

6TH Borneo Conference and Exhibition on Occupational Safety and Health

**“Industry Transformations : OSH
Engagement for future skills and works”**



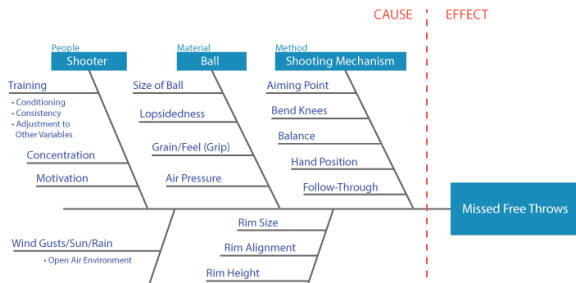
MR AZIZIE HAMID

Training Manager

NIOSH Certification Sdn Bhd



Effective Fundamental Tools in Occupational Health and Safety Management System



Risk Matrix

		Likelihood of Occurrence			
		Very Unlikely Little or no chance of occurrence	Unlikely A rare combination of factors would be required for an incident to result	Possible Not certain to happen but an additional factor may result in an accident	Probable More likely to occur than not
Hazard Severity	Minor No or minor injury (first aid)	CARE	CARE	CARE	CAUTION
	Moderate Off-site medical treatment or "DAFW"	CARE	CARE	CAUTION	ALERT
	Serious More than one DAFW, long-term absence	CARE	CAUTION	ALERT	STOP!
	Major Permanent disability or harm, fatality	CAUTION	ALERT	STOP!	STOP!

DAFW - Day Away From Work

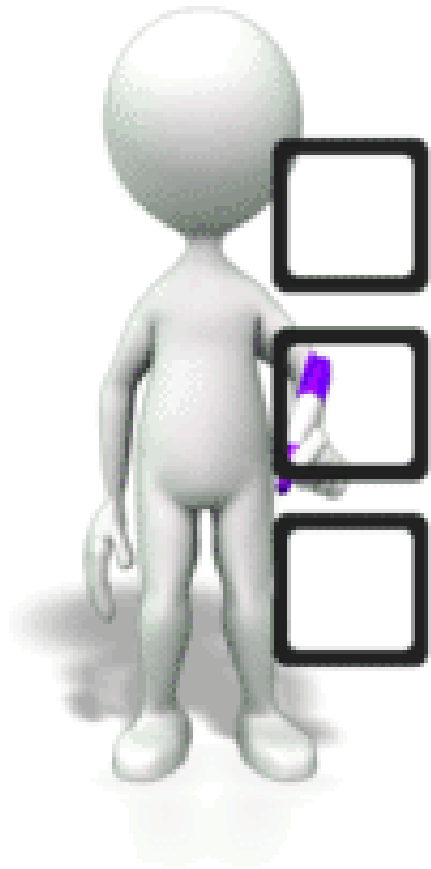
CARE	Minor harm possible, serious harm very unlikely to occur; implement controls and ensure care is taken when performing activity.
CAUTION	Minor harm probable, major harm unlikely to occur; follow all control measures, increased level of competence required and ongoing self-assessment of risks identified.
ALERT	Moderate degree of harm probable but major harm unlikely; critically assess the risks and appropriate controls. Specific competence required and ongoing assessment of risks by individual and/or supervisor.
STOP!	Serious or major harm will probably occur; stop the activity and critically assess the risks, review safety aspects of activity and implement further, appropriate controls. Consider referencing HSE or other Best Practice, consider involving HSS.

Potential Failure Mode and Effects Analysis (FMEA)

Item	Function	Requirements	Potential Failure Mode	Potential Effect of Failure	Potential Cause of Failure	Current Process Controls	Desired Process Controls	Recommended Actions	Responsibility & Target Completion Date	Action Results
FMEA										



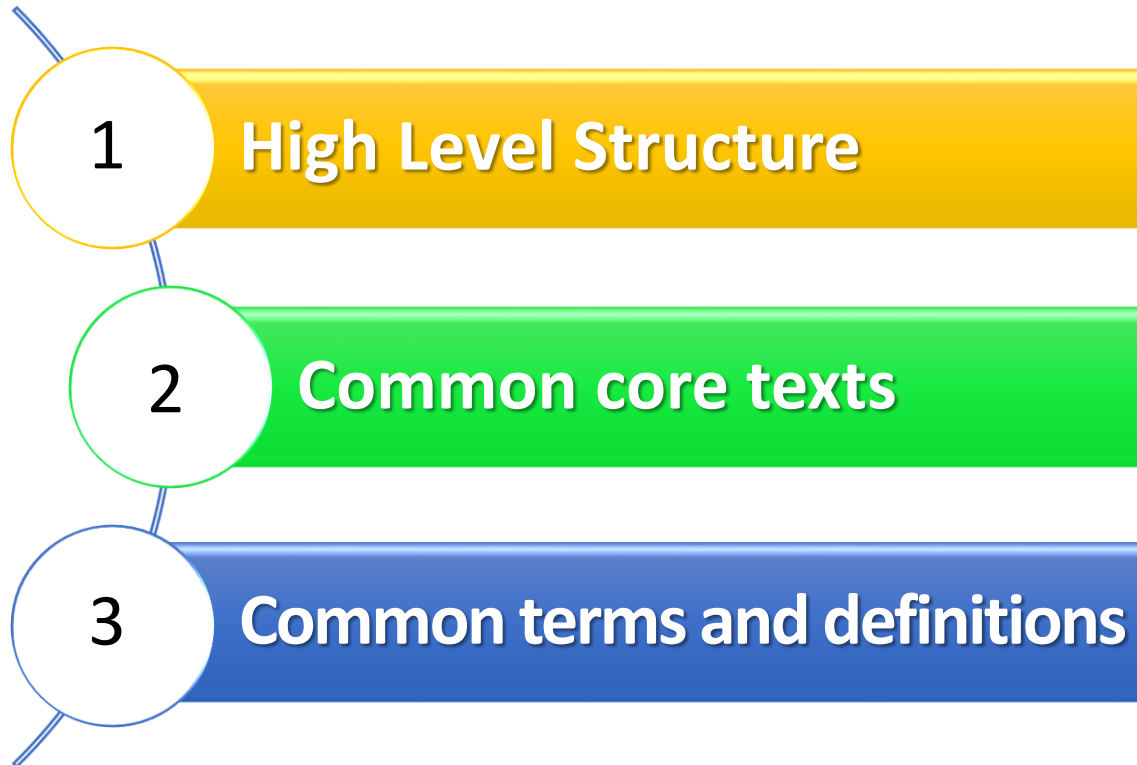
OBJECTIVE



- Brief of understanding “**High level Structure**” in Management System
- Tools in OHS Management System “**PDCA Concept**”
- ISO 30101:Risk Assessment

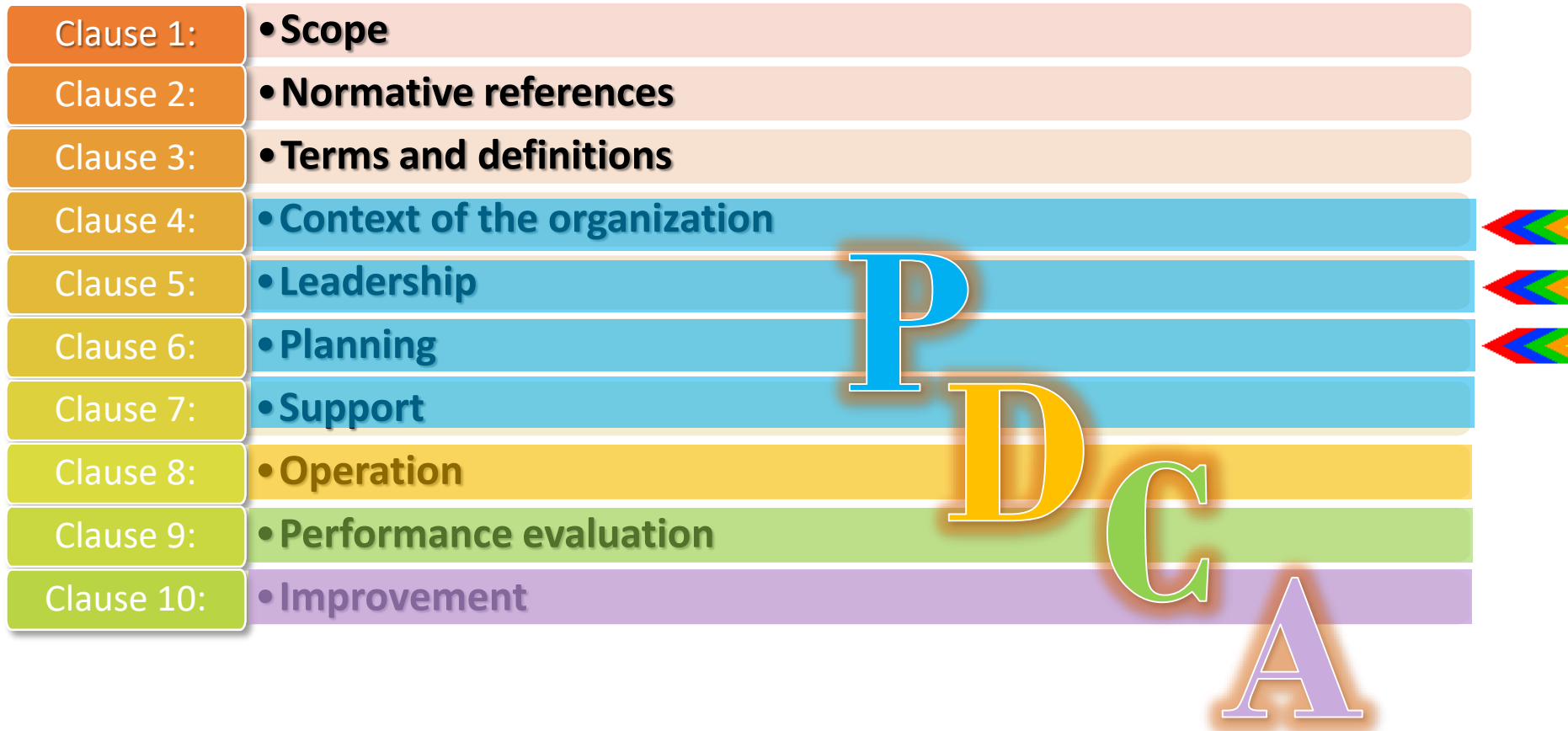
High Level Structure (HLS) – ISO Management System Standard

- Since 2012 ISO requires that all its management systems standards to adopt Annex SL – which now has been changed to Annex L as per ISO/IEC Directives, Part 1

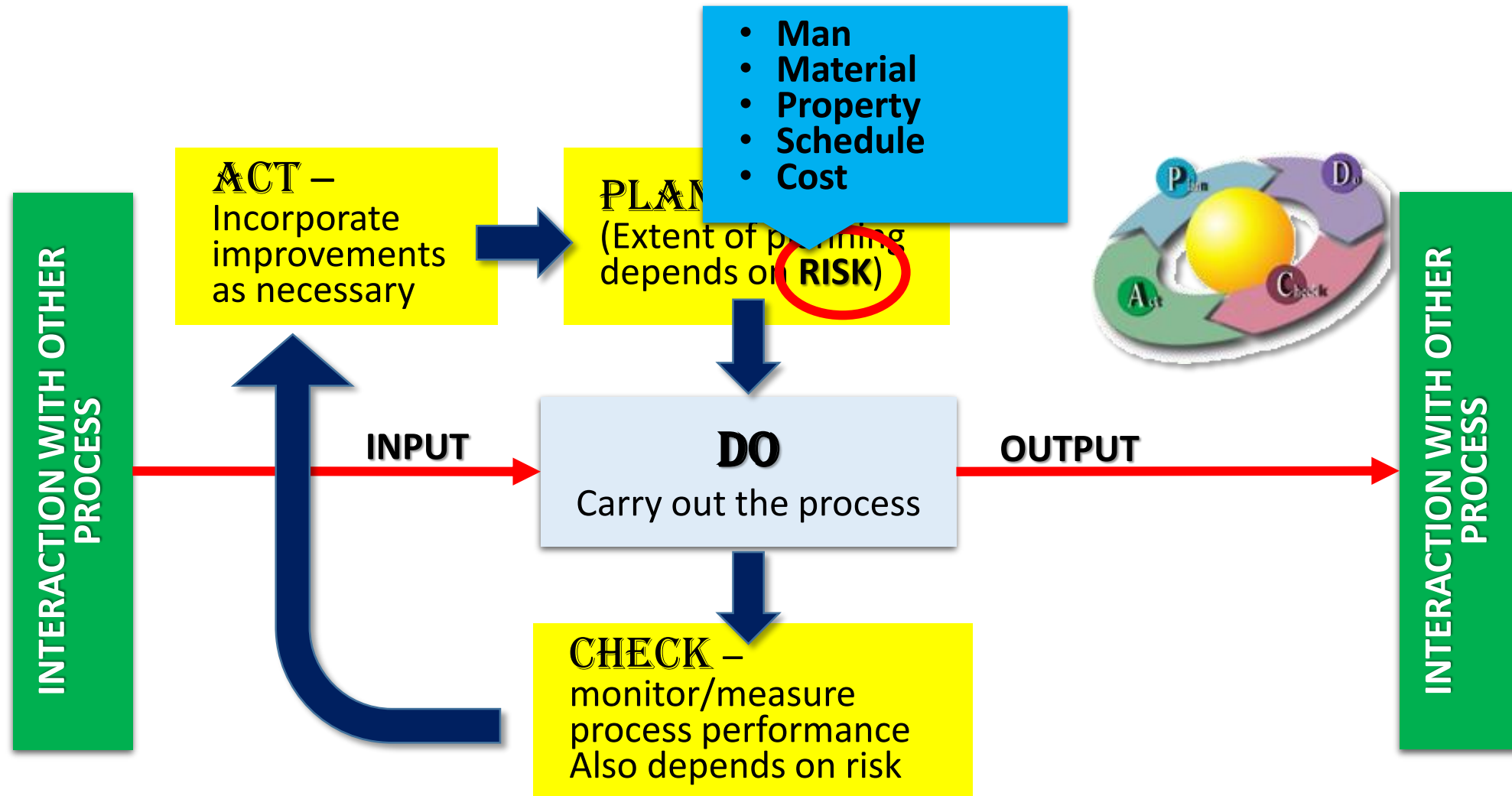


1st implementations new HLS (end of 2015), after the publication of ISO 9001:2015-QMS, and ISO 14001:2015-EMS

Annex SL – High Level Structure (HLS)

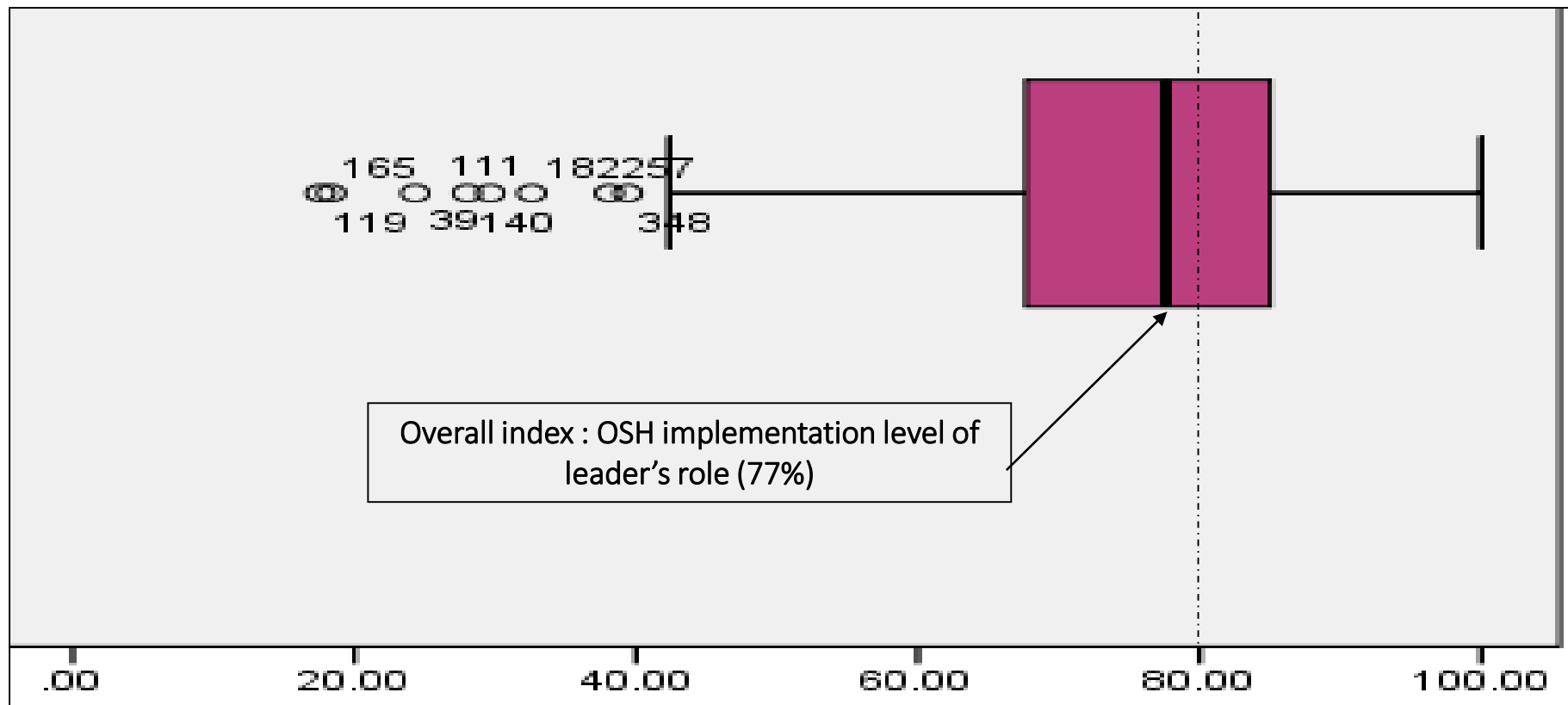


Tools in PDCA Concept



Index of OSH Implementation Level by Leader

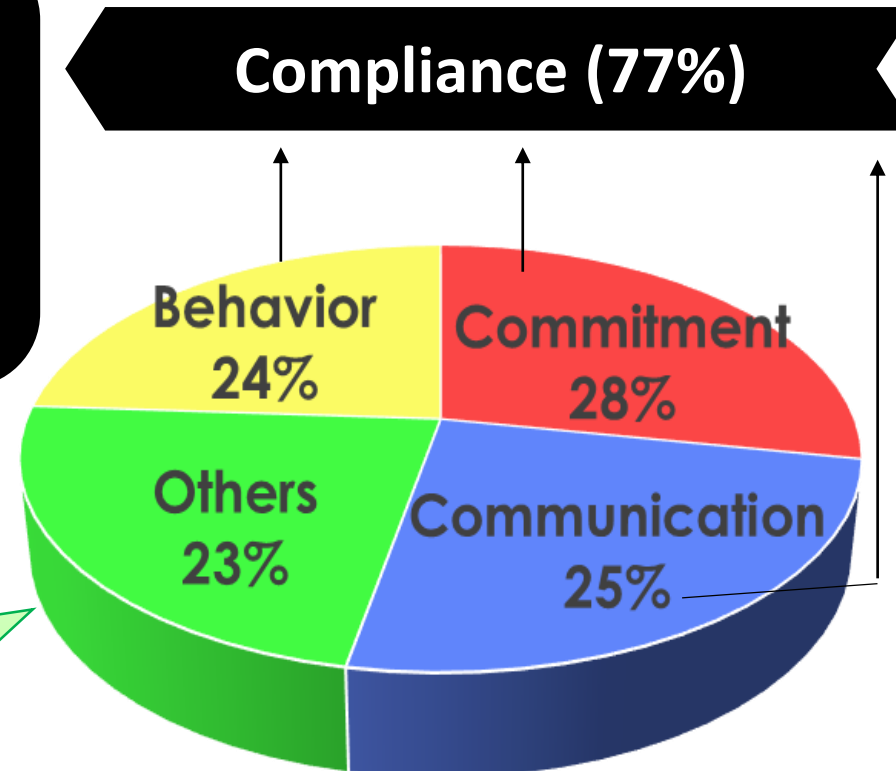
(Suggested index value for excellent leader is at 80) (Source: NIOSH Malaysia, 2018)



OSH Implementation Level By Leader

High in management commitment, effective OSH communication and good behaviour portrayed by leaders will contribute to **77%** of OSH compliance

There are other OSH leadership elements that not being studied in this research



Correlation Among 3C 1B 1SC of Leader's Role in OSH Implementation in Malaysia

Correlations

		Indeks_Komitmen Pengurusan	Indeks_Komunikasi KKP	Indeks_Pematuhan KKP	Indeks_Tingkah Laku	Indeks_Budaya Keselamatan
Indeks_KomitmenPengur usan	Pearson Correlation Sig. (2-tailed) N	1	.832 .000 453	.816 .000 453	.747 .000 451	.908 .000 453
Indeks_KomunikasiKKP	Pearson Correlation Sig. (2-tailed) N		1	.809 .000 453	.758 .000 451	.869 .000 453
Indeks_PematuhanKKP	Pearson Correlation Sig. (2-tailed) N			1	.790 .000 451	.925 .000 453
Indeks_TingkahLaku	Pearson Correlation Sig. (2-tailed) N				1	.833 .000 451
Indeks_BudayaKeselama tan	Pearson Correlation					1

- 1) Compliance and safety culture element showed the **highest** correlation of 0.925.
- 2) This shows a **strong** relationship among the leadership elements towards safety culture.

Regression Model for Index of Leader's Role

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.878 ^a	.771	.770	7.06686	.771	501.807	3	447	.000

a. Predictors: (Constant), Indeks_TingkahLaku, Indeks_KomitmenPengurusan, Indeks_KomunikasiKKP

b. Dependent Variable: Indeks_PematuhanKKP

- 1) There was a high correlation between the elements of OSH compliance, management commitment, communications and the leader's behaviour which were 0.878.
- 2) 77% of the variations in the OSH compliance were due to the high variation in the elements of management commitment, OSH communication and the leader's behaviour.

Regression Model for Index of Leader's Role

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.255	1.982		1.138	.256		
Indeks_KomitmenPengurusan	.374	.046	.349	8.096	.000	.276	3.624
Indeks_KomunikasiKBP	.321	.047	.298	6.801	.000	.266	3.761
Indeks_TingkahLaku	.284	.034	.303	8.279	.000	.382	2.620

a. Dependent Variable: Indeks_PematuhanKBP

- 1) There is a **significant** influence on the elements of management commitment, OSH communication and behavior towards the OSH compliance where all p values below the significant level of 0.05.
- 2) The **highest** influence comes from the management commitment ($\beta = 0.349$) followed by the leader's behavior ($\beta = 0.303$) and OSH communication ($\beta = 0.298$).

Regression Model for Index of Leader's Role

Coefficients^a

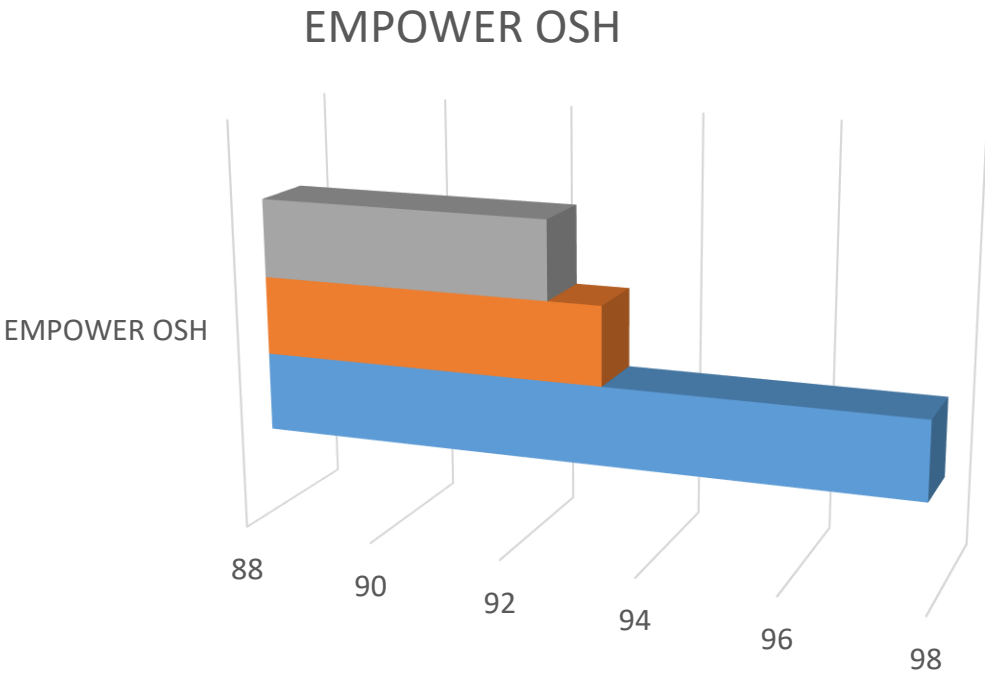
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.255	1.982		1.138	.256		
Indeks_KomitmenPengurusan	.374	.046	.349	8.096	.000	.276	3.624
Indeks_KomunikasiKBP	.321	.047	.298	6.801	.000	.266	3.761
Indeks_TingkahLaku	.284	.034	.303	8.279	.000	.382	2.620

a. Dependent Variable: Indeks_PematuhanKBP

- 1) There is a **significant** influence on the elements of management commitment, OSH communication and behavior towards the OSH compliance where all p values below the significant level of 0.05.
- 2) The **highest** influence comes from the management commitment ($\beta = 0.349$) followed by the leader's behavior ($\beta = 0.303$) and OSH communication ($\beta = 0.298$).

Majority of the respondents agreed to include in **Empower OSH apps/portal:**

- 1) OSH guidebook (97.8%),
- 2) OSH leadership assessment (93.2%), and
- 3) OSH leadership training (92.4%).



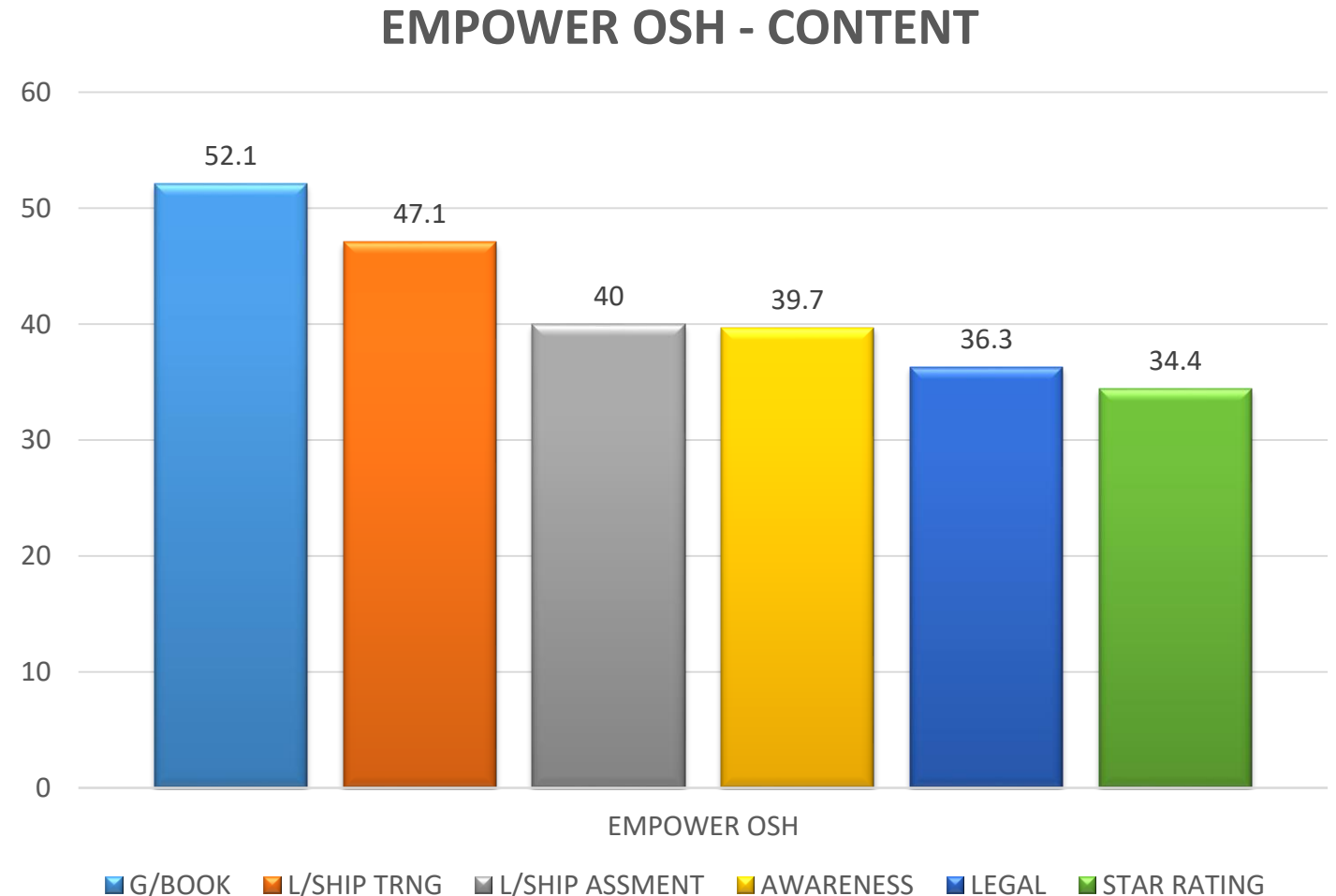
	EMPOWER OSH
L/SHIP TRAINING	92.4
L/SHIP ASSESSMENT	93.2
G/BOOK	97.8

L/SHIP TRAINING L/SHIP ASSESSMENT G/BOOK

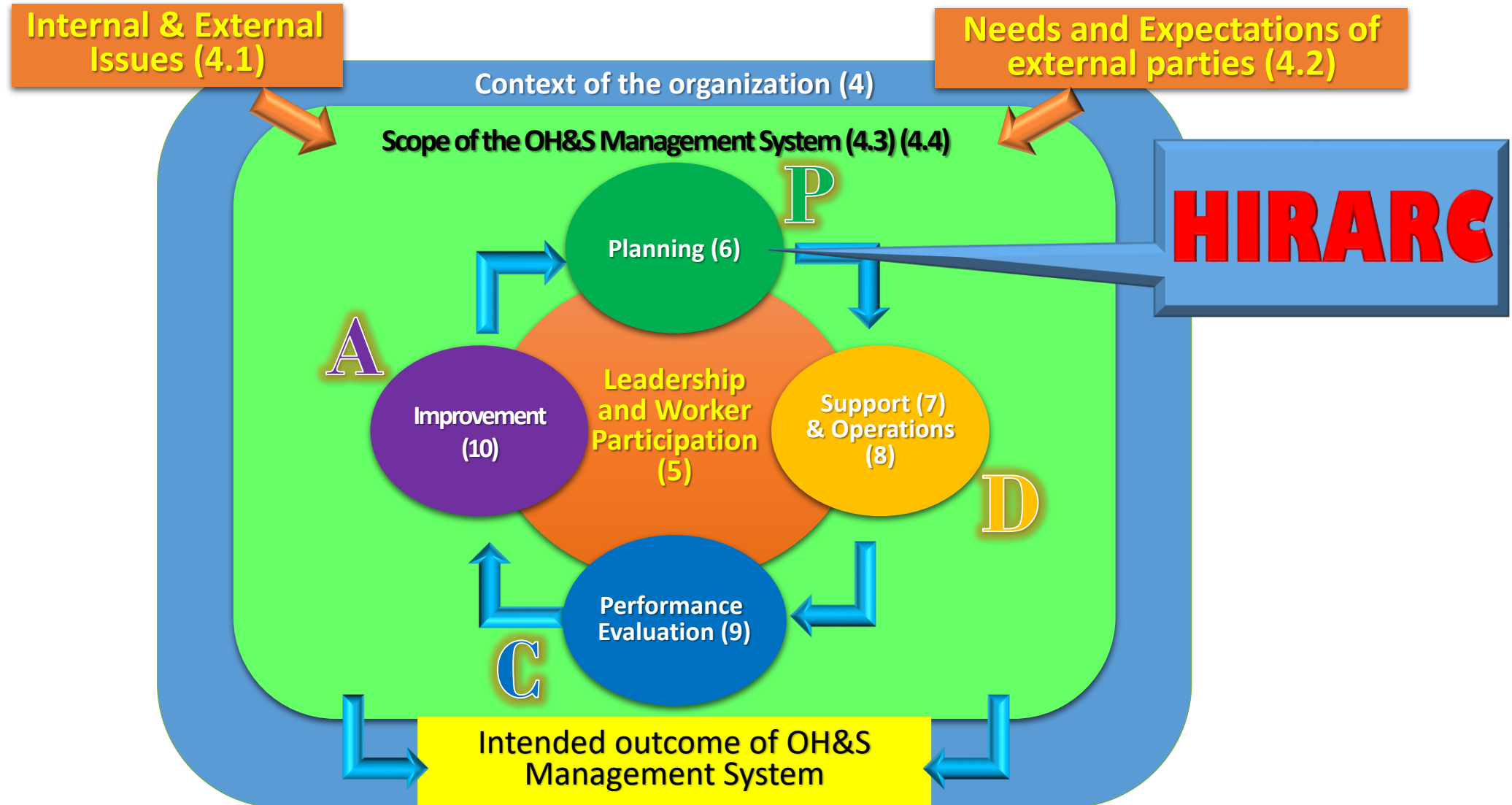
SUITABILITY OF METHOD/PRODUCT NEEDED

It was also found that the most suitable **module** for employers were:

- 1) OSH guidebook (52.1%),
- 2) OSH leadership training (47.1%),
- 3) OSH leadership assessment (40%),
- 4) OSH awareness (39.7%),
- 5) OSH legislation (36.3%), and
- 6) OSH star rating (34.4%).



ISO 45001 OH&S Management System Model



MS IEC/ISO 30101:2011

Risk management - Risk assessment techniques (IEC/ISO 31010:2009, IDT)

- Is a **Supporting Standard** for “ISO 31000”
- Provides guidance;
 - selection and application of systematic techniques for risk assessment.



MS IEC/ISO 30101:2011

• Risk assessment concepts

Purpose and benefits

- Provide evidence-based information and analysis to make informed decisions to treat risks.
- Understanding the risk and its potential impact
- communicating risks and uncertainties;

Risk assessment and the risk management framework

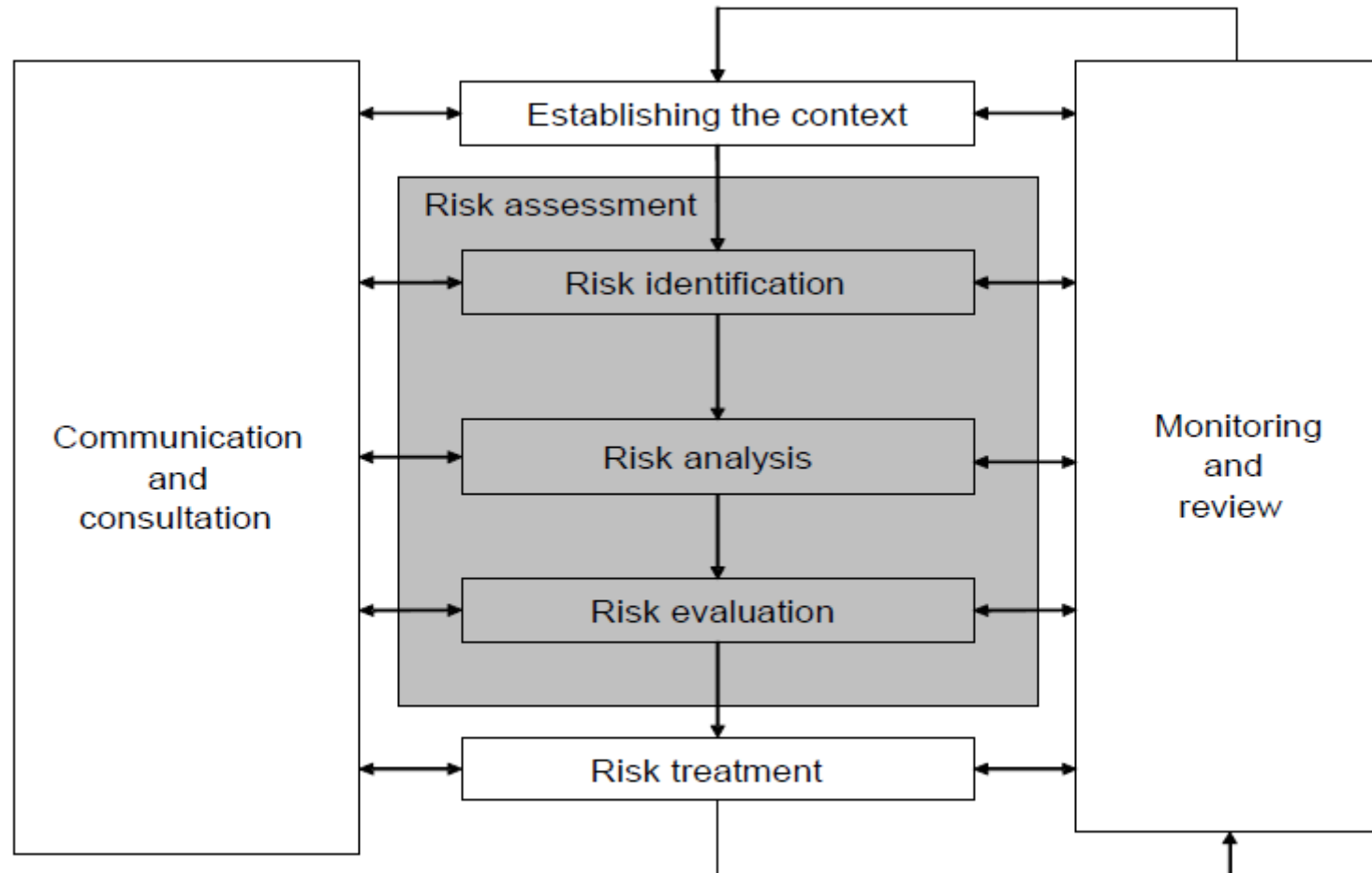
- Provides;
 - ⑩ policies
 - ⑩ procedure

Risk assessment and the risk management process

- communication and consultation
- establishing the context
- risk assessment (comprising risk identification, risk analysis and risk evaluation)
- risk treatment
- monitoring and review



RISK ASSESSMENT PROCESS



IEC 2061/09

RISK ASSESSMENT TOOLS

Table A.1 – Applicability of tools used for risk assessment

Tools and techniques	Risk assessment process					See Annex
	Risk Identification	Risk analysis			Risk evaluation	
		Consequence	Probability	Level of risk		
Brainstorming	SA ¹⁾	NA ²⁾	NA	NA	NA	B 01
Structured or semi-structured interviews	SA	NA	NA	NA	NA	B 02
Delphi	SA	NA	NA	NA	NA	B 03
Check-lists	SA	NA	NA	NA	NA	B 04
Primary hazard analysis	SA	NA	NA	NA	NA	B 05
Hazard and operability studies (HAZOP)	SA	SA	A ³⁾	A	A	B 06
Hazard Analysis and Critical Control Points (HACCP)	SA	SA	NA	NA	SA	B 07
Environmental risk assessment	SA	SA	SA	SA	SA	B 08
Structure « What if? » (SWIFT)	SA	SA	SA	SA	SA	B 09
Scenario analysis	SA	SA	A	A	A	B 10
Business impact analysis	A	SA	A	A	A	B 11
Root cause analysis	NA	SA	SA	SA	SA	B 12
Failure mode effect analysis	SA	SA	SA	SA	SA	B 13
Fault tree analysis	A	NA	SA	A	A	B 14
Event tree analysis	A	SA	A	A	NA	B 15
Cause and consequence analysis	A	SA	SA	A	A	B 16
Cause-and-effect analysis	SA	SA	NA	NA	NA	B 17
Layer protection analysis (LOPA)	A	SA	A	A	NA	B 18
Decision tree	NA	SA	SA	A	A	B 19
Human reliability analysis	SA	SA	SA	SA	A	B 20
Bow tie analysis	NA	A	SA	SA	A	B 21
Reliability centred maintenance	SA	SA	SA	SA	SA	B 22
Sneak circuit analysis	A	NA	NA	NA	NA	B 23
Markov analysis	A	SA	NA	NA	NA	B 24
Monte Carlo simulation	NA	NA	NA	NA	SA	B 25
Bayesian statistics and Bayes Nets	NA	SA	NA	NA	SA	B 26
FN curves	A	SA	SA	A	SA	B 27
Risk indices	A	SA	SA	A	SA	B 28
Consequence/probability matrix	SA	SA	SA	SA	A	B 29
Cost/benefit analysis	A	SA	A	A	A	B 30
Multi-criteria decision analysis (MCDA)	A	SA	A	SA	A	B 31

¹⁾ Strongly applicable.
²⁾ Not applicable.
³⁾ Applicable.

RISK ASSESSMENT TOOLS (HAZOP)

What is HAZOP?

- A Hazard and Operability Analysis (HAZOP)
- To identify potential hazards and functional flaws in existing or planned plant systems.
- To reduce risk and ensure the safety of workers in plant environments.
- Complex study operational hazards and functions in chemical processing plants but is also used in nuclear, water, sewage, and treatment plants.

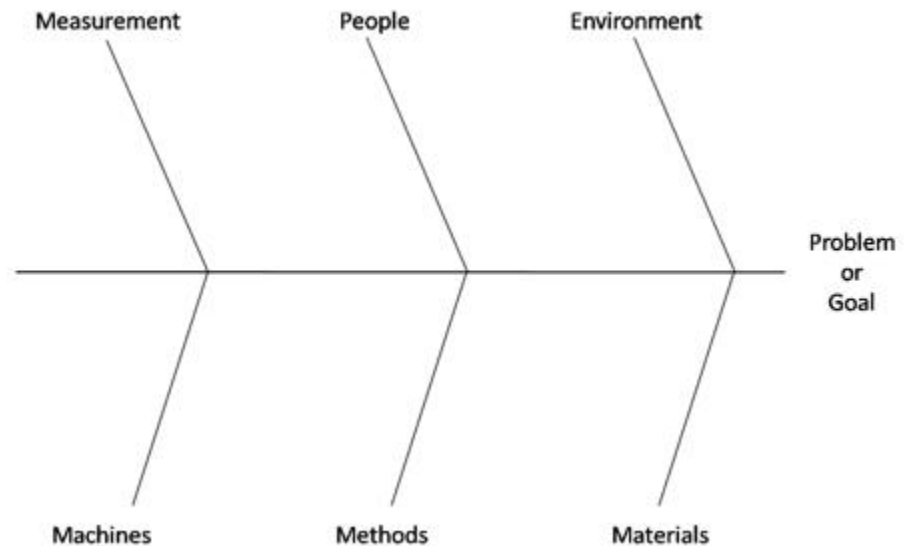
HAZOP WORKSHEET						
NODE NO. 1	DISCRIPTION:			Risk Rating	PFD No.: 001 TITLE:	
	DESIGN INTENTION:					
Guidewords	Line	Causes	Consequences	Safeguards	Recommendation	Responsible agency
1. No/ Low Flow/ Quantity	Raw water overhead tank to pre-heater tank	-No level in over head tank	-High temp. of pre-heating tank	-LI on overhead tank is provided	-Safe Operating Procedure for pump operation to be prepared and strictly followed	
	Line from pre-heater tank to boiler via boiler pump	-No level in pre-heater tank	High temp. & high pressure in boiler	-LI is provided in boiler -At low level of boiler, boiler pump is trip -PG is provided in discharge line	Dry running trip to be provided on raw water pump -Safe Operating Procedure for pump operation to be prepared and strictly followed	
	Line from over head water tank to RO plant via high pressure pump	-No level in over head tank -Filter choking	-Dry running of raw water pump	-LI on overhead tank is provided -PG is provided on pump and filter	Dry running trip to be provided on raw water pump -Safe Operating Procedure for pump operation to be prepared and strictly followed	

RISK ASSESSMENT TOOLS (RCA)

What is RCA?

- Root cause analysis (RCA) is a systematic process for identifying “root causes” of problems or events and an approach for responding to them.
- RCA helps organizations avoid the tendency to single out one factor to arrive at the most expedient (but generally incomplete) resolution.

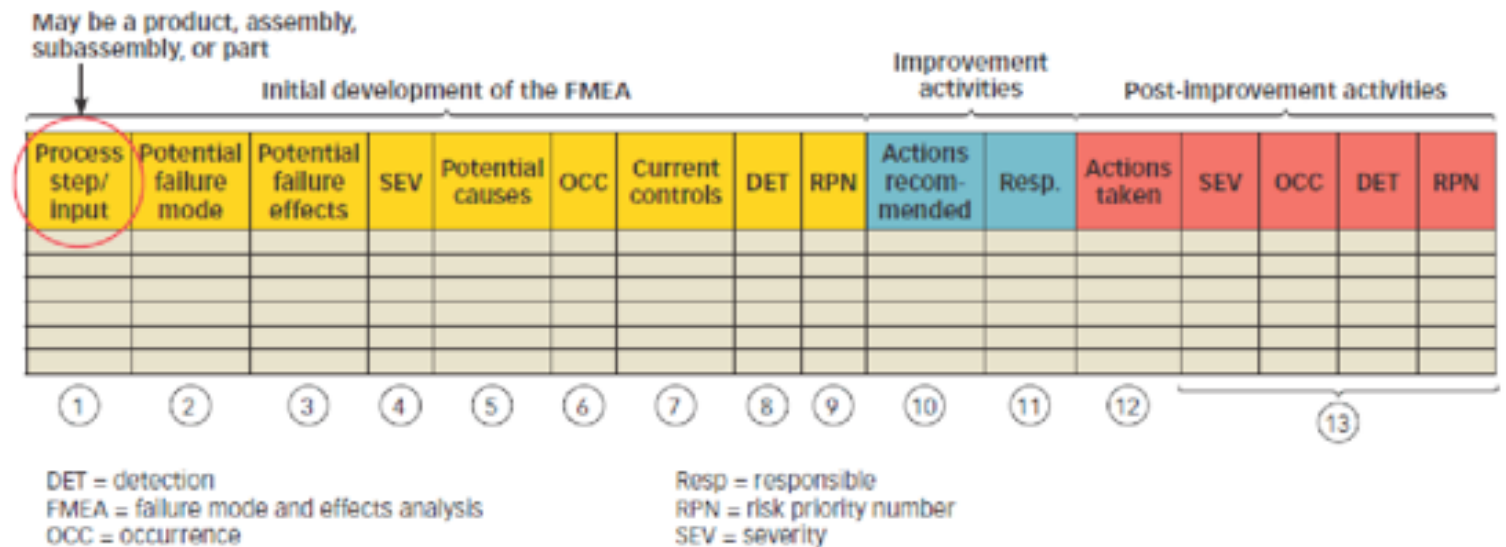
Fishbone Diagram



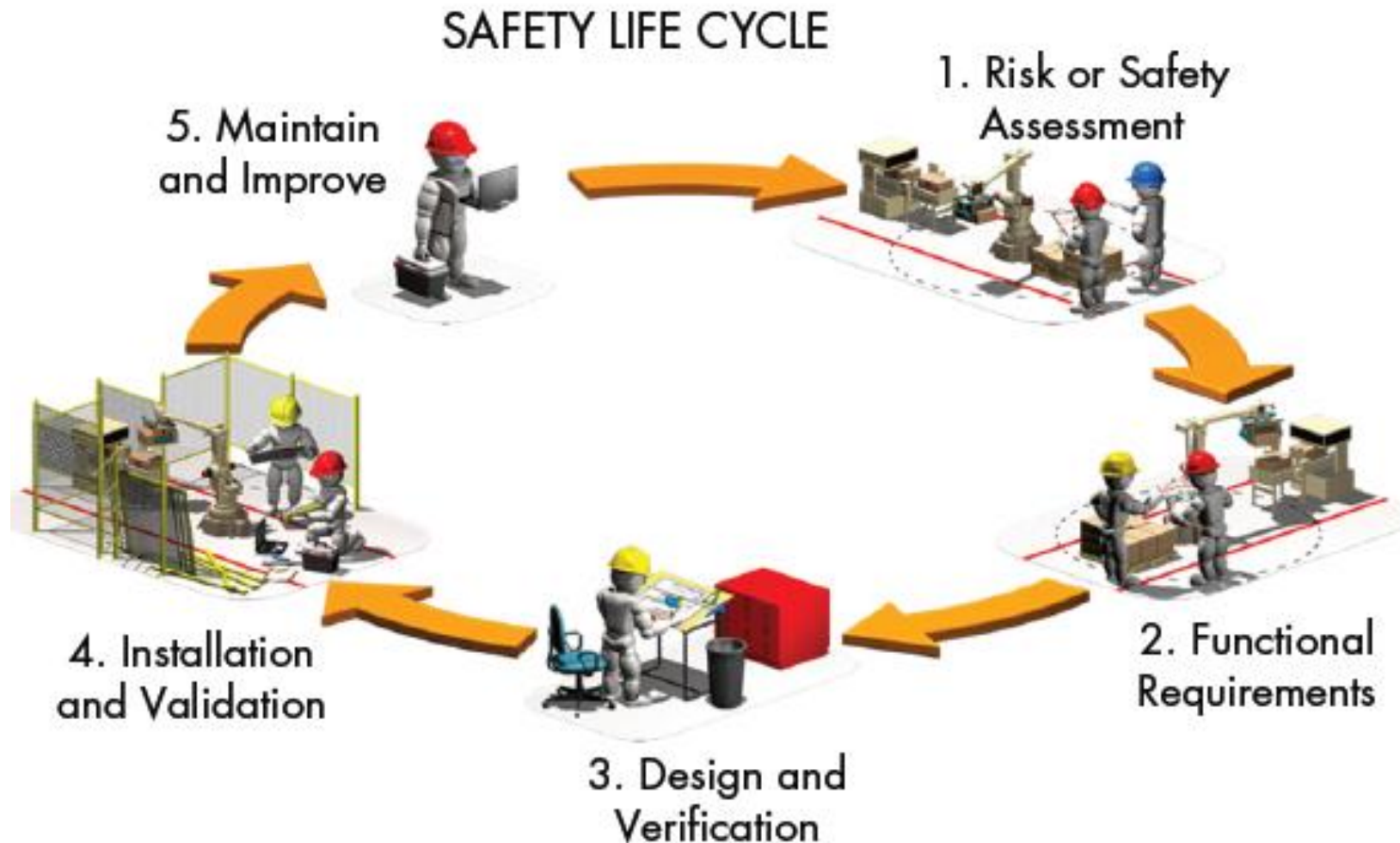
RISK ASSESSMENT TOOLS (FMEA)

What is FMEA

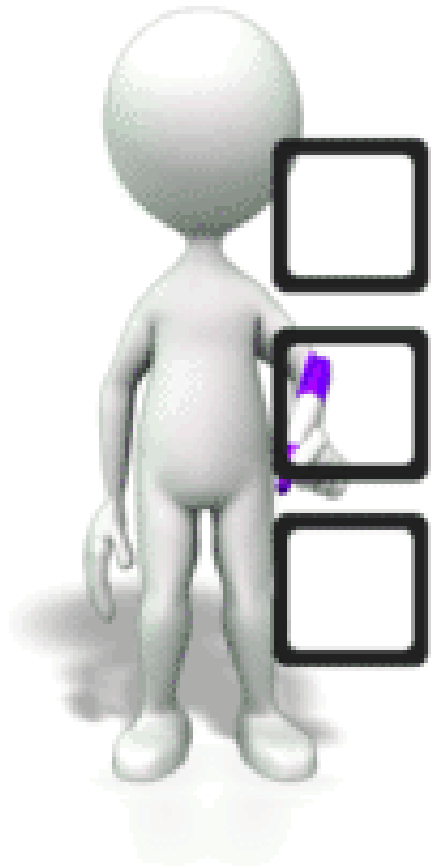
- Failure Mode and Effects Analysis (FMEA) is a structured approach to discovering potential failures that may exist within the design of a product or process.



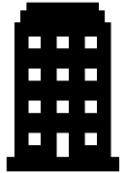
SAFETY LIFE CYCLE



RECAP



- Brief of understanding “**High level Structure**” in Management System
- Tools in OHS Management System “**PDCA Concept**”
- ISO 30101:Risk Assessment



Headquarter

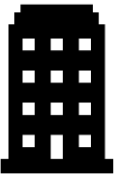
7th Floor, NIOSH Tower

Lot 1, Jalan 15/1, Section 15, 43650 Bandar Baru,
Bangi, Selangor

Phone : +603 8922 1925

Fax : +603 8926 7682

Email : mst@nioshcert.com.my



East Malaysia Office

c/o NIOSH Sabah Regional Office
Harbour City , Lot 22-27

Tingkat 2, Block 2,

88100 Kota Kinabalu, Sabah

Phone : +6088 257 252

Fax : +6088 263 252

Email : mst@nioshcert.com.my



NIOSH CERTIFICATION SDN BHD
(A wholly owned subsidiary of NIOSH Malaysia)



OUR BIG IDEA

To gain insights from our customer and use the data for improvement.

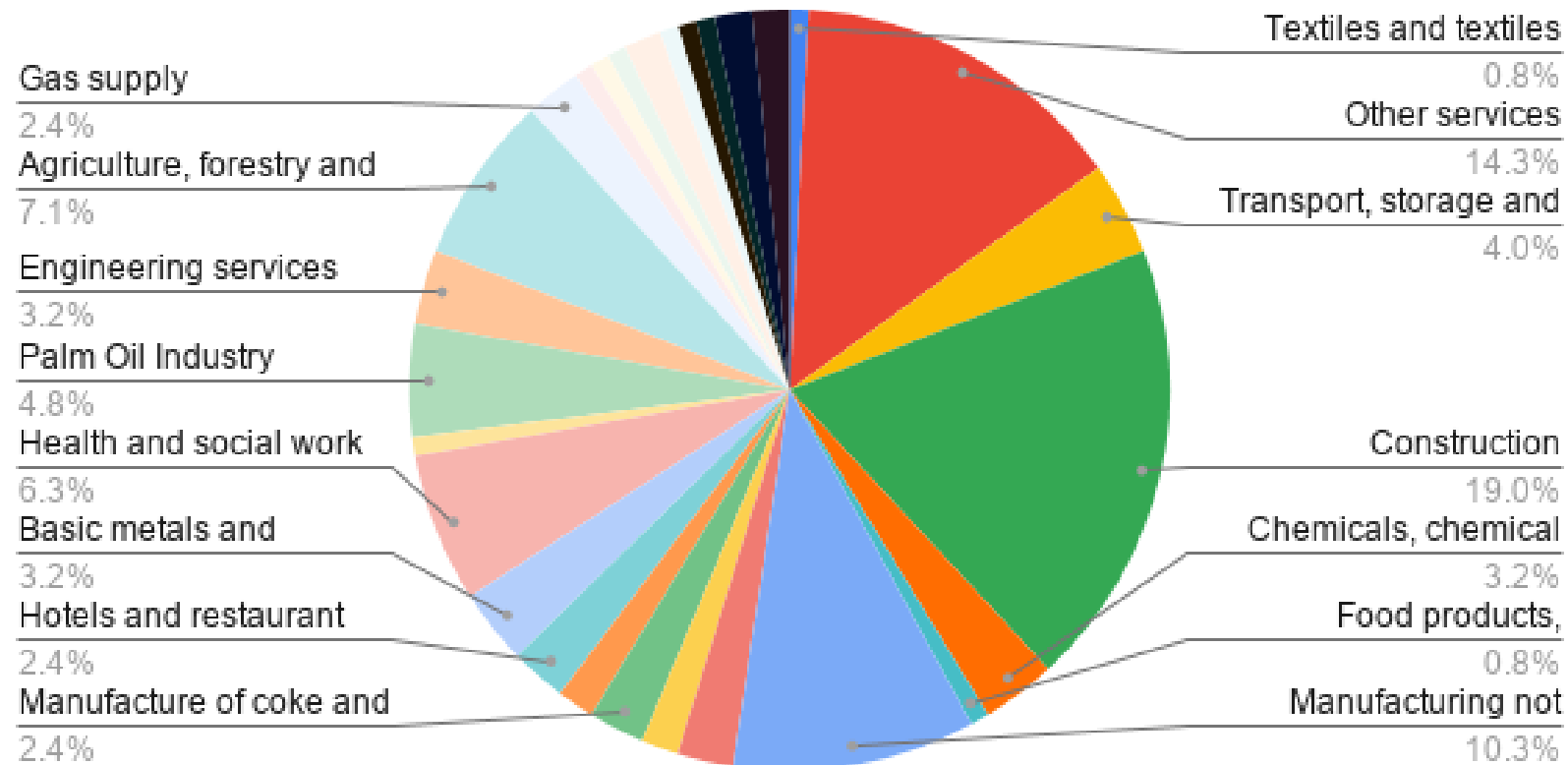
Survey has been sent using email, facebook, linkedIn and Telegram.

Survey timeframe: 7 Oct – 11 Oct 2019.

Response received: 126 responses

QUESTION 1: Type of Industry

1) Sila pilih industri dimana anda bekerja sekarang/ Type of Industry currently working:



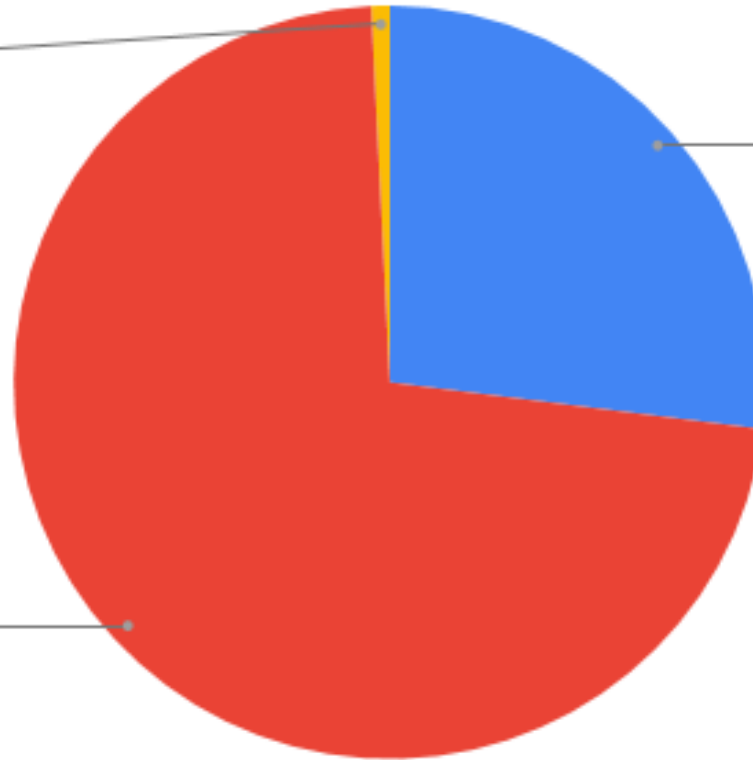
QUESTION 2: Satisfaction with NIOSHCert Courses

2) Adakah anda berpuas hati dengan kursus yang kami anjurkan? /Are you satisfied with the course we offer?

Tidak/ No
0.8%

Ya/ Yes
72.2%

Perlu penambahbaikan/
27.0%



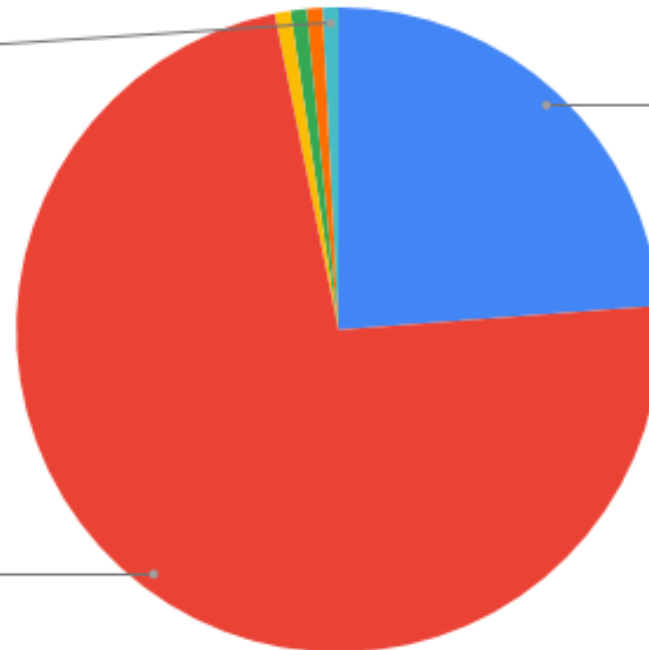
QUESTION 3: Satisfaction with NIOSHCert Trainers

3) Adakah anda berpuas hati dengan pengajar kami? /Are you satisfied with our trainer?

Cari tenaga pengajar yg
0.8%

Perlu penambahbaikan/
23.8%

Ya/ Yes
73.0%



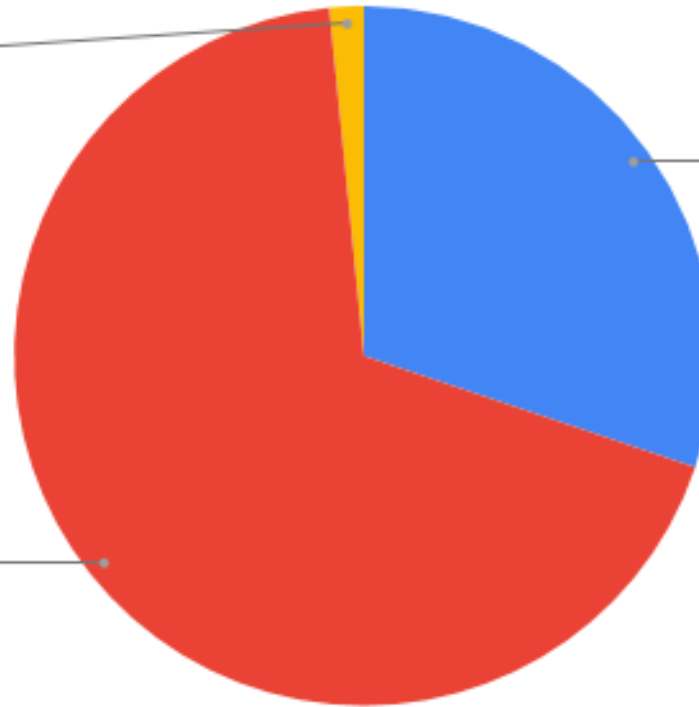
QUESTION 4: Satisfaction with NIOSHCert Training Content

4) Adakah kandungan latihan yang anda hadiri memenuhi jangkaan anda? /Did the training content meet your

Tidak/ No
1.6%

Perlu penambakan/
30.2%

Ya/ Yes
68.3%



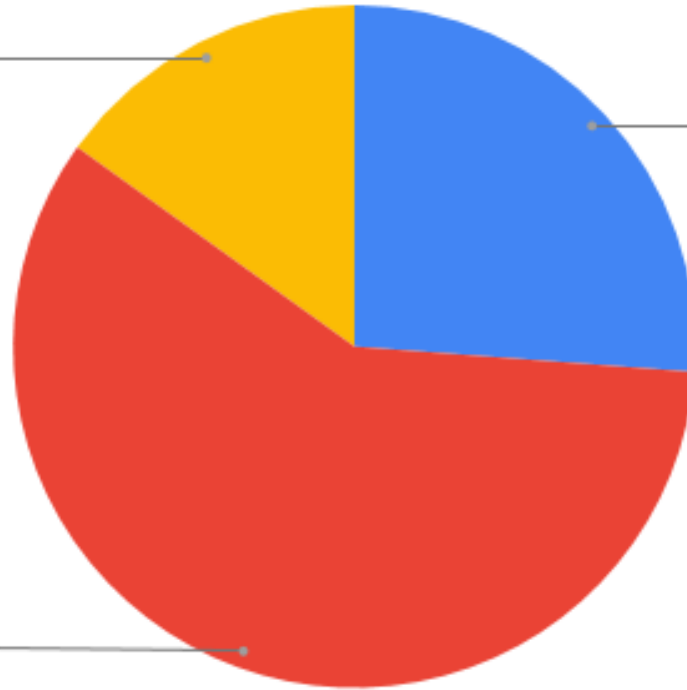
QUESTION 5: Satisfaction with NIOSHCert Course Fee

5) Adakah harga kursus NIOSHCert berpatutan? /Is NIOSHCert courses price reasonable?

Tidak/ Ya
15.1%

Perlu Penambahbaikan/
26.2%

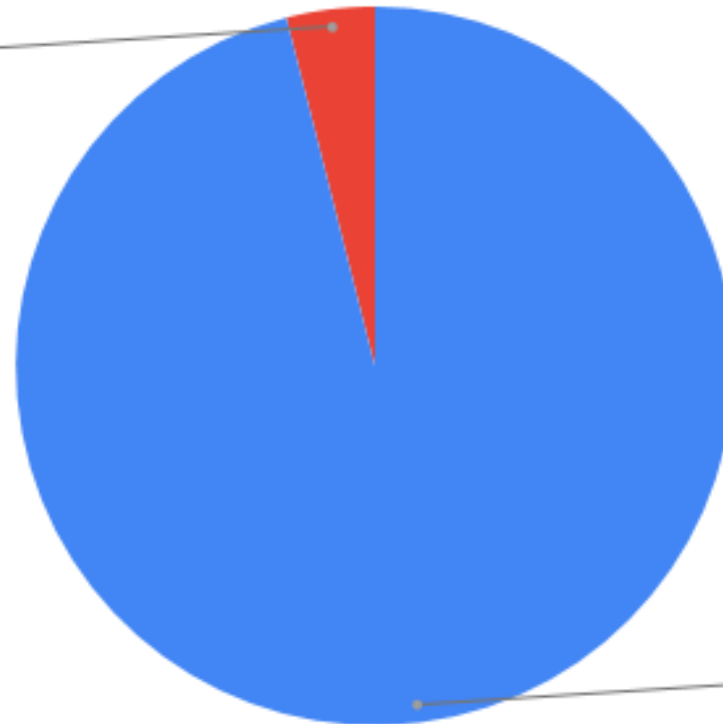
Ya/ Yes
58.7%



QUESTION 6: Applicability to Organization

6) Adakah kursus yang dijalankan oleh NIOSHCert membantu Organisasi anda? Has NIOSHCert courses

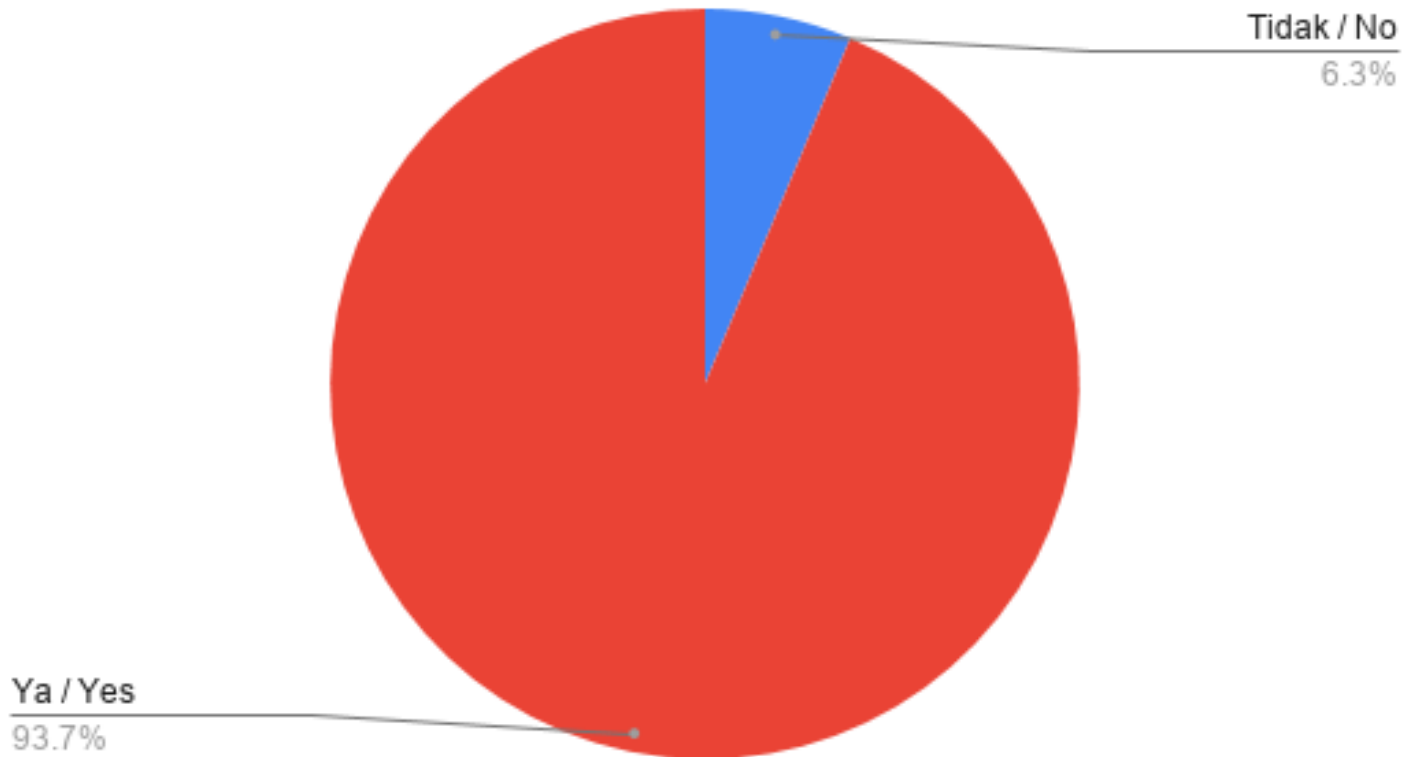
Tidak/ No
4.0%



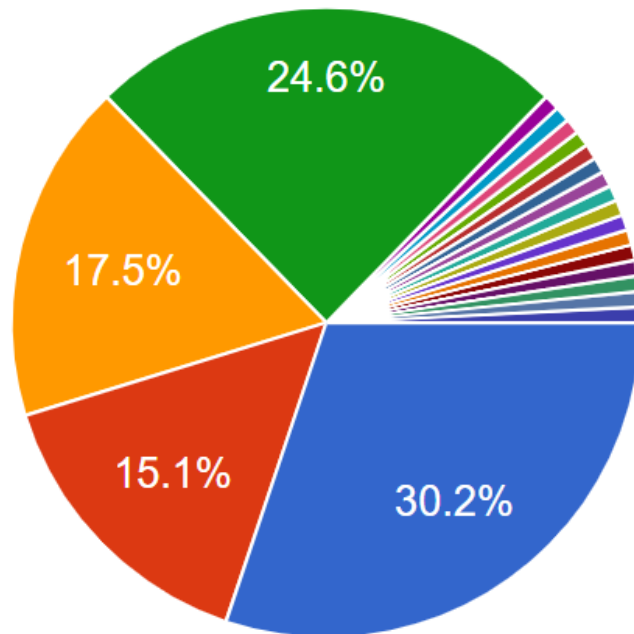
Ya/ Yes
96.0%

QUESTION 7: Willingness to recommend NIOSHCert

7) Adakah anda akan menyarankan perkhidmatan NIOSHCert kepada rakan-rakan anda? / Would you



QUESTION 8: Preferred type of Training



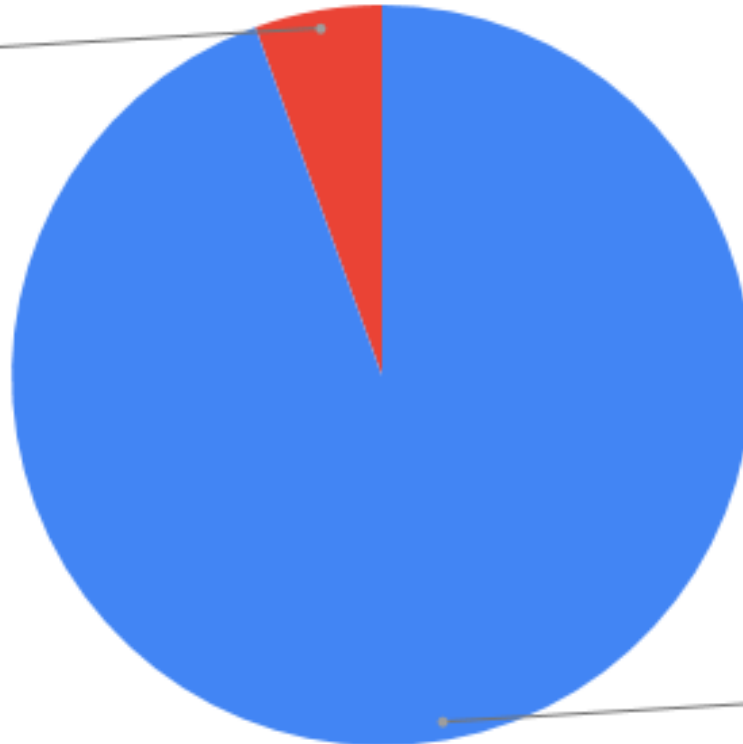
- Seminar
- Kursus Pemahaman Standard ISO/...
- Kursus Juruaudit Dalam Standar...
- Kursus Juruaudit/Ketua Juruaudit S...
- Customized In-house Trainings
- kursus kompeten
- Tidak relevan
- Competency

▲ 1/3 ▼

QUESTION 9: Perception on ISO standards towards organization

9) Adakah anda merasakan bisnes anda memerlukan sistem pengurusan berdasarkan standard ISO? / Based

Tidak / No
5.6%

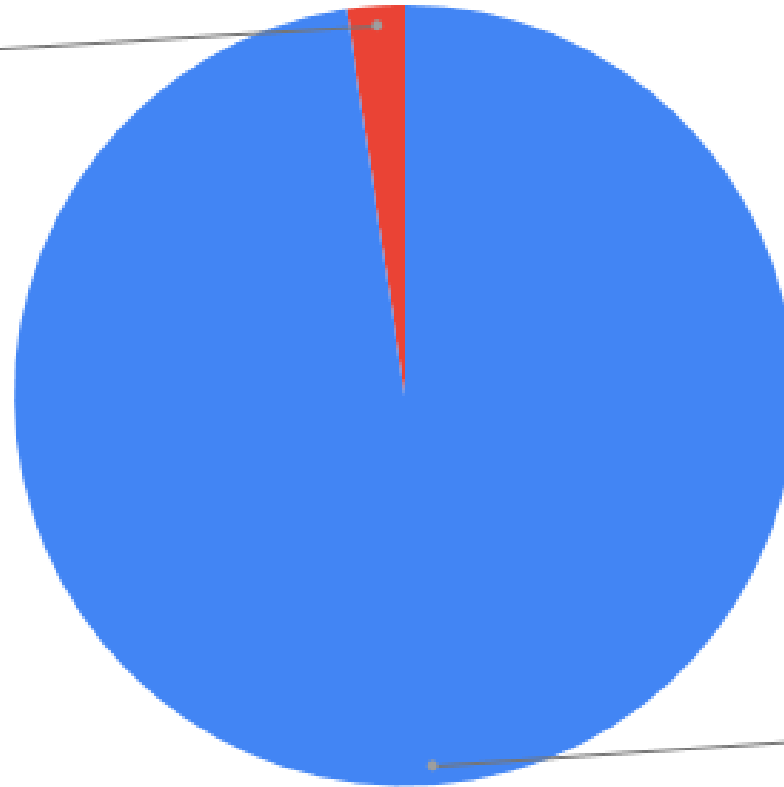


Ya / Yes
94.4%

QUESTION 10: Risk Determination in Organization

10) Adakah organisasi anda telah mengenalpasti risiko yang boleh memberi impak terhadap bisnes? / Does

Tidak / No
2.4%

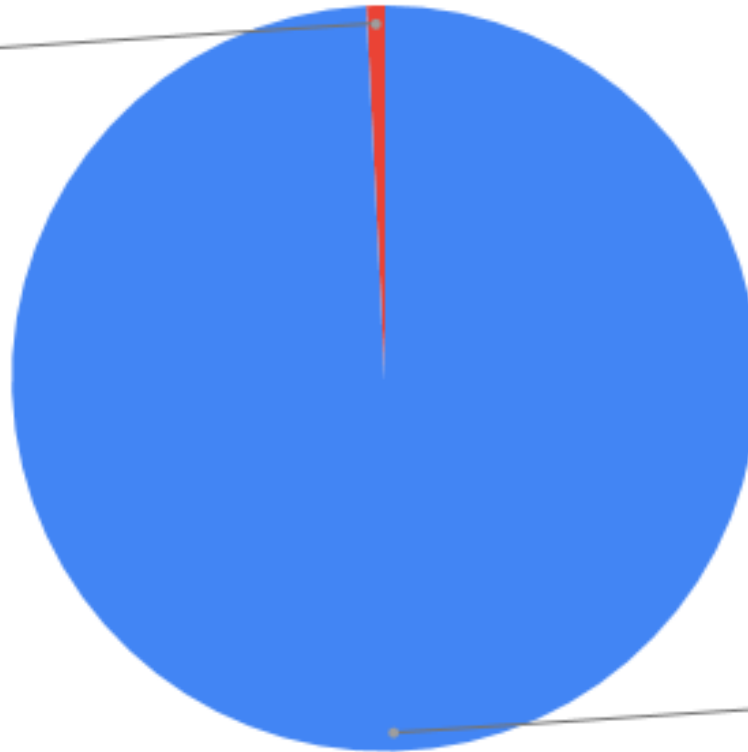


Ya / Yes
97.6%

QUESTION 11: OSH MS in Organization

11) Adakah organisasi anda telah mengenalpasti hazard yang boleh memberi impak terhadap pekerja? / Does

Tidak / No
0.8%

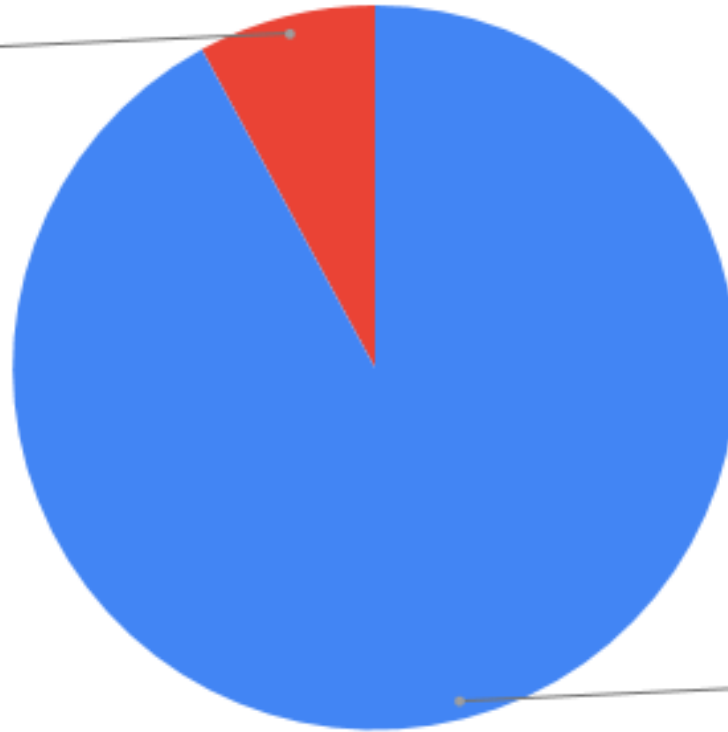


Ya / Yes
99.2%

QUESTION 12: Risk towards Worker Integrity (Anti-Bribery Management System)

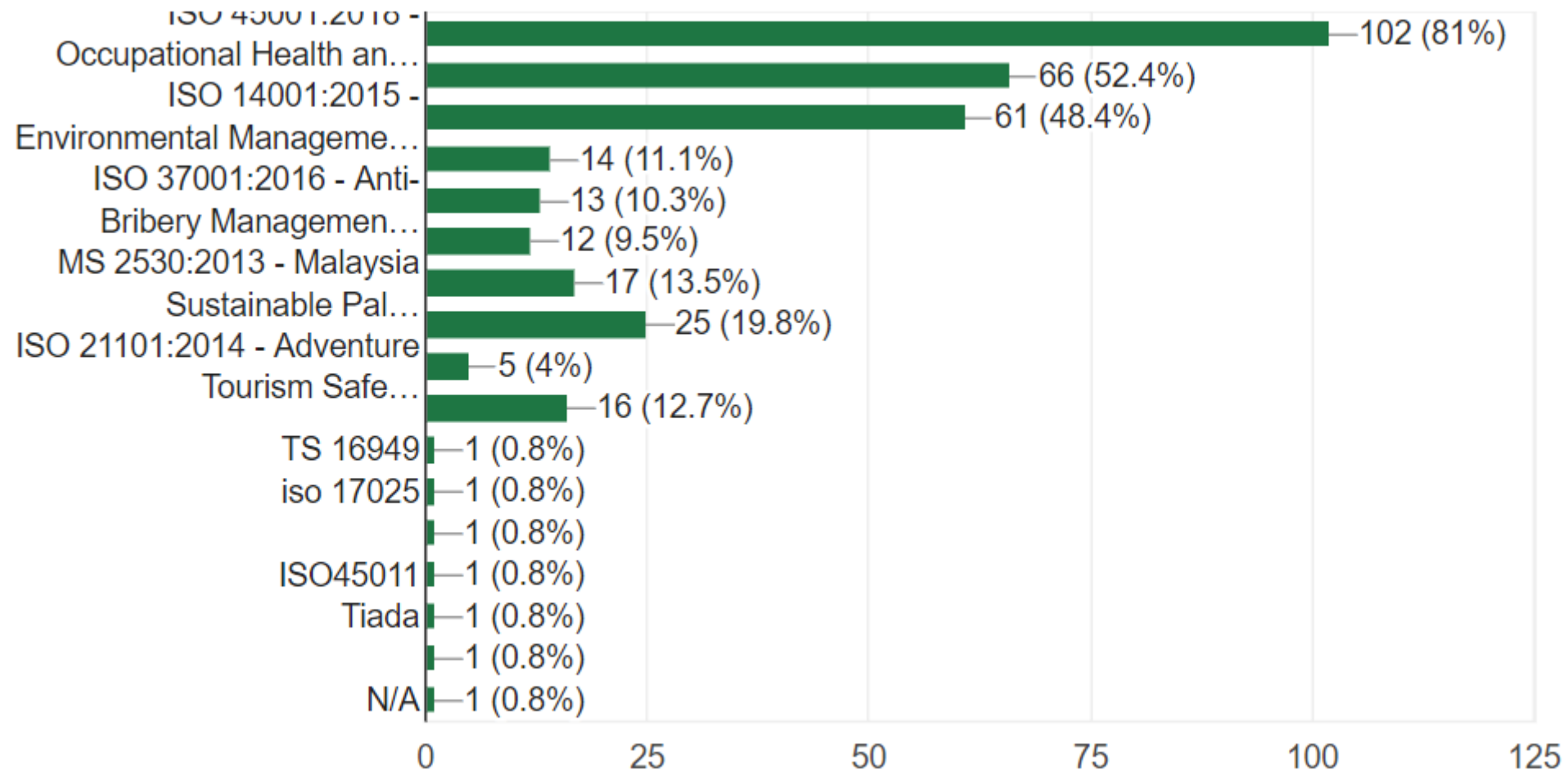
12) Adakah organisasi anda telah mengenalpasti risiko yang boleh memberi impak terhadap integriti pekerja? /

Tidak / No
7.9%

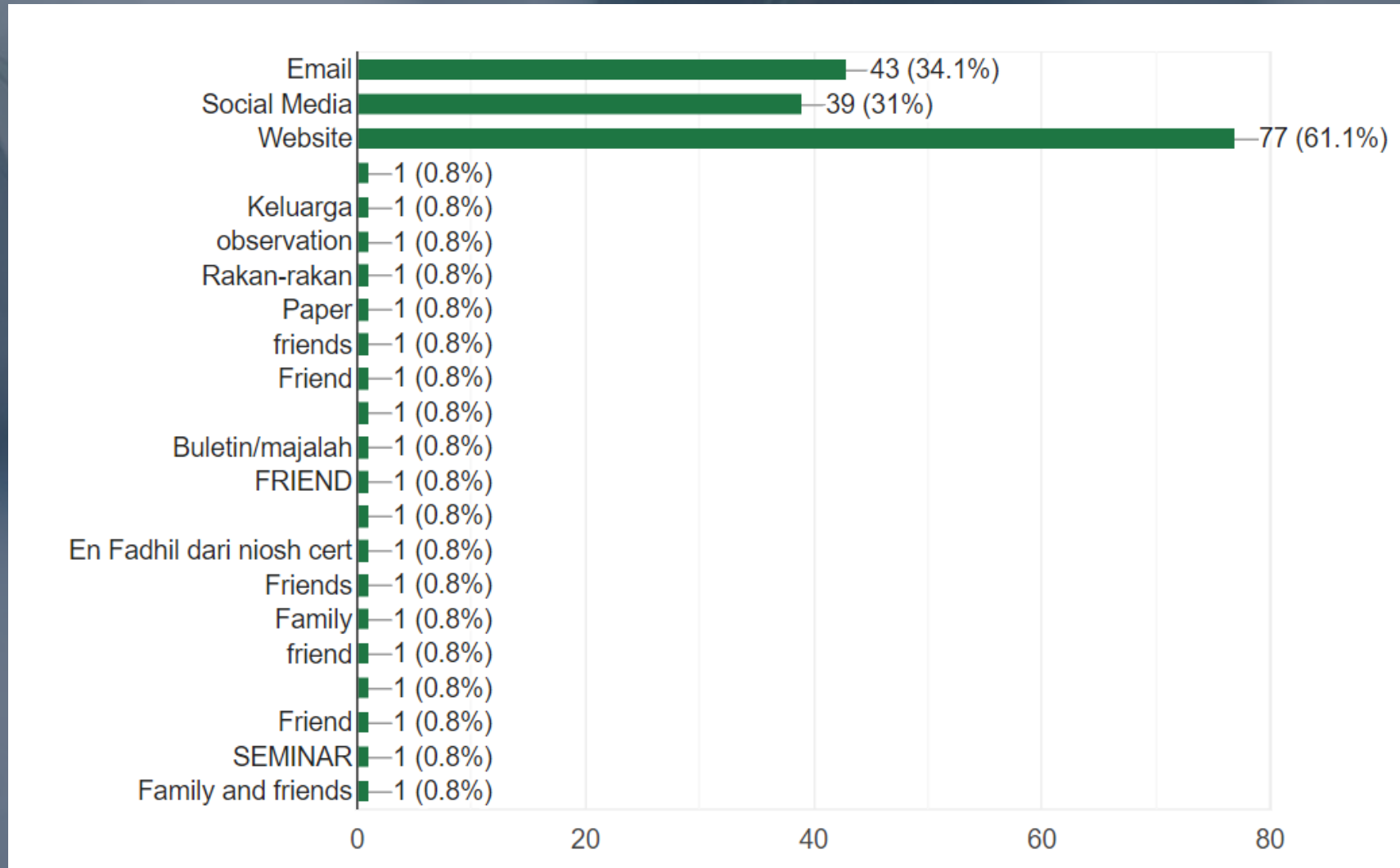


Ya / Yes
92.1%

QUESTION 13: ISO standards that can help organization



QUESTION 14: How do they know about NIOSHCert



QUESTION 15: OTHER COMMENTS

- Bahan latihan perlu penambahbaikan. Saya rasa ia sangat memainkan peranan dalam membantu peserta
- Trainers recommendation shall align with company representative and Trainer shall also be mindful of what they comment or suggest to participants especially matters that are not covered in OSHA, ICOP or Safety Guidelines
- Trainer also must get alignment from company on matters related to policy - Trainer shall not suggest that Company must do this, Company cannot do this, Employee must request this, Employee can object this etc. just to quote as example
- Please ensure your certificate is demanding by industry to ensure people have it easy to get job.
- Please do trainer evaluation/assessment
- Suggestion more class to be conducting at Sarawak
- May update training module and approach more frequent

QUESTION 15: OTHER COMMENTS (Cont..)

- Training costs must be within the affordable range and quality of trainers must be improved and professionalism of trainers is lacking
- mengadakan seminar / kursus kepada pekerja bagi mendedahkan mereka kepada sistem ISO
- Serbis nioshcert memang terbaik. Cuma harga kursus dan seminar perlu dipertimbangkan untuk dikurangkan sedikit, niat nak belajar ada tapi bila nampak harga terus lemah semangat dompet kami. saya rasa, kalau harga murah lebih ramai akan join, berbanding harga mahal tapi penyertaan tak mencukupi asik kena postpone sahaja kursus sebab kurang penyertaan..hihi harap komen dalam gurauan ini, dapat menyampaikan mesej yang jelas untuk penambahbaikan nioshcert untuk terus berkembang dan dikagumi serata dunia
- Perlu lebih banyak iklan dan pmberitahuan berkenaan latihan kepada bekas pelatih/peserta

QUESTION 15: OTHER COMMENTS (Cont..)

- Important to ensure trainers are themselves trained or competent in the subject They teach
- Perlu perbanyak kursus di daerah pengkhususan dalam mspe.
- Memberi kursus dan peperiksaan dengan harga yang lebih berpatutan agar pekerja yang kurang berkemampuan serta SME dapat menghadiri kursus yang disediakan
- Offer more courses on the management skills, corporate contents in order practitioners to cope with recent industrialization and market competition. ie: dealing with CEO, corporate HSE, etc. Furthermore, NIOSH handout seems outdated and no changes as well as less interactive/boring (based on my observation).
- Involve more industrial practitioners rather than favoritism and cronyism. Give chances to dedicated new comers.
- Improve customer services/centric when dealing with clients such as slow respond, irrational answers, and more.