

ISO 9000 Quality Systems Handbook Additional Resources

Process Descriptions

Process descriptions are required indirectly by ISO 9001 in clause 4.4 and are necessary in ensuring the effectiveness of the QMS because they contain or reference everything that needs to be known about a process. Applying the theory in Chapter 9, the essential elements would be as follows:

Process purpose – why the process exists expressed as what the process has been set up to do.

Process objectives – what the process aims to achieve as expressed in Table 1

Table 1 Level of detail on process objectives

Objective	Measure	Method	Target	Frequency of measurement	Responsibility
The measurable results the process is intended to deliver	The characteristics by which performance is judged (not the level of performance; this is the target value)	The method of measurement E.g Inspection, test, analysis, demonstration, simulation validation of records	The level of performance to be achieved. E.g Standard, specification, requirement, budget, quota, plan	How often the measurements are taken	The person or role responsible for measuring performance

Process risk – what could go wrong in producing the required outputs within the designated constraints as expressed in Table 2

Table 2 Level of detail on process risk

Risk	Effect	Cause	Probability	Controls
The potential failure mode or hazard <ul style="list-style-type: none"> How might this process fail to meet the requirements? What could happen which would adversely affect performance? What would a stakeholder consider to be unacceptable? 	The anticipated effect of this failure mode/hazard on the process outcome	The probably causes of the failure/hazard	The probability that this failure/hazard could occur	The controls in place to <ul style="list-style-type: none"> detect this failure/hazard prevent this failure/hazard from occurring or reduce it effects control this mode of failure

Some examples follow

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Risk assessment of a process for a creating a demand				
Risk	Effect	Cause	Probability	Controls
Failure to target correct market segments	Decline in the number of invitations to tender	Poor promotion	Moderate	Promotion plan
Failure to correctly position the business		Poor competitive analysis	Moderate	
Failure of promotion to reach targeted market		Poor marketing communication	High	Monitoring of enquiries
Ultimate client unaware of the organization's abilities		Identifying the decision makers and decision takers	High	Promotion plan
Range of services no longer matches customer need	Erosion of market share	Not identifying and acting upon market signals	High	Requirement review
Missing opportunities to tender in local area	Lost revenue	Not close enough the customer	High	Promotion plan

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Risk assessment of a process for managing physical resources				
Risk	Effect	Cause	Probability	Controls
Assets acquired at premium prices	Erosion of profit	Failure to establish price variation before purpose	Moderate	Price testing before purpose
Acquiring equipment that is not capable of fulfilling the intended purpose	Loss of use Frequent breakdown	Inadequate specification of purpose Buying on unit price alone	Moderate	Asset acquisition planning
Delayed arrival on site	Cannot start job on time	Poor maintenance or wear out of vehicle	Moderate	Planned maintenance by approved workshops
		Accident on highway	Moderate	Plan slack in journey
Products fail in use	Public safety hazard	Inferior quality products supplied	Moderate	Receipt checks and supplier quality tests
		Abuse by contractors/public		Emergency call-out service Inspection & maintenance regime on site
Incorrect products delivered	Delay in use	Supplier error	Moderate	Orders to use industry standard identification codes
		Ordering error	Moderate	Orders checked before release
Theft of tools and equipment from workshops/vehicles	Cannot honour commitments to customers	Inadequate security in workshops and vehicles	Moderate	Security system
Theft and vandalism of equipment on site	Public safety hazard	Abuse by public	High	Emergency call-out service Inspection & maintenance regime on site

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Risk assessment of a process for managing information resources				
Risk	Effect	Cause	Probability	Controls
Failure to deploy correct information to point of use	Service fails to meet legal requirements	Inadequate distribution or notification process	Moderate	Standards update notification alert
Failure to locate pertinent information	Cannot validate results	Poor data traceability	High	Documents to carry unique identification
Loss of data	Cannot run the business effectively	Inadequate filing	Moderate	Common filing system
		Poor security	Moderate	Buildings/Sites locked and alarmed when not in use
		Computer failure	High	Daily back-up of data
		Data retrieval failure	Moderate	Disaster recover procedure

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Risk assessment of a process for managing human capital				
Risk	Effect	Cause	Probability	Controls
Numbers of registered operatives available falls below 8	Cannot execute Major Works in compliance with Sector Scheme	Industrial dispute Epidemic	Low	Weekly review of manning levels
Insufficient numbers of trained personnel available when required	Work declined	Failure to recruit sufficient competent people	High	
	Work not undertaken in a timely manner	Inadequate training and motivation	Moderate	Probationary period and supervision
Failure to recruit staff with the right attitude towards work	Damage to reputation	Inadequate screening	High	Applicants screened for correct behavioural traits during recruitment interviews
				Probationary period and supervision
Work overload	Stress and accidents	Exceeding capacity	Moderate	Resource planning
		Changing personal circumstances		Culture that is sympathetic to individual needs
Sickness	Increasing workload on others	Various	High	Team building
Accidents	Increasing workload on others	Distractions	Moderate	Care taken in assigning work
		Negligence	Moderate	Training
		Poor planning	High	Use of method statements and PPE
		Poor implementation		Training

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Failure of staff to deliver the required results	Increasing number of errors and dissatisfied customers	Competence not maintained	Moderate	Operative certification/recertification
				Staff assessment

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Risk assessment of a process for managing financial resources				
Risk	Effect	Cause	Probability	Controls
Invoices not paid on time	Delayed revenue	Invoices not presented according to client rules	Moderate	Invoices checked before submission
Cheques bounce	Lost revenue	Low customer integrity	Very Low for Major Contractors but	Credit checks on suspect customers
Customer's inability to pay	Unrecoverable debt	Low customer integrity	High for small works and equipment hire	
Accounts imbalance	Late payment penalties	Tardy record keeping	Moderate	Install accounting software
				Employ competent accountants
Cannot pay fixed costs	Increasing debt to the bank	Taking on commitments without security	High	Expenditure regulation provisions
Customer declines to pay invoice	Delayed revenue	Inadequate justification of costs	High	All invoices to detail costs as per Tender
		Not getting up front agreement from customer to design changes	High	Obtain customer agreement to changes before implementation
Supplier declines purchase order	Breakdown in trust	Supplier owed money by FTM	High	Accounting software flags outstanding supplier invoices
Customer neglects to pay invoice by due date	Delayed revenue	Customer's payment policy	Very High	Accounting software flags outstanding customer invoices

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Risk assessment of a process for fulfilment of demand				
Risk	Effect	Cause	Probability	Controls
Inability to service new and existing contracts	Customer dissatisfaction	Taking on commitment beyond capacity	High	Decision to bid based on schedule impact
Bidding for work beyond the organization's capability	Get into difficulty and lose customer confidence	Not understanding customer needs	High	Requirement analysis and customer discussions before acceptance
		Ignoring current capability to win business	Low	Conduct impact analysis before submitting bid
		Underestimating the organization's potential capability	High	Introduce Project Planning
Underestimate the resources required to execute the work	Lose money	Lack of experience	High	Provide access to previous budgets/spend for similar designs
Overestimating the resources required to execute the work	Bid rejected			
Non-compliant design	LA/HA rejection	Not using latest highway regulations	Low	Subscribe to update service
		Misinterpreting the regulations		Independent design review
Projects competing for the same resources	Scheduling conflict	Demand on resources customer driven	Very High	Negotiate start times
				Employ subcontractors
Subcontractors fail to perform to requirements	Increased risk	Subcontractor selection ineffective	Moderate	Screen subcontractors using employee criteria
Installation not executed to plan	Delays	Customer changes requirement	Low	Change control

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Risk assessment of a process for fulfilment of demand				
Risk	Effect	Cause	Probability	Controls
Unplanned demand on resources	Creates scheduling conflicts	Client incurs difficulties	High	Reschedule
Equipment failure on site	Disruption to traffic flow	Poor maintenance	Moderate	Preventive maintenance programme established
		Vandalism	High	Emergency call-out service Inspection & maintenance regime on site
Loss/damage to customer property		Negligence	Very low	None

Process activators – what event, time or input triggers or energizes the process.

Process operation – what the process does expressed in a diagram or narrative that identifies:

- **Inputs** expressed in terms of their nature and origin,
- **Activities** expressed as a sequence or series of actions and decisions necessary to verify process inputs, plan, produce, check and rectify the process outputs together with assigned responsibilities.
- **The criteria** are defined in specifications and standards
- **The methods** are defined in procedures or work instructions when appropriate. Where there are exceptions, options or alternatives courses of action for particular cases these should be included but don't try to address all possible exceptions – apply the 80/20 rule;
- **Constraints** expressed in terms of the policies, regulations, codes of practice, codes of conduct and other conditions that govern the manner in which the activities are carried out;
- **Outputs** expressed in terms of their nature and destination.

Human resources – what the process needs to do what it is supposed to do, when expressed as the capacity and competency needed to achieve the process objectives see Table 3

Table 3 Level of detail on human resources

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Process Stage	Results	Units of competence	Assessment method	Evidence required	Performance criteria	Number Required
What action or decision must be taken?	What must be achieved?	What must the person be able to do to produce this output?	How should assessment be conducted?	What evidence should be collected?	How well must this be achieved?	Number of people required with this competence at this stage

Physical resources expressed as the capacity and capability needed to achieve the process objectives in terms of the plant, facilities, machinery, floor space, instrumentation, monitoring equipment, calibration etc.

Process constraints expressed as the statutory and legal regulations, corporate policies and other conditions resulting from the analysis of critical success factors that constrain the manner in which the process operates, can be contained in tables with cross references to other process elements.

Process reviews – how the process is controlled, expressed as:

- *Performance reviews* performed to an established schedule in accordance with defined methods to determine whether the process objectives are being achieved;
- *Improvement reviews* performed to an established schedule in accordance with defined methods to establish whether there are better ways of achieving the process objectives than those that are currently prescribed;
- *Effectiveness reviews* performed to an established schedule in accordance with defined methods to establish whether the process objectives, measures and targets remain aligned to the business objectives and stakeholder needs.

Clearly this description goes well beyond the content of a procedure. It also goes well beyond flow charts. Flow charts depict the steps in a process but do not fully describe a process. Don't try to include everything; the process description is a model of reality not a complete specification that has to explain everything so a computer can run it. There may be aspects that are nice to include but make maintenance of the description very difficult. There may be many unknowns that can stay unknowns but going through the process of asking the questions will by itself reveal much about the process that you need to know to manage it effectively e.g. knowing why provision was made for mistake proofing a stage is useful when reviewing process performance and undertaking changes so that essential elements are not removed through ignorance of why they were included.