Amity Journal of Training and Development
2 (2), (13-23)

Risk Based Approach in Management of Multi-disciplinary Training Programmes in R&D Organisation

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Abstract

The paper, training process in an R&D organisation having multi-disciplinary training requirements, analyses the training process organized at multiple centres. For effectiveness of Training Management Process (TMP), a qualitative risk based approach is applied which aims to identify the potential risks in process and provide treatment plan for reducing or mitigating such kind of risks. Using Consequence and Likelihood criteria, identified risks are categorised as low, medium or high. The paper also highlights the three high risks identified in the Training Management Process, their treatment plan and improvement achieved on its implementation.

Keywords: Training Management Process, Training Needs Assessment (TNA), Centre for Training Management, Training Completion Report, Risk

JEL Classification: M53, D81, G32, J89

Paper Classification: Research Paper

Introduction

In an R&D based organization having centres located in various parts of the country, management of training is a big challenge, because of multi-disciplinary training requirements, as well as to cater to employees of different rank having different educational background. To fulfil such kind of training requirements, a systematic process is required which will identify need-based training requirements from different work centres, identify good quality training institutes to execute effective training programmes and to establish controls to monitor effectiveness of such programmes.

Risks are involved in different stages of training management process and in order to achieve process objectives, risk based thinking in planning and design of process is useful. Risk based thinking in processes is discussed in available literatures (ISO 9001, 2015 & AS 9100C, 2016). Existing literature also discusses the impact of risk on business (Frame, 2003), risk management guidelines and risk assessment techniques (ISO 3100, 2018 & IEC/ISO 31010, 2009). It has been observed that, though risk based thinking is widely applied in design and development of products, its application in design and delivery of services is limited.

Accepting the fact that specific literature is not currently available pertaining to application of risk-based thinking in management of training process, proven tools and techniques of risk assessment and treatment from available literatures have been referred to in conducting this research study (Al-Olimat, 2008; Ishikawa & Loftus, 1990; Aven, 2008; Mahto & Kumar, 2008).

Training Management Process

Training Management Process (TMP) commences with Training Needs Assessment (TNA) data collected by Centre for Training Management (CTM) from different work centres of the organisation. After receiving training needs from various centres, data is analysed and training areas of common interest are identified. There is a practice of obtaining training proposals from at least three training institutes, for conducting each training programme. An expert committee examines such proposals and based on predefined criteria, recommends an institute for a particular programme. Proposal is subsequently forwarded to sanctioning authority for scrutiny and financial sanction. After receiving sanction for all training programmes for a particular financial year, training calendar is published and circulated to all work centres of the organization, for wider publicity and participation. Training Programmes are announced at least 75 days before the commencement of respective programmes, to seek nomination of training participants from across the organisation. Participants can send their nomination in prescribed format within a month of announcement. After receiving the nomination from various centres, information is entered in Training Information System (TIS). Nominations for a programme are confirmed as per number of vacancies available and confirmation letter is forwarded to respective centres of organization with necessary information. Before commencement of a training programme, confirmed list of participants along with other necessary formats of Training Completion Report (TCR) is forwarded to the respective training institute.

During training, a coordinator visits the training institute for monitoring the programme and provides training feedback to CTM. Training institutes also collect reaction feedback of training programme from participants and forwards to CTM along with TCR. After receiving TCR, feedback is analysed and documented. Corrective actions, if required, are initiated for continual improvement. Finances are settled after receiving the necessary bills/invoices.

What Is Risk?

Risk is an undesirable situation or consequence that has both a likelihood of occurring and a potentially negative consequence (AS 910C, 2016; ISO 3100, 2018; Frame, 2003)

Risk Based Thinking

TMP spans across all activities of Training Management starting from identification of training and concluding at closure of programme. In risk-based thinking, potential risks associated with all activities of the TMP are identified.

After identification of risk, respective root causes of risks are determined. These root causes are categorised as per their likelihood of occurrence and their consequence on end results, using a Consequence/Likelihood (MS IEC/ISO 31010, 2011) Matrix. Appropriate Risk Treatment Plan is drawn on the basis of level of risk and existing risk controls. Block diagram illustrating Risk Based Thinking (IEC/ISO 31010, 2009; ISO 9001, 2015; Aven, 2008) in Training Management Process is illustrated in Figure 1.

Figure 1. Block Diagram of Risk Based Thinking in TMP

Methodology

All activities of the TMP were examined and risks were identified through Brainstorming technique (Al-Olimat, 2008). Cause and effect analysis (Ishikawa & Loftus, 1990) was conducted involving experts, to identify possible causes of risk. Each cause was analysed using two Risk Criteria (MS IEC/ISO 31010, 2011) – Likelihood and Consequence. Subsequently, Overall Risk Scoring (MS IEC/ISO 31010, 2011) was done using Likelihood/Consequence Matrix

Risk Based Thinking in Training Management Process

Activities of training management process have been critically examined to identify risks based on events that might create, enhance, prevent, degrade, accelerate or delay the achievement of objectives of TMP. In addition to the sources of risk, their causes, impact & potential consequence was also analysed. They have been subsequently evaluated in terms of two elements of Risk Criteria namely, Likelihood of occurrence and Consequence of the risk event. Existing Controls which are in place have been evaluated and Risk Treatment Options are finalized, considering the Existing Controls and Overall Risk Assessment Score calculated for each individual risk identified. Overall Risk Assessment Score of a particular risk event was calculated from the Likelihood/ Consequence Matrix. Overall level of risk was determined as low, medium or high from the grid shown in Figure 2.

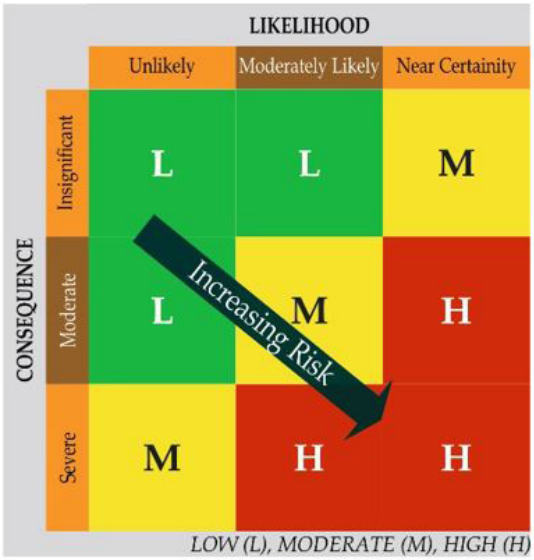

Figure 2. Likelihood – Consequence Matrix

Table I. Risk Register of TMP

S.n.	Risk Identified	Causes	Likelihood	Consequence	Overall Score	Existing Control	Status of Existing Control	Treatment Option
1	Wrong Identification of Training Programme	a. TNA Not considered	UL	S	M	TNA Analysis	E	NA
		b. Previous feedback nor considered	UL	S	M	TNA Analysis	E	NA
2	Wrong design of training programme	a. Wrong design input	UL	S	M	Review of design, Verification of design	E	NA
		b.Wrong experts selected in design committee	UL	S	M	Approval of Committee, Review of Design	E	NA
3	Training Programme not sanctioned on time	a.DHRD Guidelines not followed	UL	M	L	Divisional Procedure, Approval by Head/ Director	E	NA
		b.Insufficient information in SOC	UL	M	L	Divisional Procedure, Approval by Head/ Director, DHRD Guidelines	E	NA
4	Annual Training Calendar (ATC)not Published on Time	Sanction not received for proposed programmes	ML	M	M	Timely Submission of SOC/Reminders	E	NA
		Delay in Processing ATC	ML	S	H	No Control	P	As per Action Plan

5	Insufficient Nominations received	Wrong Programme/design	UL	S	M	Review of design/ approval of Calendar	E	NA
		Programme not announced at time	UL	S	M	Reminder in Training software	E	NA
		Clashing with major DRDO event	UL	S	M	Reschedule to empty slot in TTC/TI for in-house programme	F	To explore alternate slots for outsource programme.
6	Advance Not Paid to institute on time	Advance processing not initiated on time	ML	S	H	No control	P	As per Action Plan
7	Withdrawal of Candidates below minimum batch size after confirmation	Unforeseen circumstances	UL	S	M	Rescheduling	F	To explore alternate slots for outsourced programme
		Due to official exigency/personal reason	ML	S	H	No control	P	As per Action Plan
8	Final settlement not made on time	Late receipt of bills	ML	S	H	No control	P	As per Action Plan

Legends: UL–Unlikely, ML –Moderately Likely, S –Severe, L – Low
M –Moderate, H –High,E – Effective, P – Poor, F – Fair

A risk register (ISO 9001, 2015) is prepared containing all the above discussed information which is illustrated in Table 1. For risk at LOW level, existing controls were effective and no action was required. For risk at MODERATE level, existing controls were evaluated for effectiveness. Risk treatment is necessary only when controls were found to be less than effective. For risk at HIGH level, action plans were prepared and implemented (Ishikawa & Loftus, 1990; Mahto & Kumar, 2008).

HIGH risks identified in the TMP, their root causes, existing controls and treatment plan are described below:

Risk 01: Withdrawal of candidates below minimum batch size

Whenever an institute is finalized for imparting training, a minimum batch size is decided mutually, for which the institute charges payment irrespective of the actual number of participants attending the programme. Participants are selected from different workcentres, on the basis of their nomination and other criteria. It is ensured that the minimum batch size for each programme is achieved. One risk area identified is late withdrawal of confirmed participants from a programme.

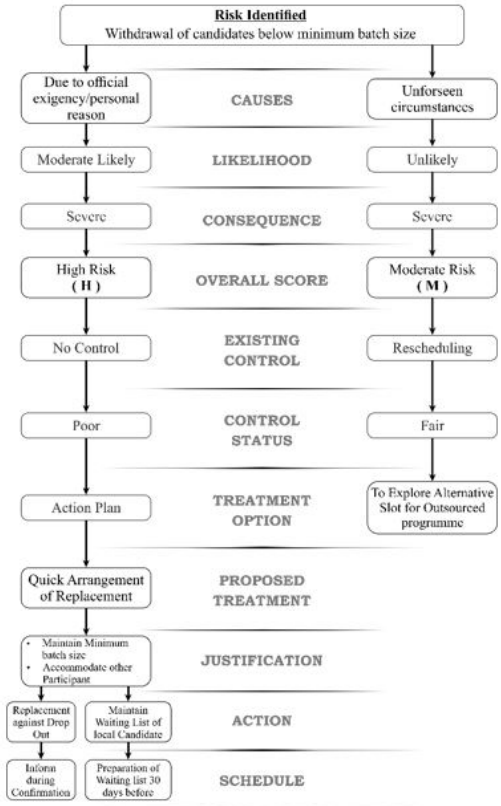

Figure 3. Withdrawal of candidates below minimum batch size

Root Cause identified for the above risk are described below:

(i) Unforeseen circumstances (like some event involving majority of workcentres).

(ii) Individual withdrawal because of personal/official exigency specific to a particular participant.

For (i) above, Level of Likelihood criteria is "Unlikely", and Level of Consequence Criteria is "Severe". From Likelihood/Consequence Matrix, the overall scoring for this cause is moderate. Existing Control of "Rescheduling" is available to address this risk.

For (ii) above, Level of Likelihood Criteria is "Moderately likely" and Level of Consequence Criteria is "Severe". Overall Scoring for this is HIGH. At present no control was found to exist to treat this risk and control status is "Poor". An action plan has been drawn which is described below:

Proposed Treatment for this risk has been decided as:

Two specific actions are decided to address the risk.

1. To maintain a waiting list of participants preferably from local work centres. Such participants can join the programme in short notice.
2. During confirmation, confirmed work centre participants can be requested for a replacement, on event of late withdrawal.

Risk 02: Annual Training Calendar (ATC) not published on time

CTM publishes an Annual Training Calendar, for information to all work centres regarding details, duration and venue of all the training programme planned in the following financial year. It is extremely important that the calendar is published timely every year.

Root Causes identified for above risk are as below:

(i) Sanction not received for proposed training programmes.

(ii) Delay in processing of ATC.

For (i), Level of Likelihood Criteria is "Moderately Likely" and Level of Consequence Criteria is "Moderate" yielding an overall score of MODERATE. Existing control like "Timely submission of case along with requisite documents" are in place and effective. Hence, no specific Action Plan is required.

For (ii) Level of Likelihood is "Moderately Likely" and Level of Consequence is "Severe" which yields an Overall Assessment Score of HIGH. Existing Controls found to be poor and an Action Plan was prepared.

Proposed Treatment decided as "Switching to in-house design of ATC" in place of Outsourcing Design. Communication with external design agency is time taking and there is often a gap between requirement and deliverables. It has been observed that monitoring of external service provider is difficult. Since competence and resource for design of ATC was available in-house, it was planned to develop in-house design. It was decided to continue outsourcing of printing work of ATC, as earlier.

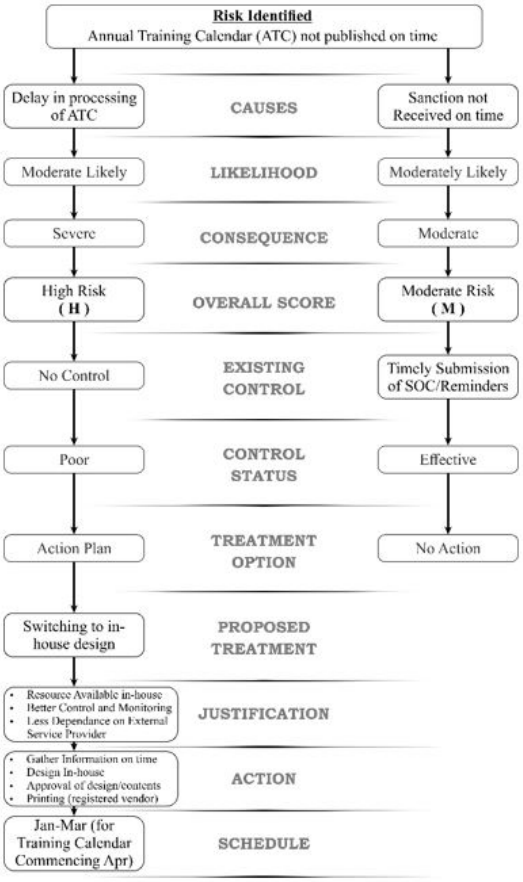

Figure 4. Annual Training Calendar Not Published on Time

Risk 03: Advance not Paid to Institute on Time

Some institutes demand partial payment of the training fees prior to conduct of programme. Risk of missing out on payment of advance can be attributed to the "Non-processing of advance on time". Level of Likelihood is "Moderately Likely" and Level of Consequence is "Severe" which gives an overall score of HIGH. Currently, no control was found to exist to address the same. Since the source of the risk was identified as non-initiation of advance payment process, a reminder was considered necessary for triggering the activity. An advance reminder option was incorporated in the TIS which was programmed to flash a reminder, 45 days before commencement of the programme. Screenshot of TIS is illustrated in Figure 5.

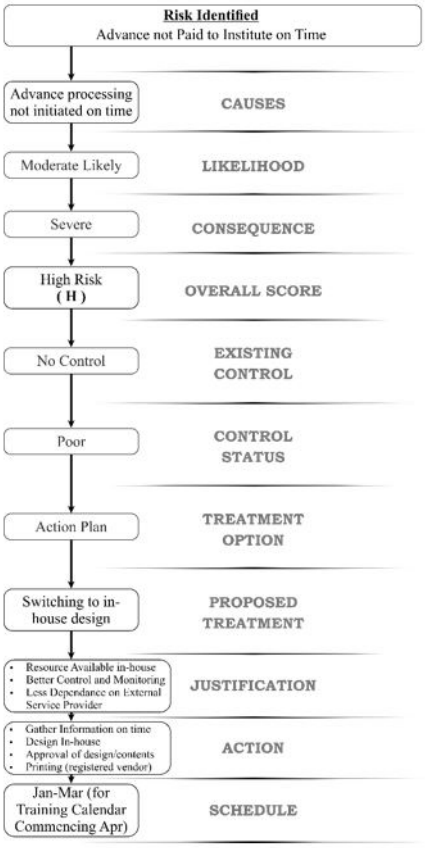

Figure 5. Advance Not Paid To Institute on Time

Training Dashboard

SN	Course Title	Venue
1	Induction Course for DRTC (Eligibility: TECH 'A')	DRDO TI, DL, Jodhpur
2	Basic Technology Management	ITM, Mussoorie
3	Induction Course for DRTC (Eligibility: STA 'B')	DRDO TI, DL, Jodhpur
4	CNC Machining and its Fundamentals Adv!	APEX, Bengaluru
5	Dynamic Web Designing using PHP Adv!	APEX, Bengaluru
6	Induction Course for DRTC (Eligibility: STA 'B')	TTC, Bengaluru
7	Engineering Drawing & Drafting using AutoCAD	FTI, Bengaluru

Figure 6. Screenshot of TIS

Result and Discussion

For the risk identified as "Withdrawal of Candidates below minimum batch size", two actions were implemented in FY 2017-18:

(i) Replacement against drop outs.

(ii) Maintenance and Upgradation of Waiting List of local participants.

The above actions have reduced the average percentage of absentees in training programmes, when compared with figures of FY 2016-17. This is illustrated in Figure 6.

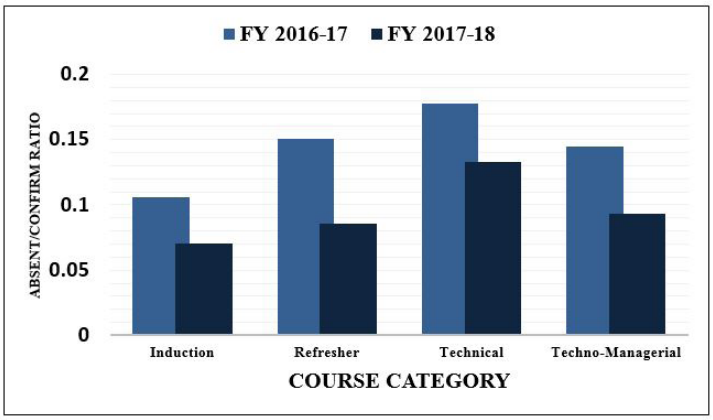

Figure 6. Result after implementation of treatment action

The Absent/Confirm Ratio of participants shows significant reduction in FY 2017-18 as compared to FY 2016-17.

For the risk identified as "Annual Training Calendar (ATC) not Published on Time", action plan implemented as below:

(i) Timely collection of information for SoC.

(ii) In-house design of ATC and outsourcing printing job from external service provider.

Above strategy has reduced the cycle time of preparation of ATC significantly.

For the risk identified as "Advance Not Paid to Institute on Time", a reminder was incorporated in TIS for initiation of advance processing. As a result, in FY 2017-18, delay in advance processing was significantly reduced.

Conclusion

It has been observed from the study that qualitative risk-based approach is effective in management of risks in a service process like training management. When risks are systematically identified, assessed and treated in training management process, significant improvements like reduction in absenteeism in training programmes and effective monitoring of training process can be achieved. The risk scores can be periodically re-evaluated to identify evolving risk areas and treatment can be applied accordingly.

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