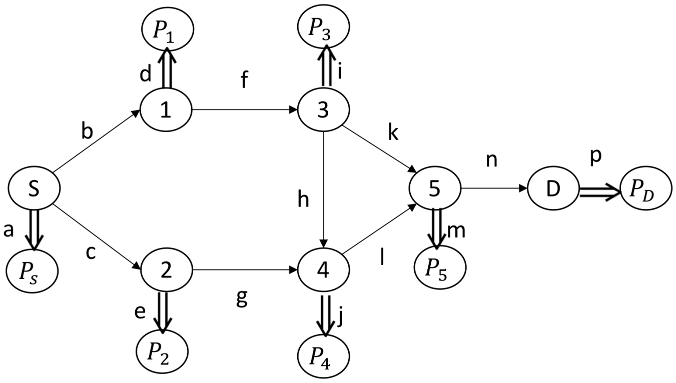

Fig. 4. Sample TN

TABLE VIII
RFT AND HFT OF DESTINATION NODE D

Time	TI_{ID}		$^{RFT_t}\omega_P^{ID}$			$^{HFT_t}\omega_P^{ID}$		
	LDB	UDB	b	d	u	b	d	u
t_1	0.3803	0.5489	0.4511	0.4646	0.0843	0.4511	0.4646	0.0843
t_2	0.4467	0.6492	0.3508	0.5480	0.1013	0.4010	0.5063	0.0928
t_3	0.4487	0.5880	0.4120	0.5184	0.0697	0.4065	0.5123	0.0812
t_4	0.3626	0.5670	0.4330	0.4648	0.1022	0.4197	0.4886	0.0917
t_5	0.4310	0.5393	0.4607	0.4852	0.0542	0.4402	0.4869	0.0729

E. Sample Trust Computations

We demonstrate trust computations using our toy example and a sample trust network. Fig 4 shows the sample network. We introduced notation for trust network earlier in Section II-B. As an example, b is an opinion triplet, which represents the opinion of node S on the trustworthiness of node 1 providing recommendations. All P_is are for representing FT, i.e. opinions of nodes on trustworthiness of the measurement they collect. As explained earlier, we compute propagated trust on each path (tc) from node S to D and then aggregate those values to find OTV_D. In our sample TN, we have the following paths:

$S-1-3-5-D-P_D$, $S-1-3-4-5-D-P_D$, $S-2-4-5-D-P_D$

We assume that Algorithm 1 is used to query the trust of water level measurement collected by the destination node D (OTV_D). Table VIII shows LDB and UDB, associated real-time and historical opinion triplets of node D ($^{RFT_t}\omega_P^{ID}$ and $^{HFT_t}\omega_P^{ID}$) at different times. LDB and UDB on the first row come from our earlier MADM formulation. We generate LDB and UDB for the following rows randomly from interval [0.30,0.45] and [0.50, 0.65], respectively. $^{RFT_t}\omega_P^{ID}$ and $^{HFT_t}\omega_P^{ID}$ are computed respectively using (7) and (8) (We set $\alpha = 0.5$). Note that the historical value on the last row is used as FT component of the TN, i.e. it is the label of the edge p in sample TN.

For other edges in the sample TN, we randomly generate trust intervals and obtain $^{HRT_t}\omega_B^A$. These opinion triplets of links are used to compute RT. Table IX shows the $^{HRT_t}\omega_B^A$ values we use. It also displays the propagated trust value for each tc, computed by visiting each link in the given order and by using (9). For demonstration purposes, we select $g(x) = x_b$ in $\boxtimes$ operation. For example, TV_{tc} on the second row of path 2 is obtained by: $b \boxtimes f = ^{HRT_t}\omega_1^S \boxtimes ^{HRT_t}\omega_3^1$. At the end of the section for each path, OTV_D is updated with final TV_{tc} using (10). Finally, the table shows the $OTV_D = (0.4407, 0.4868, 0.0725)$ as an aggregation of all TV_{tc}s and $^{HFT_t}\omega_P^{ID}$, highlighted as bold in the table. As seen from the table, when trust values are propagated through a tc, uncertainty increases. On the other hand, when we aggregate trust values from different tcs, uncertainty decreases, which means that more evidence is gathered by aggregation from alternative sources.

TABLE IX
OTV COMPUTATION FOR THE SAMPLE TN

Path	Link	Historical Opinion			TV_{tc}		
		b	d	u	b	d	u
1	b	0.4916	0.4456	0.0628	0.4916	0.4456	0.0628
1	f	0.0269	0.9529	0.0203	0.1503	0.1362	0.7135
1	k	0.4498	0.4934	0.0568	0.0802	0.0727	0.8470
1	n	0.4674	0.4666	0.0661	0.0408	0.0370	0.9222
				OTV_D:	0.0408	0.0370	0.9222
2	b	0.4916	0.4456	0.0628	0.4916	0.4456	0.0628
2	f	0.0269	0.9529	0.0203	0.1503	0.1362	0.7135
2	h	0.1787	0.4149	0.4065	0.0351	0.0318	0.9331
2	l	0.0961	0.7470	0.1570	0.0036	0.0033	0.9932
2	n	0.4674	0.4666	0.0661	0.0017	0.0015	0.9968
				OTV_D:	0.0423	0.0383	0.9194
3	c	0.1817	0.6065	0.2118	0.1817	0.6065	0.2118
3	g	0.0067	0.9854	0.0079	0.0056	0.0187	0.9757
3	l	0.0961	0.7470	0.1570	0.0006	0.0018	0.9976
3	n	0.4674	0.4666	0.0661	0.0003	0.0009	0.9989
				OTV_D:	0.0425	0.0391	0.9185
				$\mathbf{^{HFT_t}\omega_P^{ID}}$	0.4402	0.4869	0.0729
				OTV_D:	**0.4407**	**0.4868**	**0.0725**