13th ITS EUROPEAN CONGRESS

FULFILLING ITS PROMISES

Brainport Eindhoven, the Netherlands | 3-6 June 2019

Evoluon Congress Center
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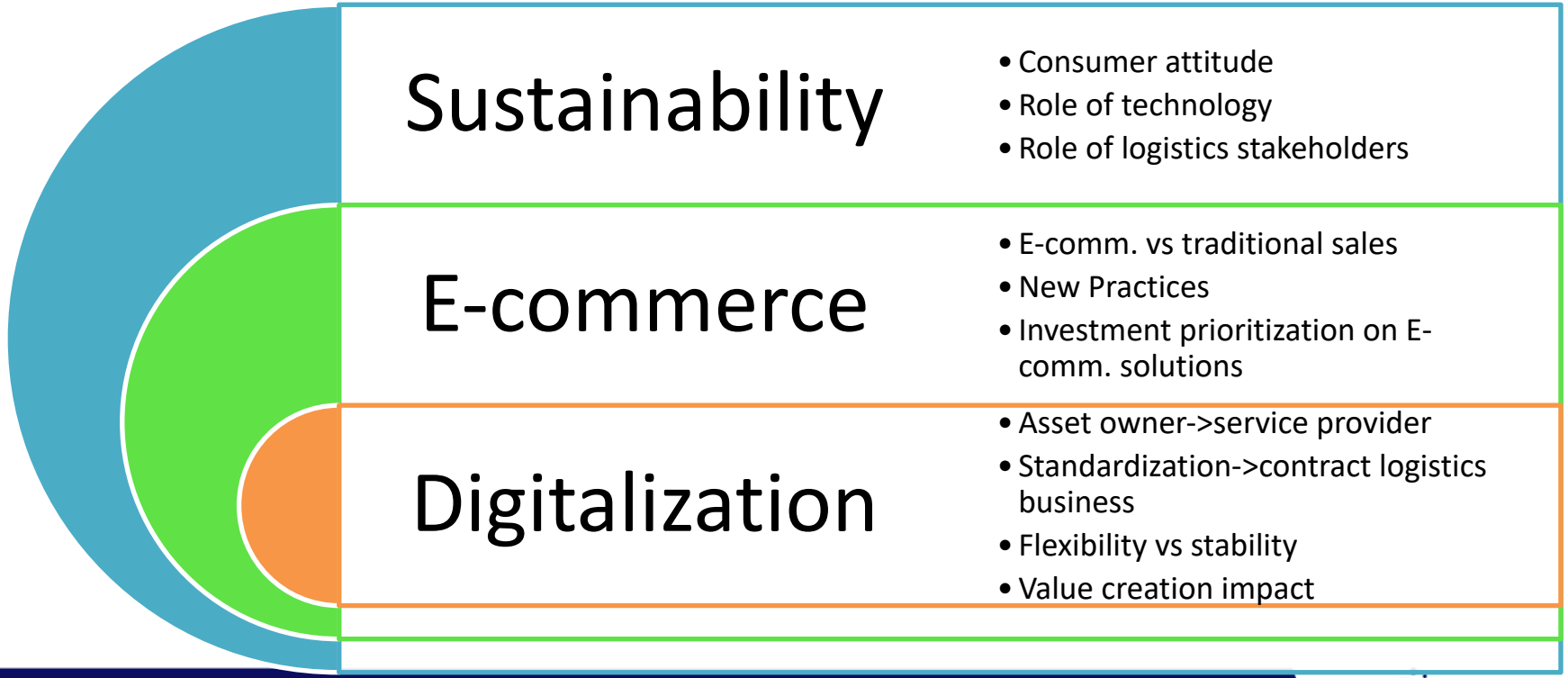
The FUTURE OF LOGISTICS - IMPACT OF EMERGING TECHNOLOGIES

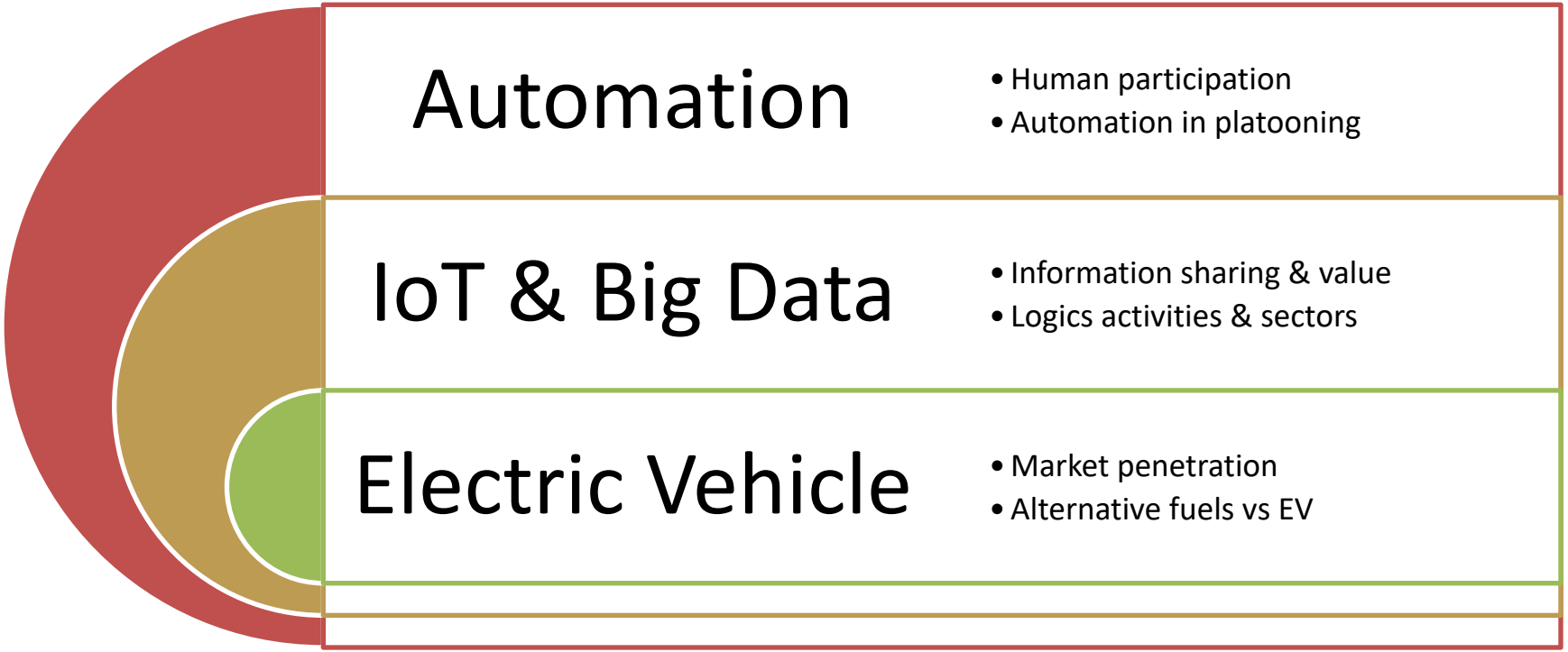
Emerging Technologies (Drivers)

- Sustainability
- E-commerce
- Digitalization
- Automation
- IoT and Big Data
- Electric Vehicles
- Collaboration
- Sharing Economy
- 3D Printing

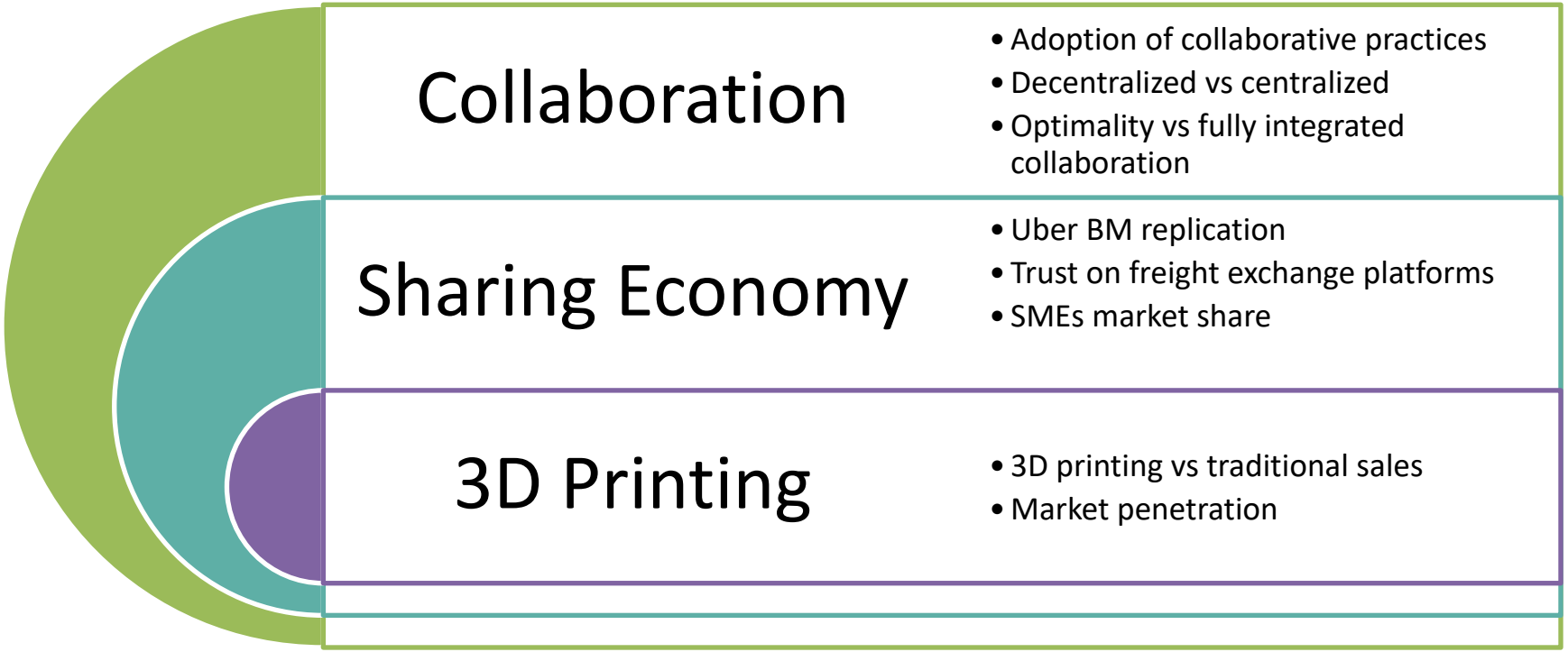
Emerging Technologies (Drivers) I



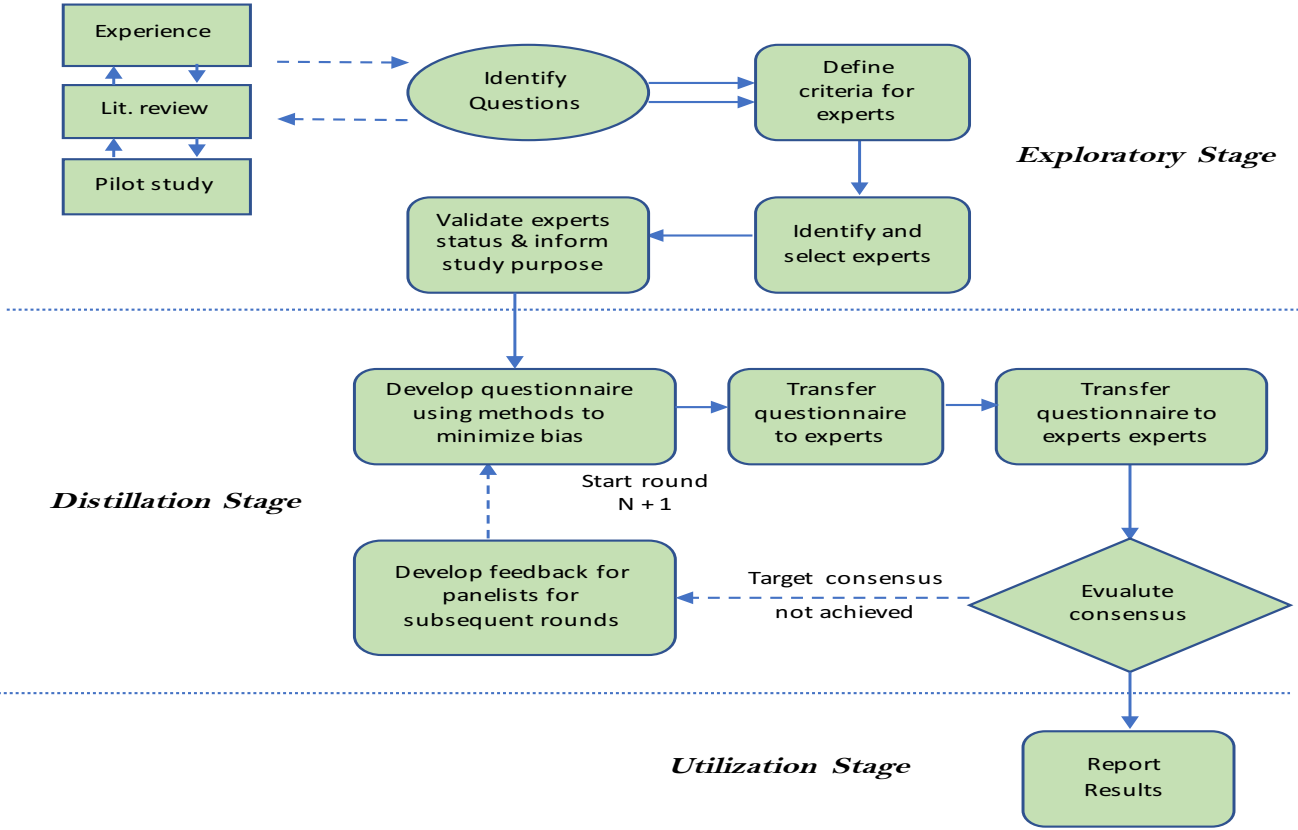
Emerging Technologies (Drivers) II



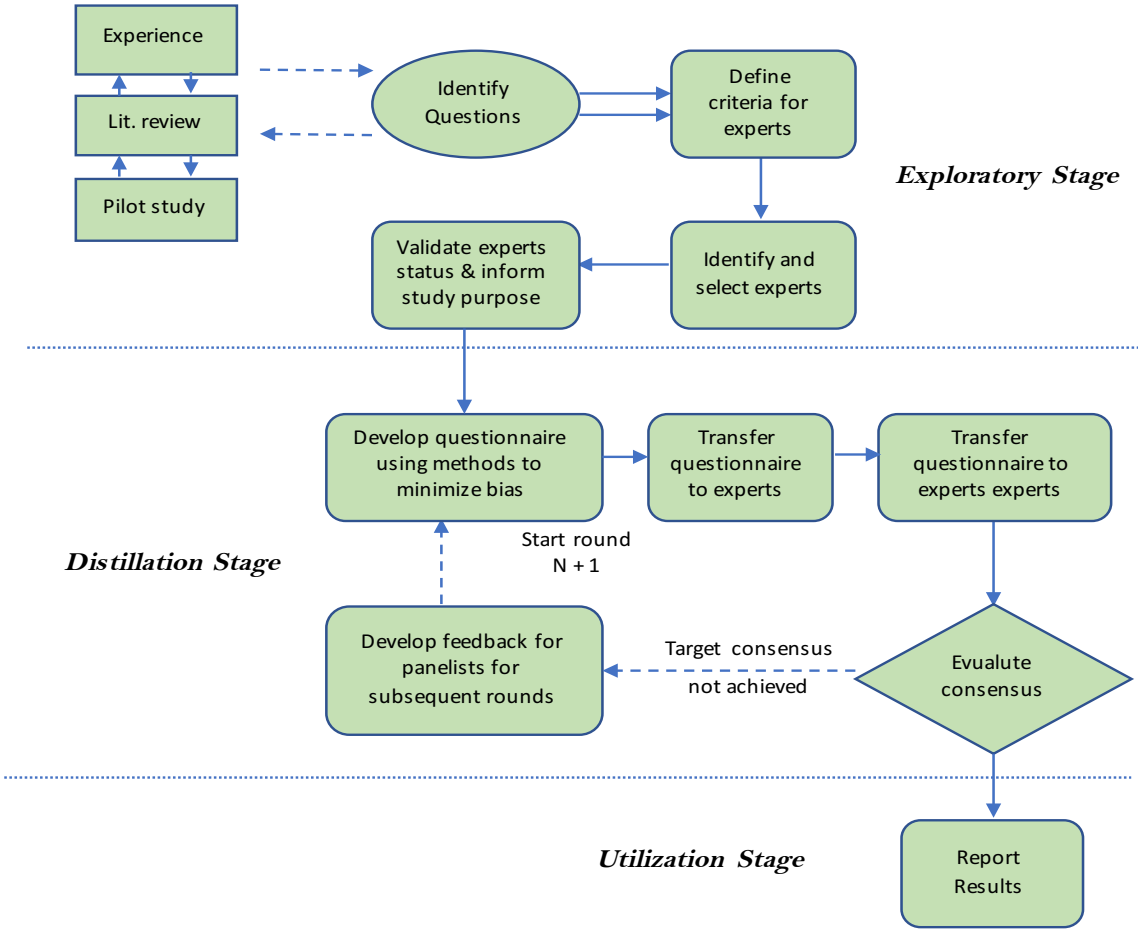
Emerging Technologies (Drivers) III



The Delphi Approach



The Delphi Approach



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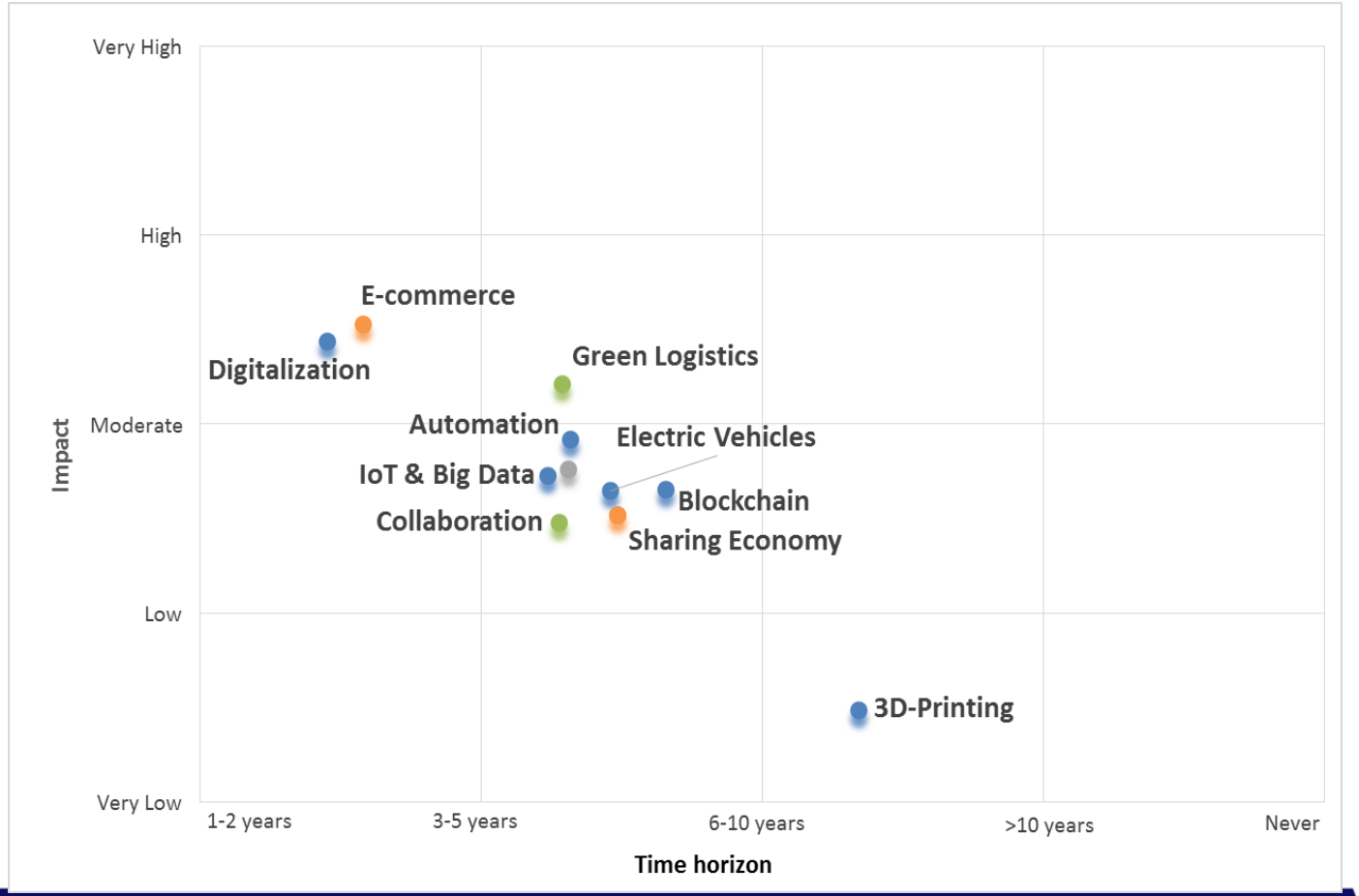

Freight transportation & Logistics Trends – Impacts and time horizon

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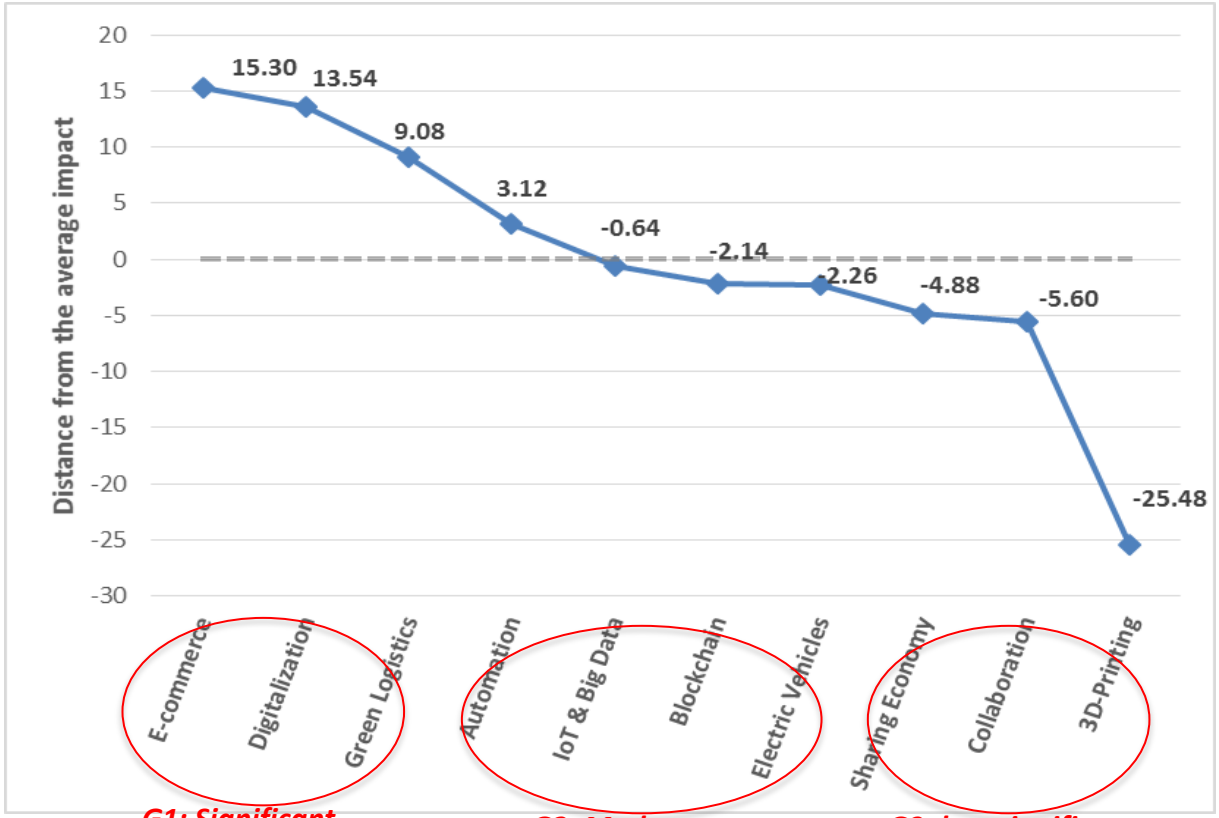
Drivers Impact Categorization

Driver/Trend	*Impact* *On a scale from 1 to 5*	*Impact* *On a scale from 0-100*
E-commerce	3.52	70.48
Digitalization	3.44	68.72
Green Logistics	3.21	64.26
Automation	2.92	58.30
IoT & Big Data	2.73	54.54
Blockchain	2.65	53.04
Electric Vehicles	2.65	52.92
Sharing Economy	2.52	50.30
Collaboration	2.48	49.58
3D-Printing	1.49	29.70

Average = 2.76

Impact of Drivers & Distance from the Avg.

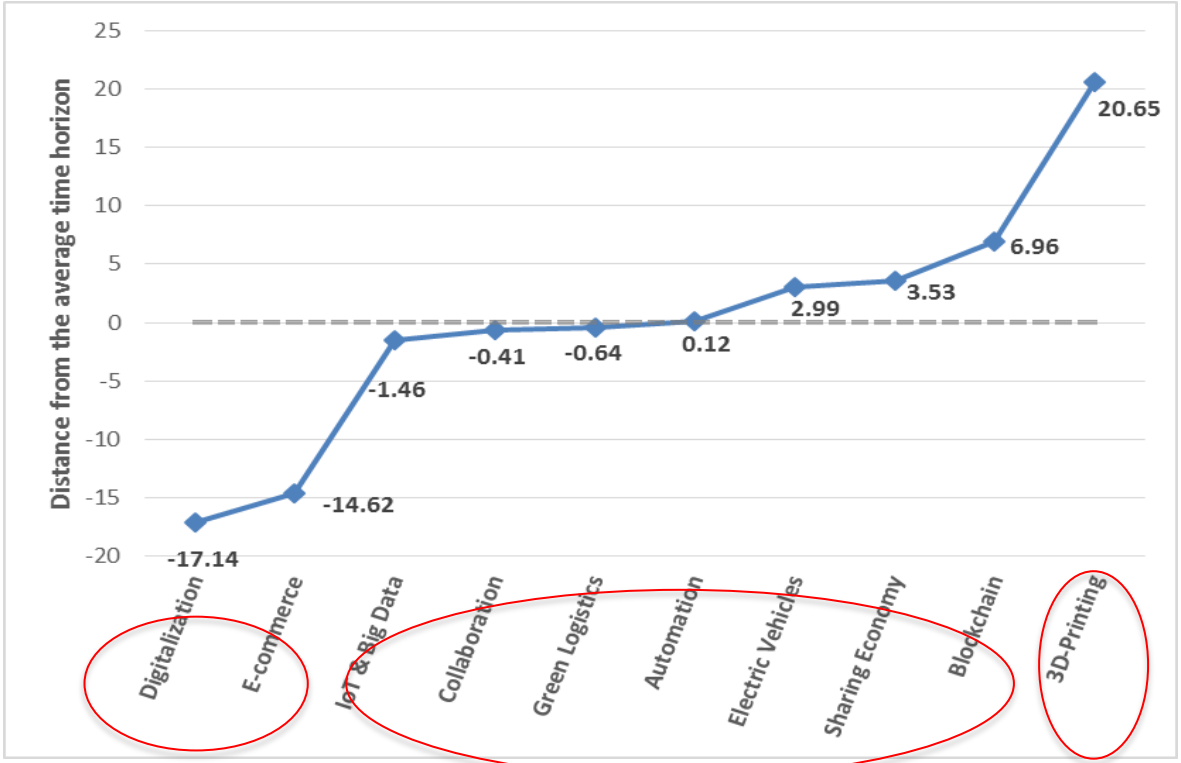


Impact in terms of Time

Driver/Trend	*Impact* *On a scale from 1 to 5*	*Impact* *On a scale from 0-100*
Digitalization	1.45	29.06
E-commerce	1.58	31.58
IoT & Big Data	2.24	44.74
Collaboration	2.28	45.56
Green Logistics	2.29	45.79
Automation	2.32	46.32
Electric Vehicles	2.46	49.19
Sharing Economy	2.49	49.73
Blockchain	2.66	53.16
3D-Printing	3.34	66.84

Average = 2.76

Impact with Time Horizon



G1: 1-3 years

G2: 3-10 years

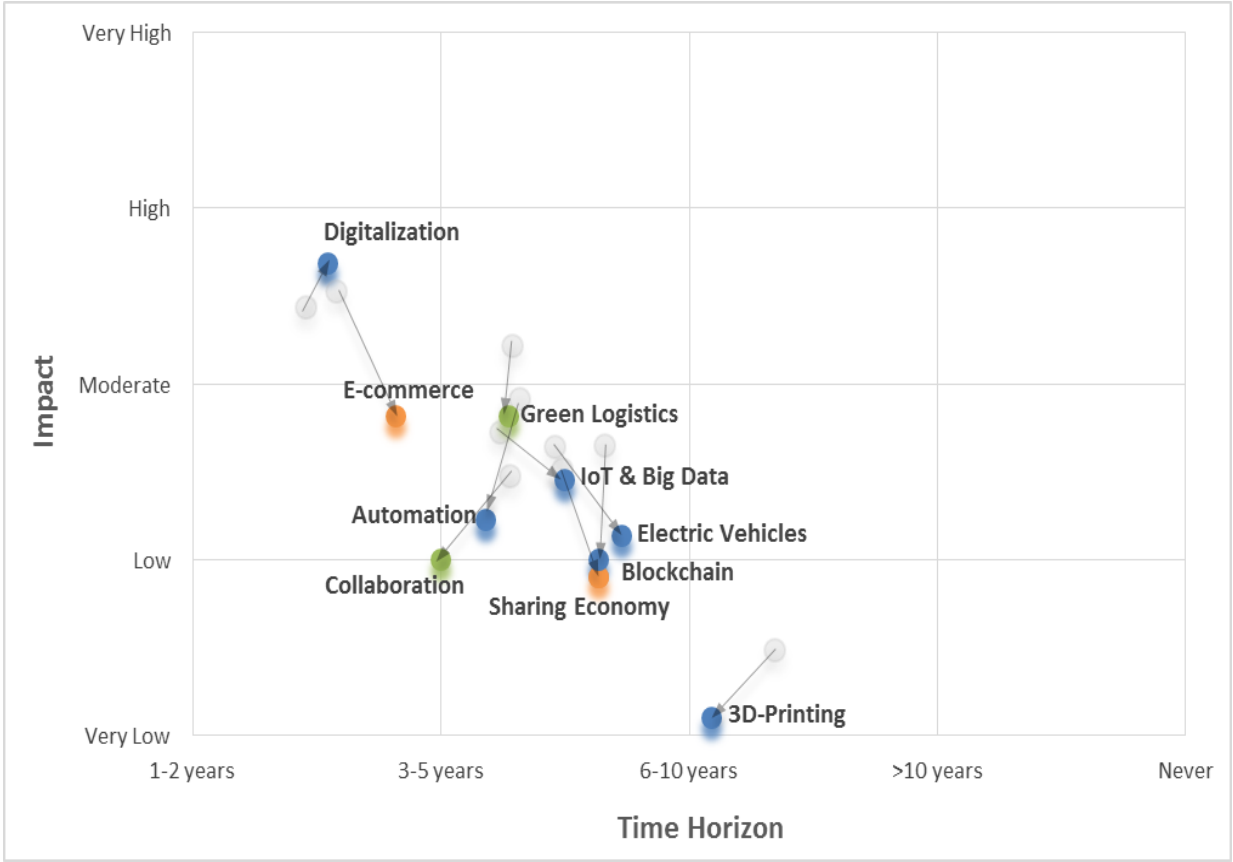
G3: >10 years

Clustering of Drivers

Clusters	*Drivers*	*Impact*	*Time horizon*
Cluster A	E-Commerce Digitalization	Moderate – High Average: 2.8	Relative close Average: 1.2
Cluster B	Green Logistics Automation	Moderate Average: 2.4	Relatively Far Average: 1.8
Cluster C	IoT & Big Data Blockchain Electric Vehicles Sharing Economy Collaboration	Low – Moderate Average: 2	Relatively Far Average: 1.9
Cluster D	3D Printing	Low Average: 1.1	Far Average: 2.6

Clustering of Drivers - Visuals

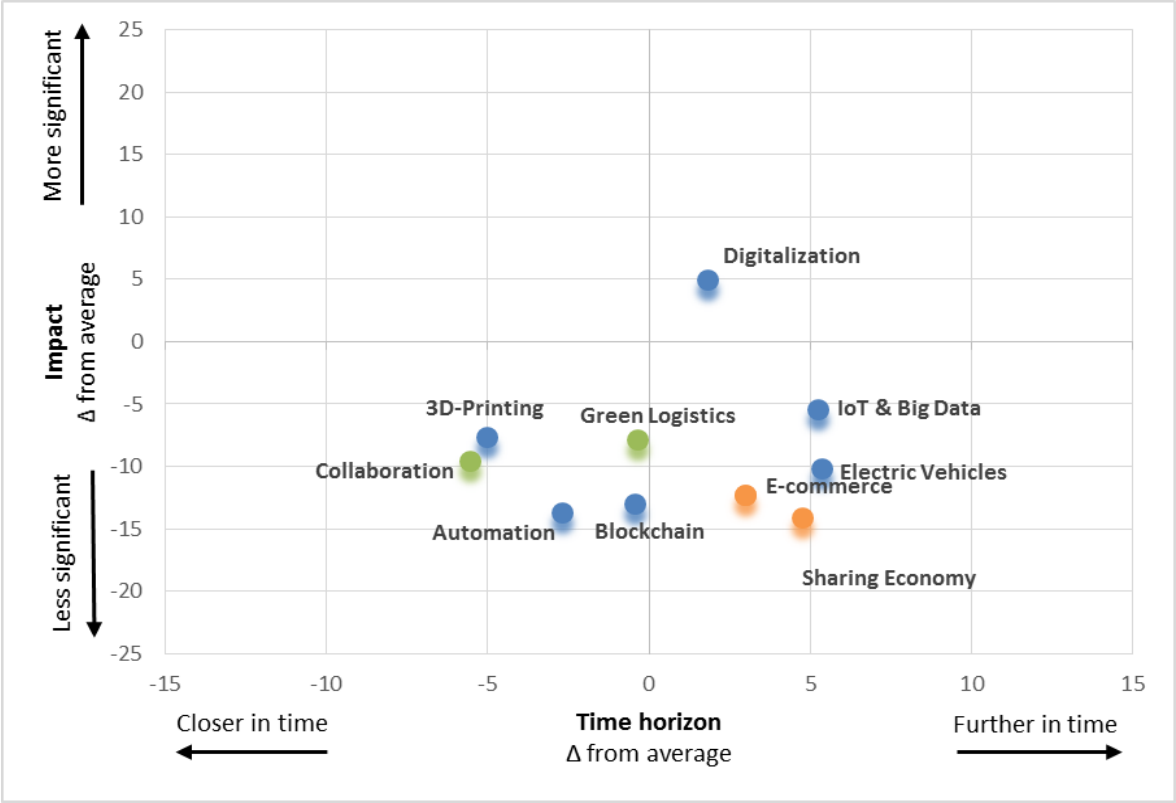
Clustering accoring to Business Sector



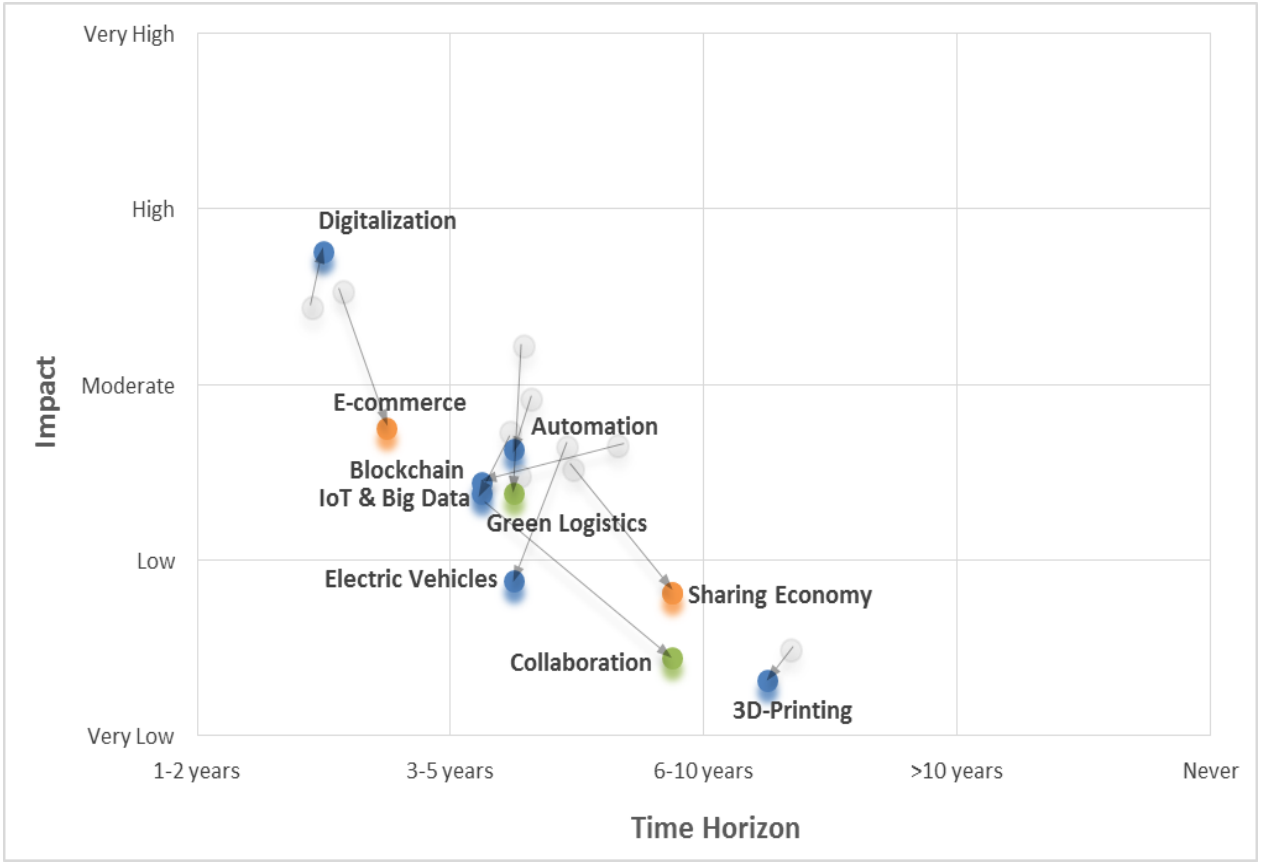
Clustering – Business Sector

Trend/Driver	*Impact*			*Time horizon*		
	Scale 1-5	*Scale 0-100*	*Δ from sample*	*Scale 1-5*	*Scale 0-100*	*Δ from sample*
Green Logistics	2.82	56.36	-7.90	2.27	45.45	-0.33
E-commerce	2.82	56.36	-14.12	1.82	36.36	4.78
Sharing Economy	1.90	38.00	-12.30	2.64	52.73	3.00
Electric Vehicles	2.14	42.73	-10.19	2.73	54.55	5.36
IoT & Big Data	2.45	49.09	-5.45	2.50	50.00	5.26
Automation	2.23	44.55	-13.75	2.18	43.64	-2.68
Blockchain	2.00	40.00	-13.04	2.64	52.73	-0.43
Digitalization	3.68	73.64	4.92	1.55	30.91	1.85
Collaboration	2.00	40.00	-9.58	2.00	40.00	-5.56
3D-Printing	1.10	22.00	-7.70	3.09	61.82	-5.02
Average	***2.31***	***46.27***	***-9.11***	***2.34***	***46.82***	***0.42***

Clustering - Business Sector (Deviation from avg)



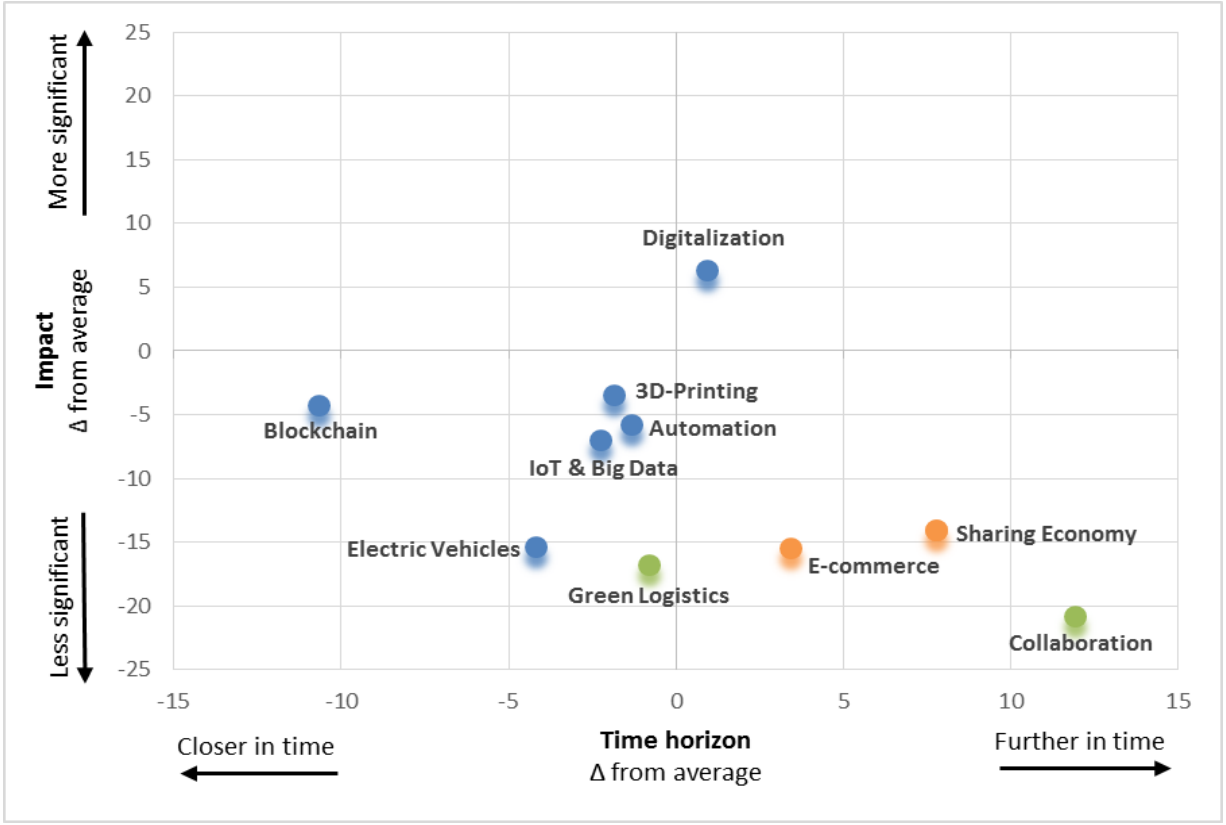
Clustering according to Authorities



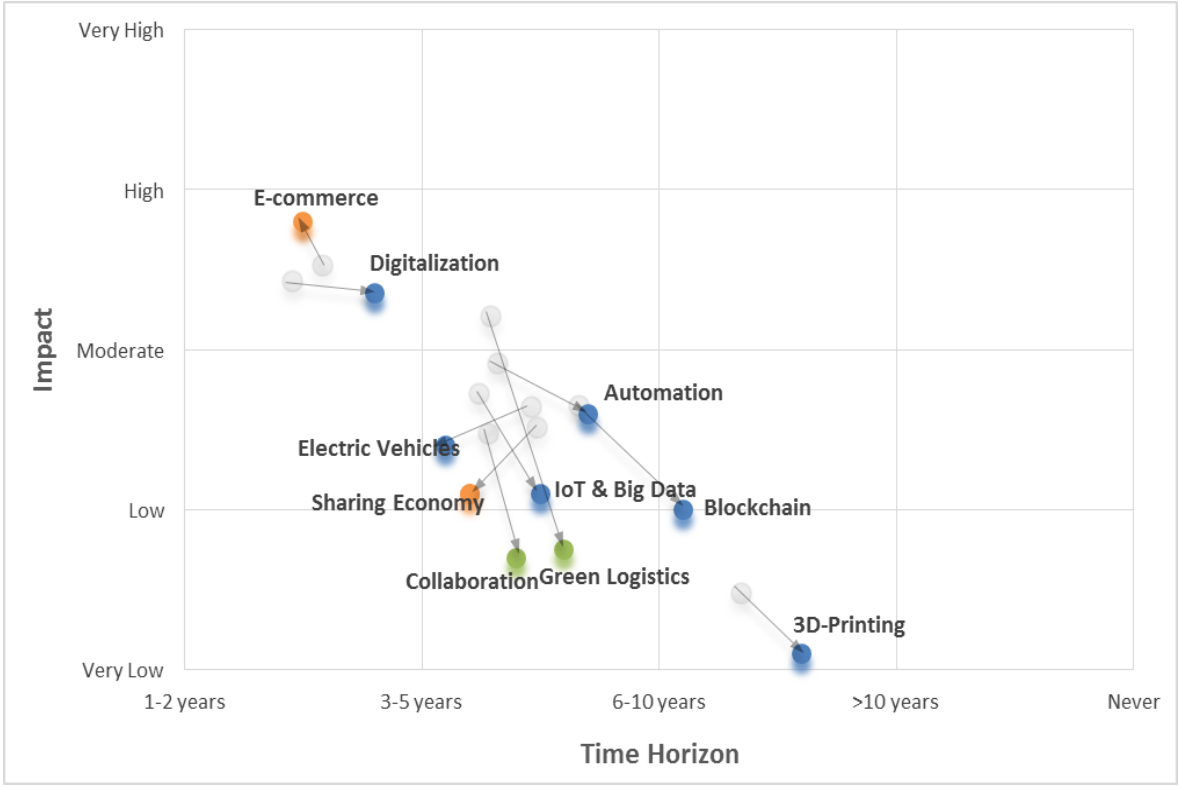
Clustering – Authorities

Trend/Driver	Impact			Time horizon		
	Scale 1-5	Scale 0-100	Δ from sample	Scale 1-5	Scale 0-100	Δ from sample
Green Logistics	2.38	47.50	-16.76	2.25	45.00	-0.79
E-commerce	2.75	55.00	-15.48	1.75	35.00	3.42
Sharing Economy	1.81	36.25	-14.05	2.88	57.50	7.77
Electric Vehicles	1.88	37.50	-15.42	2.25	45.00	-4.19
IoT & Big Data	2.38	47.50	-7.04	2.13	42.50	-2.24
Automation	2.63	52.50	-5.80	2.25	45.00	-1.32
Blockchain	2.44	48.75	-4.29	2.13	42.50	-10.66
Digitalization	3.75	75.00	6.28	1.50	30.00	0.94
Collaboration	1.44	28.75	-20.83	2.88	57.50	11.94
3D-Printing	1.31	26.25	-3.45	3.25	65.00	-1.84
Average	***2.28***	***45.50***	***-9.88***	***2.33***	***46.50***	***0.11***

Clustering – Authorities (Deviation from avg)



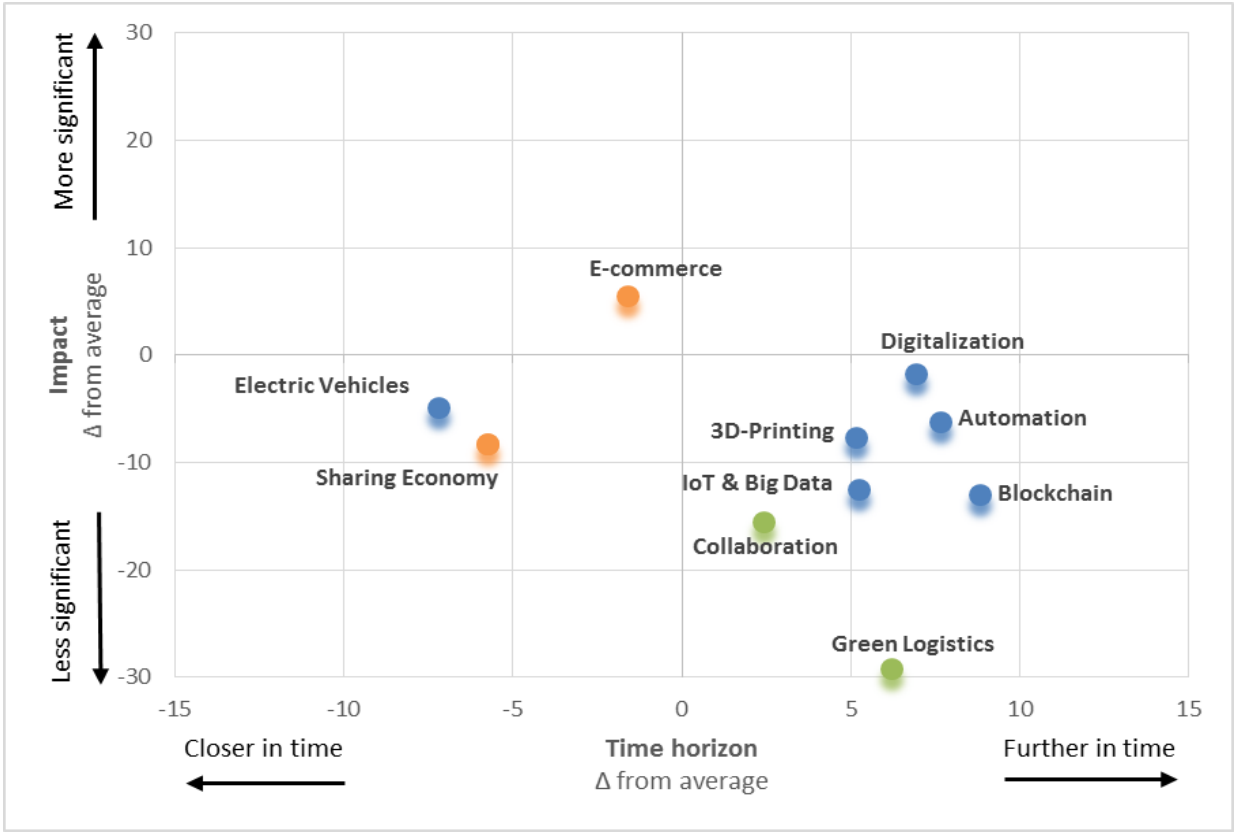
Clustering – Research Sector



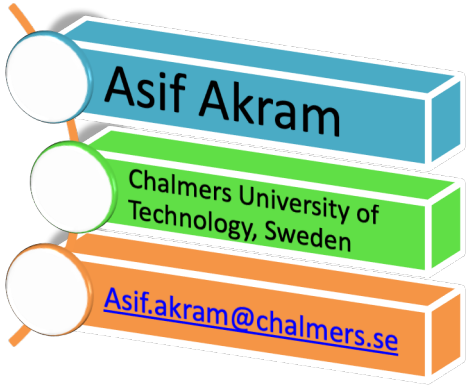
Clustering Summary - Authorities

Trend/Driver	*Impact*			*Time horizon*		
	Scale 1-5	*Scale 0-100*	*Δ from sample*	*Scale 1-5*	*Scale 0-100*	*Δ from sample*
Green Logistics	1.75	35	-29.26	2.6	52	6.21
E-commerce	3.8	76	5.52	1.5	30	-1.58
Sharing Economy	2.1	42	-8.30	2.2	44	-5.73
Electric Vehicles	2.4	48	-4.92	2.1	42	-7.19
IoT & Big Data	2.1	42	-12.54	2.5	50	5.26
Automation	2.6	52	-6.30	2.7	54	7.68
Blockchain	2	40	-13.04	3.1	62	8.84
Digitalization	3.35	67	-1.72	1.8	36	6.94
Collaboration	1.7	34	-15.58	2.4	48	2.44
3D-Printing	1.1	22	-7.70	3.6	72	5.16
Average	*2.29*	*45.8*	*-9.58*	*2.45*	*49*	*2.61*

Clustering – Research Sector (Devation from avg)



Discussion

Questions

Comments