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# Critical success factors of construction research and development

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**Table 3: Success factors of construction R&D**

Success Factors	Academia	Industry Partners	Total		Asymp. Sig.
	Mean	Mean	Mean	Rank	
<b>Initiation</b>					
Establish the research problem clearly	4.74	4.85	4.79	1	N/A
Commitment of the principal investigator	4.59	4.52	4.56	2	0.06
Selecting a competent team	4.50	4.44	4.48	3	0.51
Leadership of the principal investigator	4.35	4.19	4.28	4	0.08
Consider industrial partners' requirements	4.03	4.56	4.27	5	0.99
Consider funding bodies' requirements	4.29	4.22	4.26	6	0.87
Understand the market and its dynamics	4.21	4.04	4.13	7	0.45
<i>Consider researchers' requirements</i>	3.85	3.70	3.79	8	
<b>Conceptualising</b>					
Check the feasibility of the project	4.68	4.85	4.75	1	N/A
Commitment of the principal investigator	4.62	4.52	4.57	2	0.07
Committed and cooperative team members	4.48	4.59	4.53	3	0.55
Establish clear and realistic goals/ deliverables/ milestones	4.41	4.63	4.51	4	0.99
Adequate resources/financial support	4.44	4.44	4.44	5	0.52
Allocation of responsibilities to team members inline with competencies	4.41	4.37	4.39	6	0.61
Establish a plan to disseminate research results	4.35	4.44	4.39	7	1.00

Leadership of the principal investigator	4.26	4.37	4.31	8	0.58
Having a skilled team	4.38	4.19	4.30	9	0.76
Establish clear method to measure success	4.18	4.44	4.30	10	1.00
Consider industrial partners' requirements	4.35	4.22	4.30	11	0.95
Consider funding bodies' requirement	4.35	4.19	4.28	12	0.97
<i>Absence of lengthy bureaucracy</i>	<i>3.91</i>	<i>4.11</i>	<i>4.00</i>	<i>13</i>	<i>0.03</i>
<i>Early involvement of industrial partners</i>	<i>3.76</i>	<i>4.30</i>	<i>4.00</i>	<i>14</i>	
<i>Comprehensive briefing process</i>	<i>3.88</i>	<i>4.11</i>	<i>3.98</i>	<i>15</i>	
<i>Recognition for team members</i>	<i>3.88</i>	<i>3.96</i>	<i>3.92</i>	<i>16</i>	
<i>Consider researchers' requirements</i>	<i>3.91</i>	<i>3.74</i>	<i>3.84</i>	<i>17</i>	
<i>Fast decision making process</i>	<i>3.59</i>	<i>3.88</i>	<i>3.72</i>	<i>18</i>	
<b>Development</b>					
Committed and cooperative team members	4.62	4.56	4.59	1	N/A
Commitment of the principal investigator	4.56	4.59	4.57	2	0.83
Adequate resources/financial support	4.53	4.59	4.56	3	0.91
Having a skilled team	4.53	4.48	4.51	4	0.55
Meet funding bodies' requirements	4.53	4.48	4.51	5	0.99
Share a common understanding about the work	4.38	4.44	4.41	6	0.29
Having a well establish operational procedure	4.50	4.26	4.39	7	0.91
Meet industrial partners' requirements	4.24	4.59	4.39	8	0.98
Secure momentum/ motivation of the team	4.41	4.33	4.38	9	0.91
Flexibility and responsiveness to change	4.38	4.37	4.38	10	1.00

Leadership of the principal investigator	4.38	4.37	4.38	11	0.94
<i>Absence of lengthy bureaucracy</i>	4.03	4.22	4.11	12	0.02
<i>Meet researchers' requirements</i>	4.09	4.07	4.08	13	
<i>Recognition for team members</i>	4.00	4.04	4.02	14	
<i>Fast decision making process</i>	3.82	4.11	3.95	15	
<i>Having a risk mitigation strategy</i>	3.85	4.08	3.95	16	
<i>Testing the market</i>	3.79	4.07	3.92	17	
<b>Launch</b>					
Effective dissemination of the results	4.56	4.48	4.52	1	N/A
Meet funding bodies' requirements	4.65	4.30	4.49	2	0.73
Having a well established dissemination/ marketing plan	4.47	4.48	4.48	3	0.88
Meet industrial partners' requirements	4.21	4.63	4.40	4	0.46
Launch the output within the planned time frame	4.35	4.37	4.36	5	0.93
<i>Comprehensive project review and feedback</i>	3.91	4.22	4.05	6	0.03
<i>Meet researchers' requirements</i>	3.74	4.07	3.89	7	
<i>Refinement of the output after launch</i>	3.94	3.70	3.84	8	
<b>Project Management</b>					
Effective communication	4.68	4.74	4.70	1	N/A
Effective collaboration	4.62	4.63	4.62	2	0.28
Effective planning, controlling, and organising of activities	4.41	4.67	4.52	3	0.29
Continuous reviews	4.35	4.63	4.48	4	0.53

Effective resource management	4.26	4.44	4.34	5	0.19
Effective management of the people	4.38	4.26	4.33	6	0.85
<i>Having an external person to do reviews</i>	<i>3.97</i>	<i>4.00</i>	<i>3.98</i>	7	
<i>Evaluating post delivery success</i>	<i>3.82</i>	<i>4.11</i>	<i>3.95</i>	8	
<i>Having a separate project administrator</i>	<i>3.41</i>	<i>3.44</i>	<i>3.43</i>	9	

