, continuity, sustainability, knowledge capture, and creativity.

In a term project given to second degree (executive M.Sc.) students, the approach was applied to core processes at their several places of employment (defence, healthcare, aircraft components), resulting in modelling, assessment, and evaluation of seven key processes.

Business process alignment was found to play a important role in recognizing the impact of effective coordination and collaboration between people, the significance of ensuring uninterrupted process execution, and, in general, those managerial aspects to be incorporated into any BPM program.

Keywords: Business process context, business process assessment, business process alignment, alignment assessment template.

INTRODUCTION

Processes are considered a generic factor in all organizations (Smart *et al*, 2009). They are the way things get done. They are also viewed as strategic assets, which require companies to take a business process orientation. Process thinking has become mainstream; and process are regarded as both a business imperative and a means of understanding and explaining business activities – the way customer requirements get transformed into actual goods and services. Furthermore, business process capabilities provide significant strategic opportunities; and the processes themselves may be viewed as strategic assets (Smart *et al*, 2009). They thereupon define a business process as "a set of related activities that create value for customers. The implications of this definition are significant. Businesses provide goods and services to customers; if processes are the means through which those goods and services are delivered, then all businesses have processes".

Hence, in recent years, researchers have become increasingly interested in developing methods and tools for the verification, validation, and compliance of business process models. Verification mainly focuses on avoiding errors at the structural level of the process model; validation takes into consideration the content, data, and context layers, aiming to evaluate the correctness of the related business process logic; compliance addresses verification and validation issues aiming to ascertain whether a process model complies with a reference pattern that can relate either to structure or content – in particular semantics-based validation and sequence validation (Lincoln and Gal, 2011a; Lincoln and Gal, 2011b, Groefsema and Bucur, 2013); and also issues relating to internal and external regulations, policies and standards.

This paper extends the domain of process evaluation to aspects outside the immediate area of process architecture. We consider the correct alignment of a business process within its operational context. Business process alignment can be defined as the synchronization of process strategy, functioning, coordination and objectives with organizational strategy and objectives, with a view to maximizing its integration and effectiveness within the process suite of the organization (KnowledgeLeader, 2014a). Overall, correct alignment of a business process implies (a) harmonization of its functioning and communication with that of interconnected processes, external events and stakeholders; (b) maximization of the capability to function continuously in adverse situations; and (c) recognition of restrictions on organizational resources, infrastructures and practices. The method of alignment discussed in this article is intended to enable a process designer or assessor to establish whether a process is satisfactorily aligned with the setting in which it is intended to operate; and what changes or additions are required to improve its alignment to that setting. Through the use of the framework presented in this article, analysts will be able to describe and explain the process model's degree of alignment – and point out how weak features can be pinpointed and improved (adapted from Morrison *et al*, 2011).

BUSINESS PROCESS ALIGNMENT TEMPLATE

Robertson and Robertson (2013) detail a "Quality Gateway" scheme for testing system requirements for correctness, suitability and the ability to interact successfully with adjacent systems. The scheme comprises several factors: scope (boundary activities), completeness (no missing activities),

traceability (all decisions to be taken traceable to an authorizer), consistency and clarity (all terms understood by all stakeholders), relevancy (process goal accords with organizational goals), viability (process functions successfully within budget and resource restrictions), and meaningfulness (benefits all stakeholders). Luftman (2000) presents six alignment criteria: communications (liaison, sharing, protocols, unambiguousness), competency (continuous improvement, assessments and reviews, benchmarking, metrics), governance (strategy planning, reporting, budgeting, prioritization), partnership (risks, management, relationships, value perception), scope (processes, standards, integration, flexibility), and skills (innovation, management style, readiness for change, loci of power). Shostack (1984) points out that process actions may have three types of interactions with their surroundings: delay points, failure points and contact points. Based on the system alignment model (SAM) (Henderson and Venkatramen, 1992), Aversano *et al* (2012) list several alignment "entities", amongst them: business strategy, organizational structure, human resources, business rules, environmental uncertainty, output misfits, and business and technical skills, knowledge and experience. In addition, the advent of "lightweight" techniques and social networks provides a powerful means for organizational units to intercommunicate and interact (cf. Levy and Karni, 2014). A review of these factors, and a study of further articles dealing with business process management and strategic alignment (Avison *et al*, 2004; Hung, 2006; Wynn *et al*, 2009; Gulledge and Sommer, 2012; Capgemini, 2012; KnowledgeLeader, 2014a; KnowledgeLeader, 2014b; KnowledgeLeader, 2014c), have yielded some 50 factors related to the association between a business process and the setting in which it is intended to function. In these articles, these factors are listed – usually at a generalized process level – but not collected together in a methodology for application at the level of a business process. Our approach is based on a multiple-entry template structured as a list of 50 determinants of process attributes, capabilities and interactions, categorized under five headings ("the five Cs"), and 16 sub-categories (Table 1). The categories and sub-categories typifying a process include:

- content – scope, rationale, relevancy, terminological consistency, and transparency and traceability
- continuity – completeness, fault tolerance and continuity, and empowerment
- constraints – viability, compatibility, recognition of stakeholder involvement, and moderation of customer contact during execution
- conformance – security and compliance
- communication – networking and auditing

These sub-categories can also be grouped in line with our description of the "correct alignment" of a business process:

- harmonization – scope, rationale, relevancy, terminological consistency, transparency and traceability, completeness, compatibility, recognition of stakeholder involvement, moderation of customer contact during execution, networks, auditing
- continuity – fault tolerance and continuity, empowerment, security
- restrictions – viability, compliance

PERFORMING A FUNCTIONAL ALIGNMENT ASSESSMENT OF A BUSINESS PROCESS

The assessment of the functional alignment of the process is carried out in three stages.

Stage 1: the business process alignment (BPA) checklist

The template is first applied to create a "Business Process Alignment (BPA) Checklist" (see Tables 2 and 3 (left-hand columns)). It is filled in by the process modeller or reviewer when a process is designed, redesigned or appraised. His responses are usually: how the process fulfils (or does not fulfil) the capability demanded by the determinant (e.g., delegation of authority: *"the HR department head can improve the conditions offered – within clearly defined limits"*); his own suggestions for modifying the process model (e.g., buttressing delay points: *"in case the HR vice-president is not available, a senior executive should be appointed to act in his stead")*; or his own suggestions for modifying the environment in which the process operates (e.g., *"candidate data is retrieved from several recruitment agency databases – so that for candidates appearing in more than one database the details may differ and need to be reconciled"*).

Stage 2: the business process alignment (BPA) analysis

The template is then applied to produce a "Business Process Alignment (BPA) Analysis" (see Tables 2 and 3 (right-hand columns)). It is filled in by the process analyst, whose responsibility is to go through and examine the responses in the checklist and provide remarks (e.g., *"the requesting department is the main stakeholder!"* – missing from the list of stakeholders), recommendations (e.g., *"complex actions and decisions should be part of organizational standards and procedures and be signed off by all stakeholders"*) and solutions (e.g., *"the agency databases may be inaccessible; the interviewer should consult directly with the head of the requesting department regarding possible candidates"*) – all intended to improve the functional alignment of the process and its operational context (e.g., *"employment practices in benchmark companies should be investigated"*).

Stage 3: evaluation of the business alignment template responses

Further study of the entries in the two template columns serves as a powerful stimulant for discussing organizational strategies, policies, procedures and standards, and for "out of the box" thinking. They suggest six prime categories essential to process alignment – and process quality – into which determinant assessments can be clustered and evaluated:

- Stakeholders – all stakeholders need to be included, and their interests and requirements considered, to ensure that processes are acceptable and that benefits are real (e.g., *"recruitment agency: payment for providing a successful candidate; testing institute: payment for testing candidates; requesting department: staffing a job opening; HR department: performing a department functionality as quickly and as reliably as possible"*). Robertson and Robertson (2013) provide a generic stakeholder map which divides a large list of potential stakeholders into three groups: the operational work area – stakeholders who have some direct contact with the process; the containing business area – stakeholders who benefit from the process in some way, even though they are not in the operational area; and the wider environment – other stakeholders who have an influence on, or an interest in, the process.

- Coordination and transfers – these encompass necessary or recommended transfers of goods, data, information and knowledge between persons or organizational units before, during or after process execution (e.g., *"confirmation is required that the material has been unloaded at the work station"*).
- Continuity – as there will usually be some disturbance while executing the process (e.g., failure or delay points (Shostak, 1984); non-events (Robertson and Robertson, 2013)), some backup and counteracting activities must be integrated into the process in order to avoid local or global disruption (e.g., *"the process must incorporate proper fallback procedures when (a) forklifts are unavailable; (b) stockouts occur; and (c) prioritization cannot be carried out"*). In addition to interfering with the process, such interruptions can also spill over into interfacing processes.
- Sustainability – a sustainable system is built up of three principles: environmental, economic and social (McKittrick, 2011). Environmental principles cover: energy, renewable resources, resource consumption and cost minimization, dematerialization, disposal, recycling, reuse, repair, regeneration, recovery, remanufacturing, and operational and disposal impact mitigation. Economic principles embrace environmental accounting, eco-efficiency, and ethical investments. Finally, societal principles relate to social responsibility, QOWL of employees, employee morale, employee health and safety, saving on operational costs, and reporting to stakeholders (Bakshi and Fiksel, 2003; Glavic and Lukman, 2007; McKittrick, 2011). For example: *"to avoid wastage, materials should be ratified by the shift foreman as being undamaged before transfer to the production line"*.
- Knowledge capture – the increased application of wi-fi and smartphone network communication and Web 2.0 based "lightweight" mechanisms (Levy and Karni, 2014) to accompany "heavyweight" mechanisms allows process execution to be a vehicle for capturing and disseminating real-time knowledge (Levy and Karni, 2014). Lightweight mechanisms allow process operators, owners, beneficiaries, other organizational units, and other stakeholders to articulate and communicate reactions, opinions, recommendations, and even objections, in reaction to incidents occurring during process realization. For example: *"wikis can also be used to encourage worker participation in deliberations regarding operational and quality issues"*.
- Creativity – in order to respond to the lack of a response to a determinant, or an irrelevant or inadequate response, a creative solution is called for. Introducing the solution will, hopefully, overcome the difficulty and markedly improve the process and its operation. These include innovation in strategies ("breaking the rules"), in procedures ("trespassing"), and adoption of ideas from similar or even dissimilar organizations ("imitating") (cf. TRIZ principle #26 (D) – copy creative service concepts across different industries (Karni and Kaner, 2007)). "Two levels of creativity can be identified whether we look at the concept from the product, the person or the process point of view. The one is radical and revolutionary, the other adaptive and confirmatory" (Ekvall, 1997). We are generally interested in adaptive creativity, and not necessarily in radical solutions. For example: *"When rapid product configuration changes occur, manual creation of successive ad-hoc lists of material requirements should be drawn up by the production and inventory managers together".*

The determinant clusters can then provide a general overview of the process alignment quality – either for an individual process, or for a group of interconnected processes.

CASE STUDY

The alignment concept and assessment template were taught within the framework of a second degree course "Advanced Approaches in Business Process Management" given to second degree (executive M.Sc.) students in Industrial Engineering. As part of the term project, the methodology was to be applied at their several places of employment in the defence, healthcare, and aircraft component industries. Each group modelled a core process, and filled in a BPA checklist. Seven processes were investigated: creation and authorization of a purchase request ("*purchase*"), standard customer order entry and authorization ("*customer*"), employee recruitment and hiring ("*recruit*"), software modification project proposal ("*software*"), creation and authorization of a production order ("*produce*"), and issue of raw materials for a production order ("*issue*"). In this article we detail the responses for two processes ("*issue*" and "*recruit*") in Tables 2 and 3 (left-hand columns) (stage 1). After receiving the results from the students, we performed the BPA analyses, using the corresponding process flowcharts and checklists, in Tables 2 and 3 (right-hand columns) (stage 2).

EVALUATION OF THE ALIGNMENT TEMPLATE RESPONSES – PROCESS LEVEL

Process: material issue from stores to production

The checklist and analysis responses, together with the process flowchart, were evaluated. From this, we compiled a list of the major concerns to be dealt with (relating to 20 determinants):

- Improve confirmations of, and consultation about, material and information flows (11)
- Institute fallback solutions and processes (4)
- Clarify and simplify priority rules (3)
- Extend the use of networking tools to reinforce inter-unit communication (2)

Process: recruiting and hiring a new employee

The checklist and analysis responses, together with the process flowchart, were evaluated. From this, we compiled a list of the major concerns to be dealt with (relating to 19 determinants):

- Improve confirmations of, and consultation about, information flows (5)
- Improve endorsement and signing-off procedures (4)
- Institute fallback solutions and processes (4)
- Extend the use of networking tools to reinforce inter-unit communication (4)
- Institute auditing procedures to improve process performance monitoring and improvement (2)

EVALUATION OF THE ALIGNMENT TEMPLATE RESPONSES – ALL PROCESSES

A final assessment, based on determinant clustering, was made for all seven processes – but mainly for the "issue" and "recruit" processes. (Selected determinants are referenced by process, determinant number, and column ('c' (check-list) or 'a' (analysis)).)

Stakeholders

From the cluster we learned that:

- Major stakeholders are often omitted
- There are few procedures in place for consulting and signing off stakeholders during design or improvement activities
- There is little or no planning for stakeholders in the operational work area (see above) to consult each other during process operation
- On the other hand, the "purchase" process has a *dynamic* list of signatories for authorizing process outputs

For example:

- A sign-off is required from all stakeholders (Issue, 5, a; Recruit, 28, a)
- There are no consultations with production regarding (a) stockout situations; (b) fast track unscheduled strategies for obtaining required materials (Issue, 6, a)
- Flowcharts have to be checked and signed off by all stakeholders (Recruit, 5, a; Produce, 5, a)
- Complex actions and decisions should be part of organizational standards and procedures and be signed off by all stakeholders (Recruit, 6, a; Customer, 6, a)
- The requesting department is the main stakeholder! (Recruit, 27, a)
- A dynamic list of authorizers is generated by the finance department and incorporated in each process instance (Purchase, 7, c)

Studying the stakeholder map (see above) would help avoid many of the omissions noted in the observed responses, and also would help ensure that the attitudes and decisions of relevant stakeholders, regarding process functionality and outcomes, would be taken into account.

Coordination and transfers

From the cluster we learned that:

- Updatedness of input or retrieved data is not confirmed
- There is a lack of consultation between "players" in regular and irregular circumstances
- Streaming and confirmation of process inputs and outputs (tangible and intangible) is poor
- For example:

- Confirmation of the updatedness of the production plan and material list is missing (Issue, 9, c)
- There are no consultations with production regarding (a) stockout situations; (b) fast track unscheduled strategies for obtaining required materials (Issue, 6, a)
- There is no transfer of the contract to the requesting department; no introduction of the new employee to the department (Recruit, 1, a)
- The process should include an endorsement by the requesting department before the candidate is finally approved (Recruit, 22, a)
- The process must include notifying the production department that the production order approval has reached the production line (Produce, 9, a)
- The process must include notifying the sales department that the customer order has reached the product warehouse (Customer, 9, a)

From these examples we see the importance of communicating and confirming the start and/or end of a significant process action so as to ensure smoothness of operation within and between processes, avoidance of disruption, and validation of inputs and outputs and their flows.

Continuity

From the cluster we learned that:

- It is important to incorporate and activate fallback procedures in the event of lack of materials, resources, data and personnel
- It is important to incorporate and activate fallback procedures when non-events, delays or failures crop up
- Use clear and simple (where possible) decision or business rules (e.g., to break ties)
- For example:
- The process must incorporate proper fallback procedures when (a) forklifts are unavailable; (b) stockouts occur; and (c) prioritization [a transfer sequence change] cannot be carried out (Issue, 11, a)
- The material request should also be accessible to the forklift operator to avoid delays should the picking list seem to be incorrect (Issue, 35, a)
- In case the HR vice president is not available, a senior executive should be appointed to act in his stead (Recruit, 15, c)
- When an agency database is not accessible, organize with a recommended candidate to come to an interview and bring an updated resume (Recruit, 19, a)
- A list of suggested suppliers, provided by the requesting department, should accompany each purchase request to expedite the process (Purchase, 3, a)
- A fast track cancellation process should take place if the customer reneges on the order after it has been received in the product warehouse (Customer, 11, a)

Sustainability

From the cluster we learned that:

- Plan and monitor material quantities, flows and quality
- Be concerned with employee welfare
- For example:
- To avoid wastage, the process should require materials to be ratified by the shift foreman as being undamaged before transfer to production (Issue, 45, a)
- A study should be made of the HR interface to sustainability: QOWL of employees, employee morale, employee health and safety, and savings on operational costs (Recruit, 45, a)
- To avoid wastage, the process should require material quantities to be ratified by the production manager to ensure that an uncalled-for "safety" amount has not been added to the production order (Produce, 45, a)
- To avoid wastage, the order picking activity should include a check that products are undamaged (Customer, 45, a)

In general, in the same way as a stakeholder map can be drawn up (see above), an analogous map of sustainability determinants can be put together for the process designer to consider (Karni and Dror, 2014).

Knowledge capture

From the cluster we learned that:

- SMS and smartphones are sometimes used to transmit information in real time
- The whole topic of social networks for gathering operational knowledge is still in its infancy (cf. Levy and Karni, 2014)
- Many entries are missing ("none" or "not answered"), indicating a lack of awareness of knowledge capture or its application
- For example:
- SMS should also be used to confirm the transfer and correctness of the materials and quantities received (Issue, 46, a)
- Wikis can also be used to encourage worker participation in deliberations regarding operational and quality issues (Issue, 47, a)
- Further application of BI to real-time inventory and production management procedures should be explored (Issue, 48, a)
- An HR social network should be set up within the organization to elicit comments and suggestions from employees (Recruit, 46, a)
- An HR social network should be set up within the organization to discuss work practices and norms (Recruit, 47, a)

- SMS should be used to report a stockout or the undesirability of a customer (Customer, 46, c)

Creativity

From the cluster we learned that:

- Innovative solutions often require a change in equipment or procedures
- The whole topic of social networks as a means for eliciting innovative solutions to problems is still in its infancy (cf. Levy and Karni, 2014)
- Many entries are missing ("none" or "not answered"), indicating a lack of awareness of innovation or its relevance
- For example:
- When rapid product configuration changes occur, manual creation of successive ad-hoc lists of material requirements should be drawn up by the production and inventory managers together (Issue, 19, c)
- Robotized picking of standard material will reduce reliance on operator availability (Issue, 31, c)
- The general WIP store may be used for temporary storage of transferred materials (Issue, 13, a)
- The process should allow an alternative fast track procedure to be activated if operators are not available (Issue, 17, a)
- Wikis can also be used to encourage worker participation in deliberations regarding operational and quality issues (Issue, 47, a)
- A dynamic list of authorizers is generated by the finance department and incorporated in each process instance (Purchase, 7, c)

DISCUSSION AND CONCLUSION

How well an organization manages the fit between its processes and its institutional elements is captured by the concept of Process Alignment. Process Alignment can be interpreted as the organizational effort needed to make processes the platform for organizational structure, for strategic planning, and for information technology. Its aim is to arrange the various parts of the company to work in harmony in pursuit of common organization goals, in order to improve performance and sustain competitive advantage (Hung, 2006). Fulfilling this aim, at the basic functional level, requires an audit of each process – or least the core processes in the organization. Presenting an assessment in checklist-template form is one technique for effective auditing. The methodology provides a detailed and uniform record of the specific areas and activities to be investigated during the audit; helps to ensure that reviewers and analysts are well briefed about the audit objectives; permits the team leader to evaluate the work carried out by other members of the team; helps to control the ‘pace’ of the audit; and facilitates team organization when there is need to reassign part of the audit from one member to another (adapted from South East Training, 2010).

Our template structure is based on a three level taxonomy of factors relating to the connection between a business process and its operational context; this enables an assessment to be made at the determinant level (*"ability to continue the process despite the disruption"*), the sub-category level (*"fault tolerance"*), or the category level (*"continuity"*). Thus judgments and recommendations can be made at each level: specific (*"the general WIP store may be used for temporary storage"*); within category *("the process must incorporate and activate a proper fallback procedure when a non-event occurs"*); and categorical (*"it is important to incorporate and activate fallback procedures when non-events occur due to problems with materials, resources, data, personnel and customers"*).

The findings of this research have implications for the practice of Business Process Management (BPM) and provide a useful insight for organizations that implement BPM as a strategy for gaining organizational efficacy and competitive advantage. As a core concept, business process alignment plays a important role in recognizing the impact of effective coordination and collaboration between people, the significance of ensuring uninterrupted process execution, and, in general, those associated managerial aspects to be incorporated into any BPM program.

Based on the result and discussion of our research, one of our future research avenues is to extend the research model to further business processes, and to develop the clustering approach in order to refine the categories and the set of determinants in the template.

Table 1. Determinants for assessing the functional alignment of a business process model

Determinants for assessing the functional alignment of a business process model
Content
▪ **Scope**
1. Process activity space and boundaries
▪ **Rationale**
2. Reasons for inclusion of specific activities or decisions
3. Reasons for exclusion of specific activities or decisions
▪ **Relevancy**
4. Only relevant data is input or retrieved and utilized; no data duplication
▪ **Terminological consistency**
5. Consistent and unambiguous flowchart descriptors
6. Complex action or decision descriptors clarified for all stakeholders
▪ **Transparency and traceability**
7. Sources of requirements and constraints of the process details
Continuity
▪ **Completeness**
8. Transaction fully processed
9. Missing components
10. Missing inputs/outputs/retrieved data
11. Non-events
▪ **Fault tolerance and continuity**
12. Possible internal disruption (non-event) during process execution (e.g., customer behaviour)
13. Ability to continue the process despite the disruption
14. Buttressing of failure points
15. Buttressing of delay points
16. Substitute (fallback) performer
17. Substitute (fallback) process
18. Possible external disruption preventing (continuation of) process execution (e.g., computer failure)
19. Alternative process to execute or complete process despite the disruption
20. Existence of a transaction cancellation process
▪ **Empowerment**
21. Delegation of authority
22. Authorizations (intra-process)

Determinants for assessing the functional alignment of a business process model
Constraints
▪ **Viability**
23. Operates within manpower constraints
24. Operates within resource constraints
▪ **Compatibility**
25. Interfaces and formats compatible with interconnected processes and databases
26. Synchronization or coordination of process execution with interfacing or concurrent processes
▪ **Recognition of stakeholder involvement**
27. Stakeholders
28. Process acceptability
29. Process benefits
▪ **Moderation of customer contact during execution**
30. Increase contact
31. Decrease contact (simplification, automation)
32. Eliminate contact ("do it yourself")
Conformance
▪ **Security**
33. Confidentiality
34. Authorizations (inter-process)
35. Accessibility to business data and process outputs
▪ **Compliance**
36. Laws and regulations
37. Privacy
38. External standards
39. Internal policies, procedures and standards
40. Audit standards
41. Mandatory professional qualifications for process performer
42. Mandatory administrative qualifications for performer to access data and information
43. Mandatory professional qualifications for output authorizer
44. Mandatory administrative qualifications for output authorizer to access data and information
45. Sustainability policies and practices
Communication
▪ **Networking**
46. Asynchronous communication via forums or blogs
47. Asynchronous communication via wikis
48. Asynchronous communication for business intelligence (BI) analysis
▪ **Auditing**
49. Asynchronous audit trail logs
50. Asynchronous performance measurement logs

Table 2: BPA checklist and analysis for assessing the functional alignment of a material issue process

BPA checklist *Material issue from stores to production*	*BPA analysis* *Material issue from stores to production*
Content	
Scope	
1. Begins with a material request by production and ends with the unloading of the material at the designated workstation	No confirmation and verification of the transfer transaction is obtained from production
Rationale	
2. A request importance test is included in order to allow urgent material requests to be prioritized	Satisfactory
3. Production personnel and processes are not interfaced in order that frequent considerations of product changes will not interrupt the issue process	A fast track option is not explicitly incorporated into the process as it is an emergency strategy only and should not be encouraged

BPA checklist *Material issue from stores to production*	*BPA analysis* *Material issue from stores to production*
Relevancy	
4. The process input/output requirements were checked and no data duplication discovered	Satisfactory
Terminological consistency	
5. This was not checked	A sign-off is required from all stakeholders
6. This was not carried out	There are no consultations with production regarding (a) stockout situations; (b) fast track unscheduled strategies for obtaining required materials
Transparency and traceability	
7. A full requirements report was obtained from the production department	Both the inventory manager and production manager (and even the marketing manager) must agree upon and recognize prioritization rules applied in the process
Continuity	
Completeness	
8. The following activities are executed: material request received, production plan check, availability of materials handling equipment and operators, material picking, material issue, transfer of material to production, unloading of material at the designated work station	Confirmation that the material has been unloaded is required
9. Confirmation of the updatedness of the production plan and material list is missing	The process must include ongoing consultation with production regarding (a) stockouts of required materials; (b) turnaround times; and (c) prioritization rules
10. A check reveals that all data is provided to and used by the process	Satisfactory
11. No allowance is made for there being no (or not enough) stock available (probably due to inventory system errors) when the forklift operator reaches the appropriate shelf location	The process must incorporate proper fallback procedures when (a) forklifts are unavailable; (b) stockouts occur; and (c) prioritization [a transfer sequence change] cannot be carried out
Fault tolerance and continuity	
12. Notification is given of changes in material list; no forklift vehicle or operator available	The designated work station unloading area may be occupied and blocked by a previous material transfer (e.g., a split transfer)
13. The production plan provided at the beginning of a shift is frozen and followed unless the shift foreman – and he only – authorizes changes	The general WIP store may be used for temporary storage
14. Two material requests may have the same priority; no solution for this appears in the process	FIFO should be used in this case as a tiebreaker
15. It is proposed that FIFO be used in all cases instead of issuing delays caused by carrying out a priority analysis	Satisfactory
16. It is proposed that robotized picking be used for standard materials	Robotized picking is unacceptable as it demands a substantial change in materials handling procedures. In the short term (a) an operator from a later shift can be called in; (b) a fast track procedure can be activated. In the long term a temporary operator can be hired from a recruiting agency
17. It is proposed that robotized picking and FIFO be used for standard materials	Robotized picking is unacceptable as it demands a substantial change in materials handling procedures. The process should allow an alternative fast track procedure to be activated
18. A major revision of the product configuration leads to the necessity for a significant change in the material list	Satisfactory
19. When rapid product configuration changes occur, manual creation of successive ad-hoc lists of material requirements are drawn up by the production and inventory managers together	Satisfactory
20. There should be a process for the return of an incorrect transfer (material or quantity)	A retraction process should be put in place to return damaged or excess or unwanted materials to the store

BPA checklist *Material issue from stores to production*	*BPA analysis* *Material issue from stores to production*
Empowerment	
21. The shift foreman decides on prioritization and on changes in the material list	There is a lack of consultation with production when problems are encountered
22. The forklift operator may not intervene in prioritization decisions	In view of the fact that the loading limit is not the only criterion for safe handling, the forklift operator should be able to express his opinion about authorizing the transfer
Constraints	
Viability	
23. The number of material requests that can be handled is dependent on the number of available forklift operators	Hitting constraints is unacceptable. A proper approach to scheduling needs to be put in place
24. The number of material requests that can be handled is dependent on the number of available forklift vehicles [vehicles and operators are not "paired off"]	Hitting constraints is unacceptable. A proper approach to resource allocation needs to be put in place
Compatibility	
25. Material descriptions in picking lists are identical to those in the production plan and material request	Satisfactory
26. The process generates a transaction to update inventory balances as soon as the issue transaction is confirmed by stores personnel	The process should generate a notice of transfer to production as soon as the issue transaction is confirmed by stores personnel; a corresponding notice of receipt should be generated by production as soon as unloading of the batch has taken place
Recognition of stakeholder involvement	
27. Forklift operators, inventory personnel, production personnel, production manager, logistics manager, company CEO, company owner	Marketing and sales are also stakeholders!
28. Forklift operator: from picking through transferring; production: material receipt through machine loading	Irrelevant answer. Process provides materials to production through various strategies: recognizes request urgency; and prioritizes and expedites material picking and transfer activities; before the process is implemented, it must be signed off by all stakeholders
29. Ability to adhere to production and marketing timetables	Satisfactory
Moderation of customer contact during execution	
30. The shift crew is given a bonus if the prioritized issue process conforms to expectations	Irrelevant answer. The process must incorporate increased and coordinated consultation with production (the "customer") during receipt of the request and transferring the batch to the work station in both regular and irregular circumstances
31. Robotized picking of standard material will reduce reliance on operator availability	Irrelevant answer. Communication via SMS can substitute for increased contact procedures
32. Should a crisis occur during production, production personnel can fetch material directly from stores, bypassing normal inventory handling procedures ("fast track")	A fast track inventory management procedure should be available in such instances to maintain information integrity
Conformance	
Security	
33. Not relevant to this process	Satisfactory
34. Stores and production personnel are authorized to transfer material from stores and to accept material into production	Satisfactory
35. All process-related data and inputs/outputs are accessible to the shift foreman and production manager only	The material request should also be accessible to the forklift operator to avoid delays should the picking list seem to be incorrect
Compliance	
36. Safety regulations regarding the use of forklift equipment, maintenance and operation	Also safety regulations regarding the loading and use of pallets
37. Not relevant	Satisfactory

BPA checklist *Material issue from stores to production*	*BPA analysis* *Material issue from stores to production*
38. Official certification of forklift operators	Satisfactory
39. Forklift operator performance standards; procedures for consulting the shift foreman	Authorized rules for prioritization of requests; acceptable norms for the time it takes to carry out all the necessary procedures between receiving a request and the completion of the task
40. Auditing of data integrity and process performance	Auditing of stock availability, stockouts and correctness of materials and quantities transferred
41. Certified forklift operator	Satisfactory
42. Operator is familiar with the materials, issue process details, and information created and used during the process	Satisfactory
43. Certificate in inventory management	Satisfactory
44. Shift foreman is familiar with the materials, issue process details, information created and used during the process, forklift loading limits, and performance standards	Satisfactory
45. The process is carried out according to accepted industrial hygiene, safety and quality standards	To avoid wastage, the process should require materials to be ratified by the shift foreman as being undamaged before transfer to production
Communication	
Networking	
46. Changes in the production plan and stockouts are reported via SMS between production and inventory personnel	SMS should also be used to confirm the transfer and correctness of the materials and quantities received
47. It has been put forward that a proposal – increasing the number of hours worked on Thursdays to ensure fulfilment of the weekly schedule – be discussed via wikis	Wikis can also be used to encourage worker participation in deliberations regarding operational and quality issues
48. Notices of forklift problems are transferred to BI for forklift availability and quality analyses	Further application of BI to real-time inventory and production management procedures should be explored
Auditing	
49. Incidences of stockouts and production plan changes are reported	Incidences of damaged materials should also be reported
50. Material requests versus material issued; level of agreement between priorities demanded versus actual [sequencing of] material transfers	The process should record the interval between receiving a request and material unloading next to the designated work station

Table 3: BPA checklist and analysis for assessing the functional alignment of a recruitment and hiring process

BPA checklist *Recruiting and hiring a new employee*	*BPA analysis* *Recruiting and hiring a new employee*
Content	
Scope	
1. From receipt of an available job opening through recruitment and hiring of a suitable candidate	No transfer of the agreement to the requesting department; no introduction of the new employee to the department
Rationale	
2. As the job requirements are severe, it is necessary to check whether the candidate is interested at all	Satisfactory
3. Drawing up of a personalized contract is not included as there is a standard contract for all employees	Satisfactory
Relevancy	
4. Candidate data is retrieved from several recruitment agency databases – so that for candidates appearing in more than one database the details may differ and need to be reconciled	A check whether the candidate appears in several agency databases should be made and data differences reconciled

BPA checklist *Recruiting and hiring a new employee*	*BPA analysis* *Recruiting and hiring a new employee*
Terminological consistency	
5. This was not checked	This has to be checked and a sign-off is required from all stakeholders
6. This was not carried out	Complex actions and decisions should be part of organizational standards and procedures and be signed off by all stakeholders
Transparency and traceability	
7. Candidates have demanded to know all required qualifications and experience and their relationship to the job opening	All clauses in the job description should be read out and explained to the candidate
Continuity	
Completeness	
8. The process incorporates candidate search, interview, agreement on contract conditions by the HR department and the new employee, signing the contract	Copies of the contract should be transferred immediately to the salary and employing departments
9. The as-is process does not give the candidate the possibility of opting out at any stage; the vice-president for human resources (HR vice president) is not given the option of rejecting the candidate	The process should include the possibility that the candidate wishes to opt out at any stage; the HR vice president should be given the option of rejecting the candidate
10. To our best knowledge all data concerned with the job opening, recruitment and hiring is obtained and used in the process	Satisfactory
11. The candidate may refuse to provide information or may contradict information recorded in the agency databases	The process should take this eventuality into account and terminate the interview if the problem is not resolved
Fault tolerance and continuity	
12. The HR vice president may not be available in order to complete the hiring of the candidate	The psychotechnical testing institute may not be available in order to complete the hiring of the candidate
13. The interview with the HR vice president may be bypassed for low-level job openings. It may not be bypassed for senior positions; the candidate will have to return at a later stage to complete the process (but see answer 15)	The process should explicitly incorporate alternative courses of action: (a) a senior HR executive should be appointed as a stand-in; (b) another institute should be called in
14. The candidate is provided with the opportunity to opt out at any stage; the reasons for this and suggestions for possible improvements in the recruiting and selection process are recorded so as to avoid this happening	Satisfactory
15. In case the HR vice president is not available, a senior executive should be appointed to act in his stead	The process should explicitly incorporate the alterative of turning to a senior HR executive
16. Basically, if there is no HR recruiter available, the process cannot be carried out	The process should allow for an "escalation": a senior HR executive should be called in to sit with the head of the requesting department and together to carry out the interview
17. No alternative process is implementable	Satisfactory
18. A promising candidate is located on the job candidate database, but the candidate cannot arrive for an interview because of e.g., a transportation strike	The agency databases may be inaccessible; the interviewer should consult with the head of the requesting department regarding possible candidates
19. Organize with the candidate to go to a nearby videoconferencing center for conducting the interview	Organize with a recommended candidate to come directly to an interview and bring with him an updated resume
20. No employee retraction process exists to deal with the case that the new employee decides in spite of everything not to take the job	A retraction process should be put in place should a new employee decide, in spite of his signing a contract, not to take the job
Empowerment	
21. The HR department head can improve the conditions offered – within clearly defined limits	The process should include a consultation with the requesting department regarding improved conditions

BPA checklist *Recruiting and hiring a new employee*	*BPA analysis* *Recruiting and hiring a new employee*
22. The HR department head and the HR vice president have full authority to approve or reject the candidate	The process should include an endorsement by the requesting department before the candidate is finally approved
Constraints	
Viability	
23. The number of interviews that can be handled is dependent on the number of available interviewers	Urgent requirements or filling senior positions should be given priority
24. Psychotechnic testing capability is limited by the room size and computing facilities made available for this purpose	Urgent requirements or filling senior positions should be given priority
Compatibility	
25. Results of the interview are registered on a prearranged form which guarantees that all necessary information is passed to the HR and requesting departments; the contract is standard and incorporates all the conditions required of and offered to the new employee	Satisfactory
26. The process is dependent on the updatedness of the recruiting agency databases; the search is set in motion as soon as notification of a job opening is received	The process must include notifying the requesting department that an interview for the job opening is underway
Recognition of stakeholder involvement	
27. Recruitment agencies, HR personnel, HR department head, HR vice president, job candidates, job applicants, psychotechnical testing institute	The requesting department is the main stakeholder!
28. Not answered	Before the process is implemented, it must be signed off by all stakeholders
29. Agency: payment for providing a successful candidate; testing institute: payment for testing candidates; requesting department: staffing a job opening; HR department: performing a department functionality as fast and as reliable as possible	Satisfactory
Moderation of customer contact during execution	
30. Remain aloof throughout the interview to keep the candidate in suspense and improve the negotiating position	The process should incorporate an improved interview script and a visit to the requesting department
31. Send job details to the recruiting agencies to minimize the necessity for explanations to the candidates	Satisfactory
32. Not relevant	Satisfactory
Conformance	
Security	
33. The contract is known only to the new employee and the HR department; the psychotechnical testing institute may not receive information regarding any previous testing of the candidate	The contract should also be made known to the salary department and senior management
34. The salary department has full access to the employee database	Satisfactory
35. The HR department is authorized to add any relevant information regarding the new employee to the employee database	Satisfactory
Compliance	
36. National labour laws, contract format and conditions	The contract format and conditions should be reviewed periodically
37. All employee-related documents are archived with limited access to authorized personnel	Satisfactory
38. None	Employment practices in benchmark companies should be investigated

BPA checklist *Recruiting and hiring a new employee*	*BPA analysis* *Recruiting and hiring a new employee*
39. Standardized job descriptions; no hierarchical relationships between family members	Satisfactory
40. No answer	Auditing of improved conditions offered and accepted
41. Some of the HR personnel have a first degree in HR management	Familiarity with the company hiring policies required
42. Free access to all data processed by the HR department	Satisfactory
43. Not answered	Familiarity with the company hiring policies required; familiarity with the company professionalism standards required
44. At least a first degree in HR management	Satisfactory
45. Policy of "selling" the company to promising candidates to increase the attractiveness of the company and the will to work there	A study should be made of the HR interface to sustainability: QOWL of employees, employee morale, employee health and safety, and savings on operational costs
Communication	
Networking	
46. None	An HR social network should be set up within the organization to elicit comments and suggestions from employees
47. None	An HR social network should be set up within the organization to discuss work practices and norms
48. None	Application of BI to HR management procedures, and statistics regarding the interview process and its outcomes, should be explored
Auditing	
49. None	The process should incorporate the collection of statistics regarding the interview process and its outcomes
50. None	New employee performance should be monitored and compared with the interview evaluation

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