ROLE OF KNOWLEDGE MANAGEMENT IN THE TELECOM SECTOR

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Abstract

The purpose of this paper is to investigate the impact of knowledge management on the competitive advantage capacity of an organisation. Questionnaire method has been used to collect data from employees working in the private telecommunication organisations. Two sets of questionnaires have been framed for the respondents. Extensive review of literature has been done to frame the dimensions of Knowledge Management and competitive advantage questions. Both questionnaires have been duly purified and validated before the data analysis. Structural Equation Modeling has been used to investigate the relationship between the two processes viz. Knowledge Management and competitive advantage. The results revealed a significant relationship between Knowledge Management and competitive advantage. Knowledge management enhances the competitive advantage capacity. Further, knowledge approach, knowledge protection and knowledge acquisition of knowledge management are significant predictors of competitive advantage. Data have been collected only from private sector. The respondents might have given the information regarding Knowledge Management and competitive advantage on the basis of own perception.

Keywords Knowledge management, Competitive advantage, Confirmatory factor analysis.

1. Introduction

In this information age the economic value of knowledge is more than the value of physical product (Demarest, 1997). This valuable knowledge becomes the key economic resource for an organisation to gain competitive advantage in competitive market which is full of uncertainties. There are competitions among organisations that develop new knowledge, share and convert it into services and products. Thus, knowledge gives their organisations ability to find out their weakness which create problems in their organisations and gain new opportunities (Alipour *et al.* 2010). Hence, knowledge management has become the basic necessity of all organisations in these days (Alipour *et al.* 2010) due to limited resources and increasing competition. The efficient management of knowledge in the organisation increases the skill and capabilities of employees (Julia and Rog, 2008) which helps to increase its competitive advantage.

Knowledge Management is an organisational method that utilises the strategic resource knowledge more deliberately and more efficiently. Many organisations are launching Knowledge Management initiatives with a view to improve business processes, make financial savings, generate greater revenues, enhance user acceptance and increase the competitiveness (Chua and Lam, 2005).

2. Knowledge Management (KM)-Conceptual Analysis

A conceptual understanding of knowledge management (KM) can be approached from various perspectives, such as philosophical, religious, cognitive, practical, etc. The KM literature has focused on the practical perspective, discussing it, for example, in the data-information-knowledge continuum (Davenport *et al.* 1996; Duffy, 2000). ' KNOWLEDGE' can be thought of as an information that changes something or somebody either in the most basic form by becoming grounds for actions or by making an individual capable of different or more effective action (Drucker, 1998). It is a fluid mix of framed experience (Davenport and Grover, 2001).Knowledge has been classified in different ways by knowledge management authors. Some have differentiated it as technical and strategic knowledge (Liebeskind, 1996) but the most common form of knowledge are tacit and explicit (Nonaka, 1994; Nonaka and Konno, 1998). Tacit knowledge is the knowledge that people have in their minds. It is more of an 'unspoken understanding' about something that is more difficult to write down. Explicit knowledge is documented information that can facilitate action (Nonaka, 1994). On the other hand 'MANAGEMENT Process' includes a range of activities ranging from learning, collaboration, and experimentation to integration of diverse sets of tasks and implementation of powerful information systems, such as the internet, intranets and extranets (Bhatt, 2002). Organisations learn and acquire knowledge through their routines which are embedded in specific organisational histories (Bhatt, 2002). Therefore KM can be defined as a systematic discipline and a set of approaches to enable information and knowledge to grow, flow, and create value in an organization. This involves people, information, work-flows, best practices, alliances, and communities of practice (Bharadwaj and Saxena, 2005). In general, Knowledge management in is seen as the process of critically managing knowledge to meet existing needs, to identify and exploit existing and acquired knowledge assets and artefacts and to develop new knowledge in order to take advantage of new opportunities and

challenges (Bharadwaj and Saxena, 2005). It encompasses any processes and practices concerned with creation, acquisition, capture, sharing and use of knowledge skills and expertise.

In holistic terms, Knowledge management must be seen as a strategy to manage organizational knowledge assets to support management decision making to enhance competitiveness, and to increase capacity for creativity and innovation (Nowack, *et al.* 2008). Therefore, the objective of a firm applying knowledge management is simply to make the right knowledge available at the right time at the right place.

3. Competitive Advantage

Competitive Advantage is the important issue in the marketing literature (Alipour *et al.* 2010). It is vital for the success and survival of companies. It is necessary for the company to be competitive in order to achieve major share in market and profits. Different concepts for competitive advantage have been emerged from different authors. Competitive advantage is abundance of company's suggestion attractiveness from the costumer's of point view in comparison with other rivals (Lismen *et al.* 2004). It is diversity of features or any company's dimensions that enables it to perform better services to customers than their competitors (Hao ma, 1999). Further, many theorists put focus on the factors present in the organisation in order to achieve competitive advantage (Alipour *et al.* 2006) including the resource-based view. It depicts that competitive advantage of an organisation is based on resources. It is not only competing on t ability to exploit but also on their ability to renew and develop their existing resources.

4. Knowledge Management and Competitive Advantage

Today, the competitiveness of the firm relies less on traditional factors (capital, land and labour) as knowledge is now replacing these traditional factors (Sher and Lee, 2003). As the importance of knowledge increases in a competitive organization, it becomes a pivotal engine for economic growth. The competitive advantage of an organization depends on the quality, quantity, creation, use and application of knowledge (Ahn *et al.* 2009).Turbulent environmental change continues to require effective knowledge management in order to achieve competitive advantage (Nielsen, 2006).

When knowledge is applied to existing ends, the size and durability of a firm's competitive advantage will be defined by how well protected its knowledge is (Chakravarthy *et al.* 2005). It is because knowledge as an asset is the source of a competitive advantage only when it is rare and inimitable.

Knowledge management has great impact on competitive advantage. KM affects competitive advantage in three ways viz; reduced costs, shortened production time and product differentiation. First, KM reduces the operation costs of a firm and creates added value to customers by significantly increasing product quality (Ofek and Sarway, 2001). Secondly, firms shorten time by analyzing current situations and allowing previous knowledge to be utilized to solve the problem for current situation (Duffy, 2000: Scarbrough, 1999). Finally, KM can be regarded as central to product and process innovation and improvement, executive decision- making and organizational adoption and renewal (Earl, 2001). Well-managed KM system in an organization improves business excellence and competitive advantage (Wiig, 1997). So the hypothesis generated from the above literature is:

Hypo1: Implementation of Knowledge management practices gives competitive edge to an organisation.

IT- supported knowledge management systems are an important value-adding component of knowledge management initiatives (Davenport and Prusak, 1998) because the knowledge (IT) approach helps in the systematic identification of de-central knowledge and the expertise, encourages converting knowledge in manifest forms and makes information accessible to others in the firm for local use in terms of knowledge re-use and as input for knowledge-development. IT utilisation leads to a reduction of costs, it tends to be a source of competitive advantage (Bharadwaj and Saxena, 2000).

Hypo2: Knowledge (IT) approach positively contributes to competitive advantage of an organisation.

5. Research Design and Methodology

In order to make the study more accurate and objective following steps have been taken:

5.1 Generation of Scale Items

The statements of the questionnaire were finalized after reviewing the existing literature and detailed discussion with the experts and interaction with the local managers of the leading telecommunication organizations. The questionnaire comprised three sections. The first section was concerned about the

demographic profile of the employees of telecom sector, where they were asked about the name of their organization, department, designation, qualification, age, gender, length of service. It was followed by two different scales i.e. Knowledge management scale and competitive advantage scale.

5.1.1 Knowledge Management Scale (KMS)

It consisted of 48 statements related to seven dimensions of knowledge management viz., knowledge sharing (10 statements) (Yi, 2009), knowledge acquisition (4 statements), (Nguyen and Neck , 2009) knowledge conversion (6 statements) (Nguyen and Neck, 2009), utilization (8 statements) (Nguyen and Neck, 2009), knowledge creation (5 statements) (Nonaka, 1991; Nonaka and Takeuchi, 1995), knowledge protection (6 statements) (Nguyen and Neck, 2009), knowledge IT approach (9 statements) (Sher and Lee ,2003). Knowledge management (KM) has been measured on 5-point Likert scale (1-5).

5.1.2 Competitive Advantage Scale (CAS)

The competitive advantage of Telecom- sector was measured with help of competitive advantage scale based on questionnaire developed by previous researchers viz. Nguyen and Neck (2009); Kongpichayanond (2009); Gold *et al.* (2001); Davenport and Grover (2001). This construct consisted of seven statements regarding competitive advantage.

5.2 Sample and Response Rate

The population for the study comprised 1190 employees working in the telecommunication organisations in Jammu. To determine the sample size, a pilot survey of fifty respondents selected conveniently from all the telecommunication organisations in Jammu, was conducted to work out the mean and standard deviation in the population with the help of the following formula (Mukhopadhya, 1998, p.21-31):

$$1.96*S.D\sqrt{N-n/n*N}=0.05*mean$$

Key: S.D=Standard Deviation, N= Total population, n= Sample population, Mean = sample mean.

After determining the mean and standard deviation in the population 1190, the sample size was worked out at 57 which were too small for application of multivariate techniques. So it was decided to find out the sample size according to number of items to be used for studying knowledge management. Every item requires 5 -10 respondents (Hair *et al.*, 2006). This research construct contained 48 items, so it was decided to take 480 as the sample size. The selection of employees was done on the basis of proportionate sampling by the mean of following formula

n/N*Sample size (Malhotra, 2002, p. 266-291).

Key: n= number of employees, N=Total population

Convenient sampling technique has been used for data collection. The data was collected from employees working in telecommunication organizations in Jammu. The list of employees in each company was not provided by the management. So it becomes difficult to identifying the numbers of employees in each category or group. Permission could not be obtained for personal contacts in the working hours. So respondents were contacted during lunch hours. Only 331 employees responded properly. Hence the response rate came to sixty-eight percent (Table 1).

6. Scale Purification-Exploratory Factor Analysis

Table1. Total Number of employees Contacted and Number of Responses Received

Name of the Company	Total Numbers of Employees	Number of Employees Contacted	Number of Questionnaires Received	Percentage
Reliance	210	84	84	100%
Aircel	250	101	86	85%
Airtel	180	73	45	62%
Vodafone	300	121	85	70%
TataIndicom	250	101	31	31%

The multivariate data reduction technique of factor analysis has been used for the study. The primary purpose of factor analysis is to define the underlying structure in a data matrix. It involves examination of interrelationships (correlations) among a large number of variables and reduction of large number of variables into few manageable and meaningful sets (Stewart, 1981). Factor analysis was carried out with the Statistical Package for Social Sciences (SPSS, 15.0 versions) to simplify and reduce the data. It was carried with principle component analysis method along with orthogonal

rotation procedure of varimax for summarizing the original information with minimum factor and optimal coverage (Stewart, 1981). The statements with factor loading less than 0.5 and Eigen value less than 1.0 were ignored for the subsequent analysis (Hair *et al.* 2007). The data reduction was performed in three steps- First in the anti-image correlation matrix; the items with value less than 0.5 on the diagonal axis were deleted. In the second step the extracted communalities were checked (amount of variance in each variable) and items with values less than 0.5 were ignored for the subsequent analysis. In the third step in rotated component matrix statements with multiple loadings and value less than 0.5 were ignored. The scale-wise purification is as under:-

6.1 Purification of Knowledge Management Scale

Factor analysis reduced the 48 statements to 22 which got compressed under seven factors namely, Knowledge Sharing (KS)/ (F1), Knowledge IT approach (KAP)/ (F2), Knowledge creation (KCR)/(F3), Knowledge Protection (KP)/(F4), Knowledge Conversion (KCO)/(F5), Knowledge Utilisation (KU)/(F6) and Knowledge Acquisition (KA)/(F7) respectively. The high Kaiser-Meyer-Olkin (KMO) value and chi-square value in Bartlett's test of sphericity (0.756 and 1487.313, respectively) revealed the sample adequacy for factor analysis. The total variance explained by these factors has arrived at 71 percent (Table 2). Eigen value of each factor is greater than one (Table 2). The ordering of factors shows their respective importance. Knowledge sharing, knowledge approach and knowledge creation are of great importance in this construct. Each is explaining about 12 percent of the total variation, followed by knowledge protection, knowledge conversion, knowledge utilisation and knowledge acquisition (Table 2).

Table2 Summary Of Results Of Overall Factor Analysis of Knowledge Management Data

Factors	Mean	S.D	F.L	Com.	E.V.	KMO	V.E.	Alpha value
KS (F1)								0.7899
Brains Brain storming sessions	4.06	1.39	0.750	0.628	2.437		12.183	
Team- meeting	4.09	0.89	0.865	0.731				
Share success stories	3.36	0.91	0.875	0.769				
KAP (F2)								0.7641
Knowledge formalization	4.11	0.83	0.837	0.758	2.407		12.036	
Standard Data	4.15	0.88	0.814	0.672				
Corporate Data	4.13	0.89	0.747	0.604				
IT specialists	4.10	0.84	0.795	0.512				
KCR (F3)								0.7562
Customer knowledge	4.10	0.85	0.834	0.754	1.985		11.927	
Social benefits	4.14	0.76	0.796	0.653				
According to Problems	4.09	0.85	0.705	0.589				
KP (F4)						0.756		0.7800
Protecting Trade marks	4.12	0.87	0.810	0.758	2.068		10.342	
Protects knowledge	4.19	0.92	0.795	0.670				
Importance of protection	4.17	0.89	0.746	0.639				
KCO (F5)								0.7158
Absorption of knowledge	4.12	0.82	0.837	0.750	1.527		10.633	
Organization knowledge	4.12	0.86	0.750	0.647				
Replacement- knowledge	4.19	0.81	0.741	0.620				
KU (F6)								0.7010
Improvement	4.09	0.79	0.642	0.675	1.334		10.671	
Better utilization	4.06	0.83	0.604	0.683				
Find out weakness	4.02	0.71	0.532	0.500				
KA (F7)								0.7800
Knowledge distribution	4.07	0.95	0.847	0.760	1.867		9.330	
Opportunities	4.04	0.93	0.752	0.699				
Competitors	3.98	0.92	0.708	0.688				
Total							**71.129**	**0.844**

Notes: S.D.= standard deviation, F.L.= factor loading, Comm.= communalities extracted, KMO= Kaiser-Meyer-Olkin, E.V.= Eigen value, V.E.= variance explained.

Table 3. Showing the Mean, S.D., Factor loading, Communalities, V.E, KMO and Eigen value of competitive scale

Factor	Mean	S.D	F.L	Com.	E.V.	KMO	V.E.
Competitive Advantage (CA/F8)	**4.12**	**0.83**					
Knowledge based innovation	4.10	0.86	0.827	0.684			
Competitors	4.14	0.78	0.799	0.638			
Line of services	4.13	0.85	0.606	0.567	**3.693**	**0.789**	**61.55**
Market conditions	4.90	**0.84**	0.794	0.599			
Efficient Management	4.10	0.82	0.876	0.580			
Difficult to duplicate	4.12	0.82	0.834	0.721			

Notes: S.D.= standard deviation, F.L.= factor loading, Comm.= communalities extracted, KMO= Kaiser-Meyer-Olkin, E.V.= Eigen value, V.E.= variance explained **Purification of Competitive**

Advantage Scale

This construct contained seven statements which got reduced to six under one factor after conducting factor analysis namely, CA (F8) with positive factor loadings values (0.827, 0.799, 0.606, 0.794, 0.876 and 0.834).The KMO value (0.789) and x^2 value in Bartlett's test of sphericity came to 394.174 gave required adequacy for factor analysis. The total variance explained by this factor is about 62 percent (Table 3), which reflects the soundness of the construct.

7. Scale Validation- Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a tool that enables us to either confirm or reject our preconceived theory. It is used to provide a confirmatory test of our measurement theory. A measurement theory specifies how measured variables logically and systematically represent constructs involved in theoretical model. In other words, measurement theory specifies a series of relationships that suggest how measured variables represent a latent construct that is not measured directly (Hair *et al.* 2005).

In the present study before running CFA, EFA was carried out to restrict the number of indicators which retained only 22 items under seven factors. During CFA items with standardized regression weights (SRW) less than 0.5 were deleted (Hair *et al.* 2005). The detailed CFA for two scales is as under:-

7.1 Measurement Model Development for Knowledge Management

The Knowledge Management construct comprised with sub scales namely, Knowledge Sharing, Approach, Acquisition, Creation, Utilization, Conversion and Protection (Figure 1). The result of CFA on all sub scales revealed that all the manifest variables are highly loaded on their latent construct (Table 4). The fit indices of the specified measurement model have also yielded excellent results (Chi-square/df= 1.93; $p<0.001$; GFI= 0.910; AGFI= 0.884; CFI=0.911; RMR=0.045; and RMSEA=0.054).

Table 4 shows that all standardized regression weights are substantial and significant at $p<0.001$. This measurement model did not contain any cross- loadings either among the measured variables or among the error terms. These results supported the unidimensionality, convergent and discriminant validity of all sub-scales in the final measurement model (Hair et al, 2005)

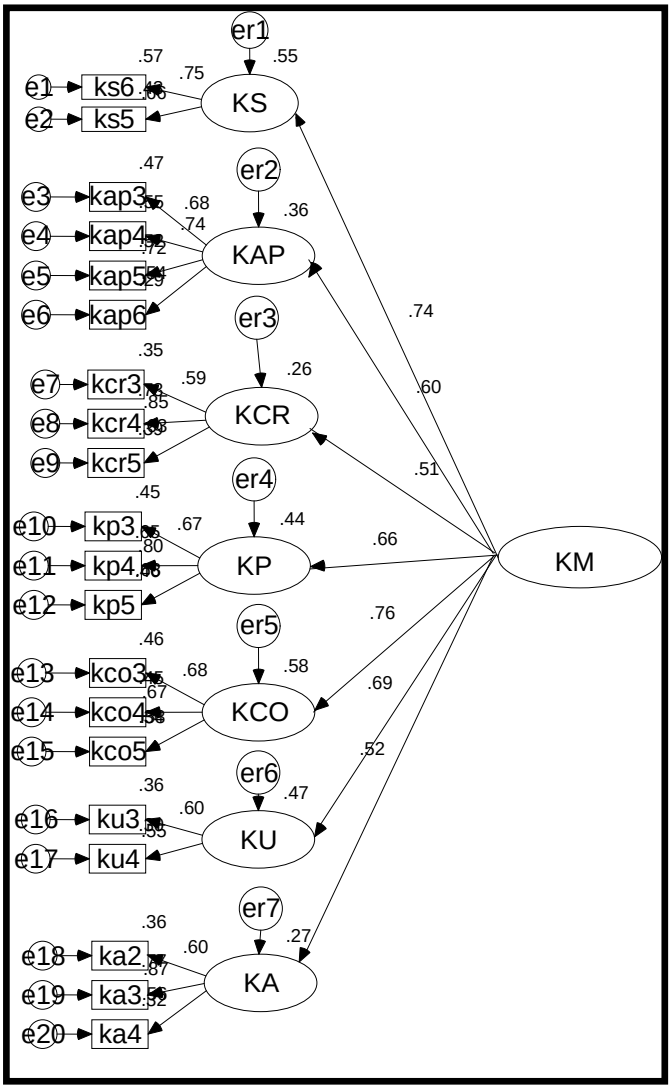

Fig 1: Knowledge Management Measurement Model

KEY: KS5---KA4 are the manifest variables of sub-scales, KS---KA are the sub-scales of knowledge management scale, e1----e20 are the error terms of manifest variables, er1---er7 are the error terms of sub-scales of knowledge management mode, KM---Knowledge Management.

Table 4 showing SRW, CR, P-VALUE AND R2 of knowledge management model

Latent variables	Manifest variables	SRW	CR	P-value	R^2
Kap	KAp4	0.742	10.342	0.001	0.450
	KAp3	0.684	Ref		0.554
	KAp5	0.723	10.160	0.001	0.517
	KAp6	0.546	8.158	0.001	0.295
KP	KP3	0.665	Ref		0.450
	KP4	0.807	10.206	0.001	0.647
	KP5	0.681	9.629	0.001	0.459
KS	KS5	0.660	Ref		0.568
	KS6	0.748	7.744	0.001	0.429
KCr	KCr3	0.599	Ref		0.353
	KCr4	0.838	8.501	0.001	0.729
	KCr5	0.639	8.420	0.001	0.395
Kco	KCo3	0.660	Ref		0.456
	KCo4	0.681	8.494	0.001	0.451
	KCo5	0.590	7.835	0.001	0.338
KA	KA2	0.599	Ref		0.359
	KA3	0.874	8.249	0.001	0.765
	KA4	0.562	7.934	0.001	0.315
KU	KU4	0.602	Ref		0.363
	KU3	0.600	5.225	0.001	0.304

7.2 Measurement Model Development for Competitive Advantage

EFA resulted into one factor consisting of six manifest variables i.e. CA1, CA2, CA3, CA4, CA5 and CA7. Application of CFA resulted in deletion of two statements i.e. CA4 and CA5 due to low standard regression weight. Manifest variable CA2 is highly loaded (0.73) on its latent construct followed by CA1, CA3 and CA7 (Table 5) proving the convergent validity of the scale.

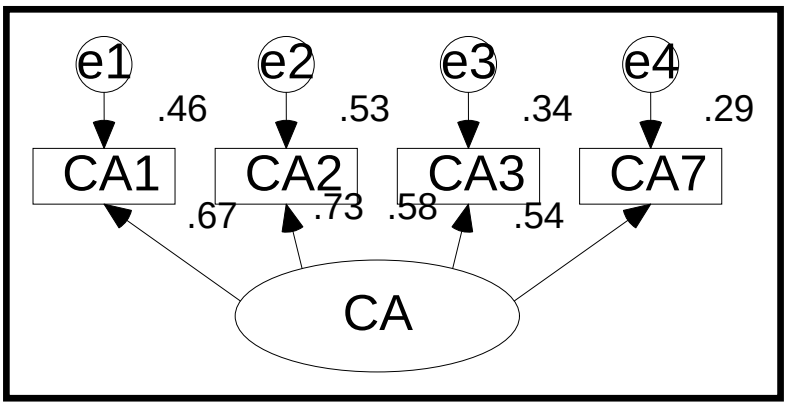

Fig 2: Measurement Model of Competitive Advantage Scale

KEY: CA1to CA7→manifest variables, e1to e6→error terms, CA→competitive advantage

This model resulted into four indicators and have excellent fit (Chi-square/df=2.066, GFI= 0.994, AGFI=0.969, RMSR=0.014, RMSEA=0.058, CFI=0.991 and NFI=0.983).

Table 5. Showing the results of CFA (Competitive Advantage)

Competitive Advantage (CA)	CA1	0.675	Ref		0.455
	CA2	0.726	7.850	**0.001**	0.527
	CA3	0.581	8.575	0.001	0.337
	CA7	0.541	7.457	**0.001**	0.300

8. Reliability

The reliability of knowledge management scale and competitive advantage scale was assessed through the cronbach's alpha, which assesses the internal consistency of the scale. The alpha reliabilities for each of the dimension of knowledge management and competitive advantage are high (above 0.7) indicating internal consistency and further the reliability of all sub-scales of knowledge management (Table 2) and competitive advantage has also proven very good (Table 3).

The construct reliability was tested with the help of following formula

CR= (Sum of standardised loadings) ^{2} / (Sum of standardised loadings) ^{2} + Sum of error terms

The values of both the scales are greater than 0.9, (Knowledge management=0.966 and Competitive advantage = 0.982), thereby indicating strong construct reliability.

9. Validity

9.1 Face validity/ Content validity: The content/ face validity of the constructs i.e. Knowledge management, and competitive advantage was duly assessed through review of literature and discussions with the subject experts, managers and other employees of Telecom sector i.e Airtel, Aircel, Vodafone, Tata Indicom and Reliance.

9.2 Convergent Validity: Convergent validity refers to the extent to which the measures correlate with other measures that were designed to measure the same thing. High correlations indicate that the scale is measuring the concept. A scale with Bentler- Bonett coefficient values of 0.90 or above implies strong convergent validity (Bentler and Bonnet, 1980).The Bentler- Bonnet coefficient for all scales is above 0.90, indicating strong convergent validity. Further convergent validity can also be checked through factor loadings (and variance extracted which should be 0.5 or higher. It gets established in the present study as majority of loadings came to be above 0.70 and variance extracted of these scales are above.

9.3 Discriminant Validity: Discriminant validity refers to the extent to which the measures differs from other similar measures designed to measure different concepts. It can be examined through the evaluation of the Variance extracted (VE) (Fornell and Larcker, 1981). They suggested that the variance extracted for each construct should be greater than squared correlation between constructs. Since variance extracted for each construct i.e. Knowledge management and competitive advantage is greater than their squared correlations, proving the significant discriminant validity (Table 6).

Table 6. Discriminant Validity of Latent Constructs

AVE/ALPHA	Knowledge Management	Competitive Advantage
Knowledge Management	.990 (.83)	
Competitive Advantage	.770**	.973 (.70)
Note: AVE is on the diagonal, squared multiple correlations are given below the diagonal and Cronbach's alpha values are in the brackets.		

10. Measurement and Analysis of Knowledge Management

The overall degree of assessing knowledge management in Telecommunication sector is very high (4.11) at 5 point. Knowledge management, being a multifaceted phenomenon was calculated on the basis of various dimensions. The detailed analysis of each dimension is as under.

KNOWLEDGE SHARING

The total mean derived from different items of knowledge sharing came to 4.07. CFA resulted into two items. The item "Team meeting" is highly related with knowledge sharing (SRW=0.749). Most of the employees are involved in the team–meeting (M=4.09) of the organization, which gave solutions to their problems. The relation between the item "Brain storming" and knowledge sharing is also high (SRW=0.660). Regular brainstorming sessions are held which increases their knowledge and reduces their problems. The detailed analysis of this dimension revealed that brainstorming session and team meetings are necessary components of sharing knowledge among employees (Table 2)

KNOWLEDGE ACQUISITION

The knowledge acquisition is the ability to seek new knowledge and enhance the knowledge management in the organisation. Knowledge acquisition is an important source of new knowledge for a firm (M=4.06). CFA of knowledge acquisition resulted in three items. The item "Knowledge about new opportunities" is highly related with knowledge acquisition (SRW=0.874). The knowledge is being acquired about new opportunities (M=3.98) for the purpose of growth and diversification of the business. The knowledge is always distributed throughout the org (M=4.07). The organisations acquire about the competitors (4.04) to remain in the market (Table 2)

KNOWLEDGE CONVERSION

The factorial mean of this dimension has arrived at 4.15. The item "Organization of knowledge" highly reflects the construct (SRW=0.681). The organizations store the organised knowledge (M=4.12). It makes knowledge useful and promote the effective and efficient management. The item "Integration of knowledge" is significantly related with construct (SRW=0.660). The organization integrates different source and types of knowledge (M=4.12). Proper integration of knowledge increased the capabilities of the organization. The organizations also replace the irrelevant knowledge (M=4.19) as it increases its efficiency. The overall analysis of this dimension explains that integration, organization of useful knowledge and replacement of outdated knowledge are the important components of knowledge conversion.

Knowledge Utilisation

Knowledge utilization means the actual use of knowledge. The total mean of the dimension has arrived at 4.11. The item "Knowledge utilization to change competitive advantage" is highly related with the scale (SRW= 0.600). The organizations utilize knowledge for competitive advantage (M=4.09) and for problem solving (M=4.06). The detailed analysis revealed that effective utilization of knowledge can result in competitive advantage and help in solving problem in an organization (Table 2).

KNOWLEDGE CREATION

The overall mean of this dimension has figured out at 4.11. CFA result showed that three items highly related with latent construct. The item "Creation of knowledge for social benefits" is highly related with the construct (SRW=0.838). Knowledge is created to provide social benefits (M=4.14) and solve the problem (M=4.09) faced by the organization. Knowledge created through customers feedback (M=4.10) is also used for social benefits. The detailed analysis indicates that knowledge is created on the basis of customer feedback for the purpose of social benefits as well as to solve the problem (Table 2).

KNOWLEDGE PROTECTION

The total mean of this dimension has arrived at 4.16. The item "protection of knowledge embedded in individuals highly reflects the construct (SRW= 0.807). The organizations are utilizing this source highly (M=4.19) and frame extensive policies and procedures for protecting trade secrets (4.12). Further, the importance of protecting knowledge is also communicated to the employees (M=4.17). The detailed analysis reveals that knowledge protection is the ability to secure knowledge from inappropriate uses, which is being highly practiced in selected organizations (Table 2).

KNOWLEDGE (IT) APPROACH

Knowledge approaches are the activities that make knowledge management successful in an organization. Modern age is the age of science. So information technology (IT) is an important approach in the knowledge management. The total mean of this dimension has arrived at 4.13. The relationship of item "Standardized data" with the construct is quite high (0.742). Most of the employees (83%) use IT system to enable knowledge formalization across the organization (4.11). These organizations have IT specialists who design the program (M=4.16) for the corporate data to be shared among employees (4.13), which is identified and standardized across the organization (4.15). IT is being used by organization to perform specific tasks as efficiently as possible (Table2).

11. Measurement and Analysis of Competitive Advantage

The employees of telecom organisations in Jammu perceive that their organisations have competitive advantage (M=4.12).The telecom organisations are following both types of cost differentiation and product/service differentiation strategies to gain competitive advantage. The item "Knowledge about competitors" is highly related to competitive advantage (SRW=0.726, Table 4), thereby, revealing its importance. Knowledge about competitors help their organisations to change their range of services according to the market competition provided by the competitors (M= 4.14, Table 3). The relationship of "Knowledge based innovation" with the construct is also good (SRW= 0.675, Table 5). It shows the importance of knowledge based innovation for attaining competitive advantage. The IT companies are also exercising this parameter a lot (M= 4.10, Table 3) to gain competitive advantage. The item "Different variety" also adequately reflects the construct (SRW=0.581, Table 5). Organisations use KM to widen the line/ range of services without increasing cost (M= 4.13) (Table 3). Cost is the major determinant for attracting customers as well as giving an edge in the market. Most of the employees (81%) believe that their organisation's knowledge management capabilities are difficult and expensive for rivals to copy (M=4.12) (Table 3). The overall analysis of competitive advantage reveals that organisation achieve competitive advantage through knowledge based innovation, complete knowledge regarding competitors and different variety of services in the market at reasonable prices.

12. Relationship between Knowledge Management and Competitive Advantage: Structural Equation Modeling (SEM)

EM is a tool to test the specified set of relationships among observed and latent variables as whole (MacCallum and Austin, 2000). SEM has the ability to incorporate latent variables into the analysis. A latent construct or variable is a hypothetical and unobserved concept that can be represented by observable or measurable variables called indicators or manifest variables. The inclusion of latent construct improves statistical estimation, better represents theoretical concepts and directly accounts for measurement error.

Two latent construct were used to assess the relationship between knowledge management and competitive advantage. It was a recursive model which shows only one-way relationship. Initially one path was established from knowledge management to competitive advantage. The results revealed knowledge management is a strong predictor of competitive advantage (SRW= 0.78 sig<0.001, Fig 3). It is responsible for fifty-eight percent variation in the competitive advantage. It supports the hypothesis

1. The goodness of fit indices have also yielded excellent results (GFI=0.956, AGFI=0.927, NFI=0.892 and CFI=0.934, RMR=0.023 and RMSEA=0.0625). Estimation from SEM (Figure 3) revealed that knowledge management has significant relationship with innovation. Knowledge management is the strong predictor of competitive advantage (SRW= 0.76, significant at < 0.01), thus, Hypothesis 1 is supported, that is, implementation of knowledge management gives competitive edge to the organisation.

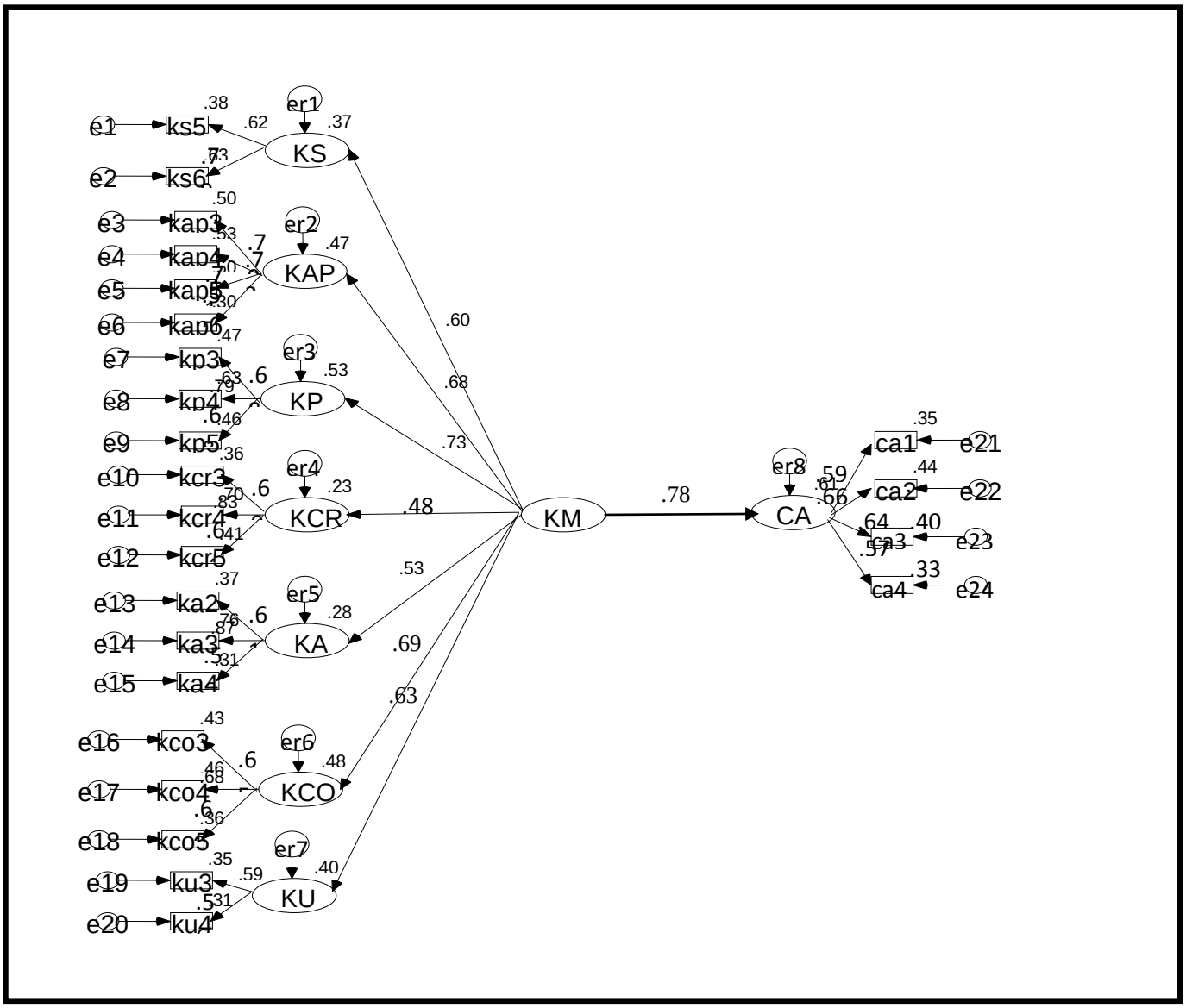

Fig 3: Impact of Knowledge Management on Competitive Advantage

Key: ***Key: KS-knowledge sharing, KAP-knowledge approach, KP-knowledge protection, KCR-knowledge creation, KA-knowledge acquisition, KCO-knowledge conversion, KU-knowledge utilisation, e1—e20 are the error terms, KS6—KU4 are the manifest variables, CA-competitive advantage, KM-knowledge management.***

Factor-wise impact of knowledge management on competitive advantage revealed that all factors are not significant predictor of competitive advantage and the model fitness is also poor (Fig 4). To obtain the model fitness all the insignificant relations was removed and model was again tested. The results revealed that knowledge (IT) approach (KAP), knowledge protection (KP) and knowledge acquisition (KA) have significant relationship with competitive advantage (Fig 5). All these are the predictors of competitive advantage. Knowledge acquisition is highly influencing the competitive advantage (SRW=0.50 sig. < 0.001) as compared to knowledge (IT) approach (SRW=0.46) and knowledge protection (SRW=0.26). The combined variation caused by all these dimensions on competitive advantage is sixty-two percent. Hence hypothesis 2 i.e. Knowledge IT approach positively contributes to competitive advantage is accepted. The fitness of this model is excellent (Chi-square=55.7, df=26, GFI=0.962, AGFI=0.934, CFI=0.904, NFI=0.946, RMR=0.021 and RMSEA=0.060).

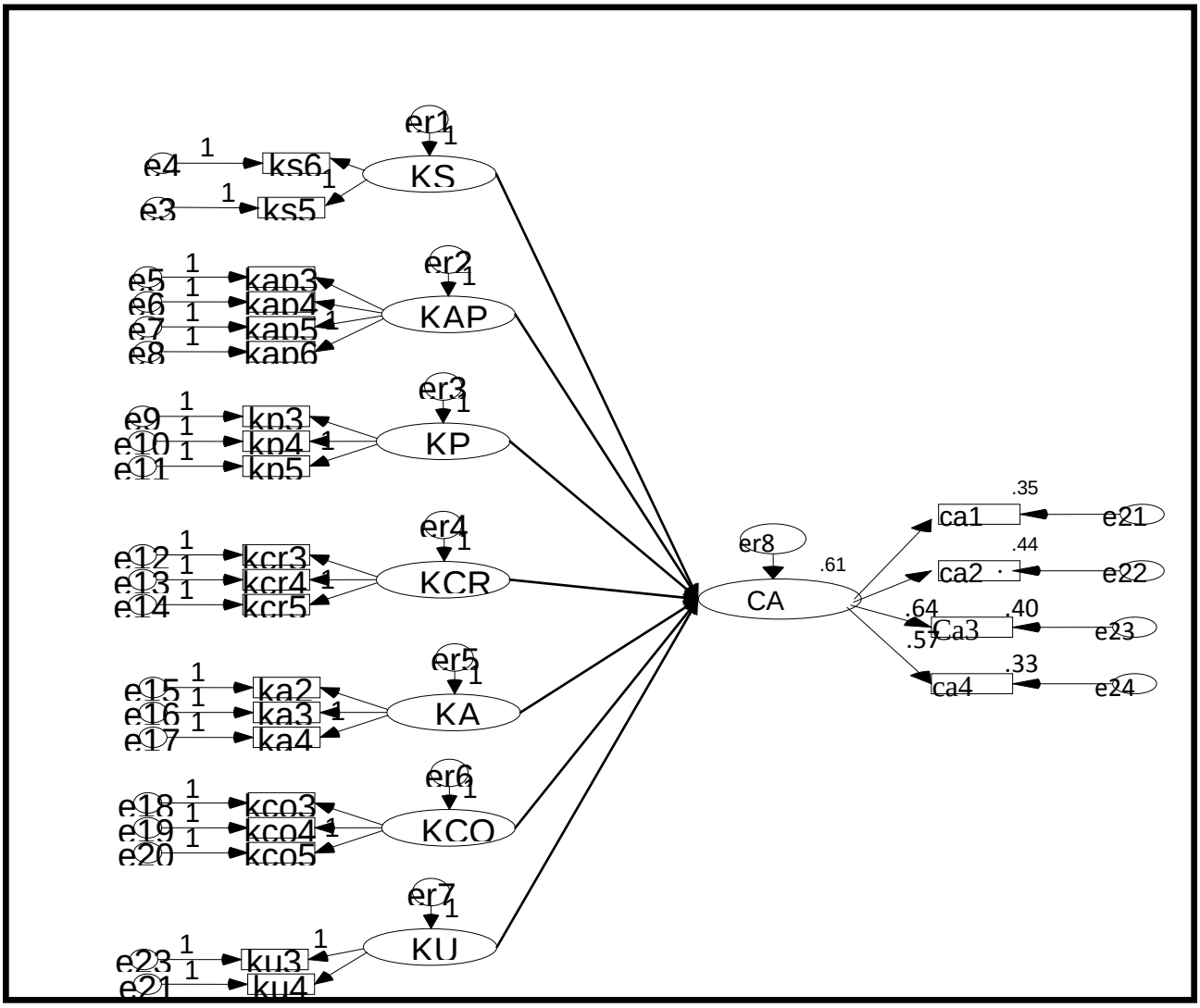

Fig 4: Impact of dimensions of knowledge management on competitive advantage

Key: ***Key: KS-knowledge sharing, KAP-knowledge approach, KP-knowledge protection, KCR-knowledge creation, KA-knowledge acquisition, KCO-knowledge conversion, KU-knowledge utilisation, e4—e21 are the error terms, KS6—KU4 are the manifest variables, CA-competitive advantage, KM-knowledge management.***

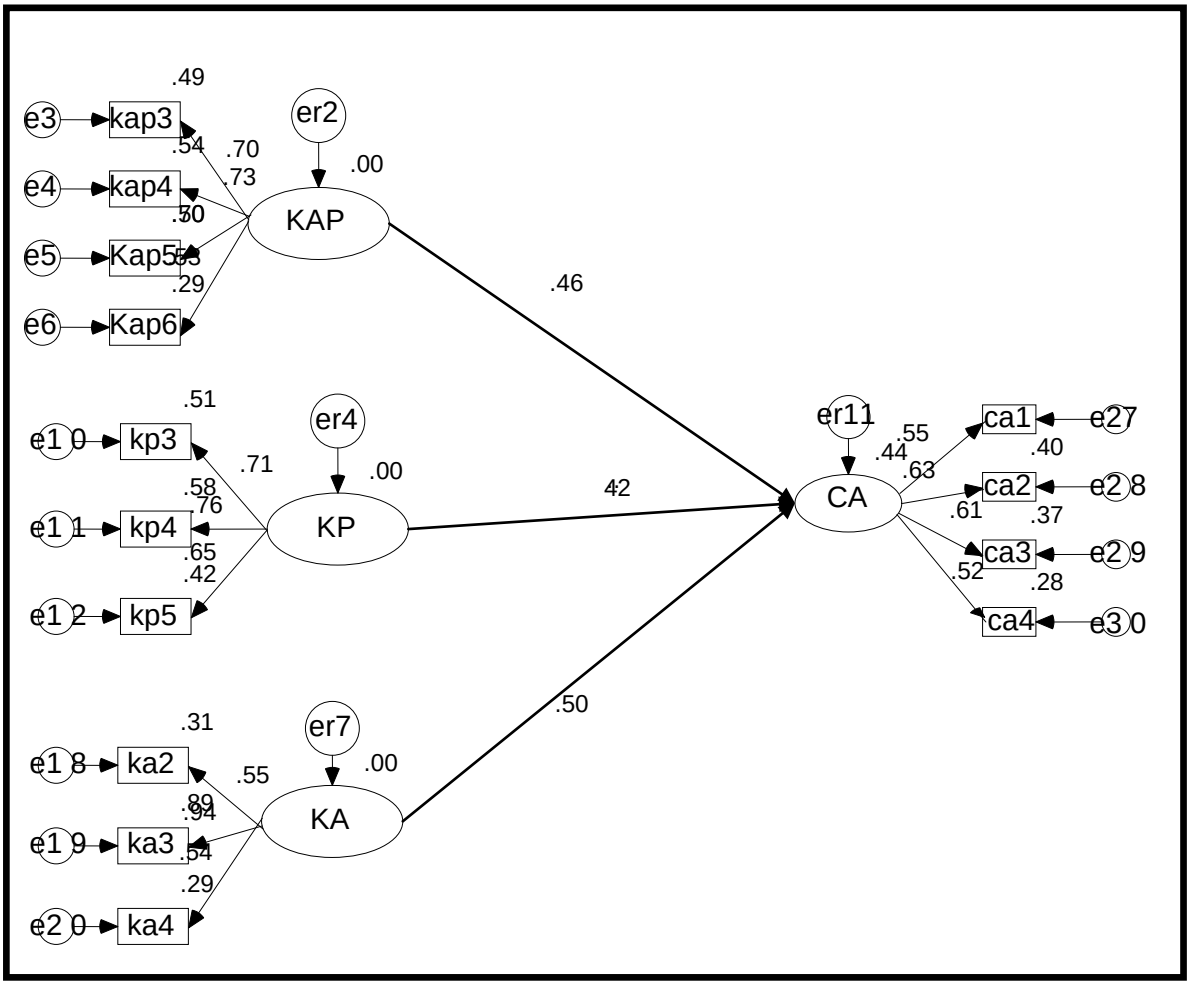

Fig 5: Impact of knowledge (IT) approach, knowledge protection and knowledge acquisition on competitive advantage

Key: ***Key: KS-knowledge sharing, KAP-knowledge approach, KP-knowledge protection, KCR-knowledge creation, KA-knowledge acquisition, KCO-knowledge conversion, KU-knowledge utilisation, e4—e21 are the error terms, KS6—KU4 are the manifest variables, CA-competitive advantage, KM-knowledge management.***

13. Conclusion

Employees of telecommunication organisations have high perception about implementation of knowledge management practices in their organisation. Knowledge sharing is the most important factor of knowledge management. Employees can share their knowledge through discussion and team meetings, which increase their knowledge and helps to solve problems concerned with goals attainment. Knowledge approach (IT) and knowledge creation are also the valuable factors of knowledge management. IT specialists are required to maintain data base which helps in the formation of new knowledge to perform special tasks efficient. Further, knowledge conversion enhances the capabilities of the organisation through proper integration of knowledge and managing the overall knowledge in the organisation. Knowledge protection helps to protect the knowledge, utilized for various purposes, from inappropriate use by making policies and procedures. Knowledge acquisition helps in the growth and diversification of the business. All the processes of knowledge management help in the creation and development of competition. Further, the structural model for the present study highlights two significant latent constructs namely; Knowledge management and competitive advantage. While analysing the relationship of Knowledge management with competitive advantage it appeared that knowledge management has a strong and significant relationship competitive advantage. Knowledge Management is the stronger predictor of competitive advantage. Any variation in the knowledge management implies direct effect on competitive advantage. Further, dimension-wise impact of knowledge management and competitive advantage also explored which revealed that knowledge protections, knowledge (IT) approach and knowledge acquisition effect competitive advantage. Knowledge acquisition is highly influences competitive advantage because a service

provider organisation remains in competition only if it has full information for its competitors, policies of governments, customers etc. They get all these information from the process of knowledge acquisition where as knowledge protection process also plays an important role in the organisation to gain competitive advantage by protects these information from illegal us.

14. Theoretical Implications

In this study, the knowledge management and competitive scales have been validated. Further, we established the relationship among knowledge management and competitve advantage, dimensions of knowledge management on competitive advantage in the telecommunication organisations which can further be used. All this will not only enhance the level of knowledge management in telecommunication organisations, but it will also improve the competition level of the organisations.

15. FUTURE RESEARCH

1. Public organizations can be undertaken to examine the impact of knowledge management on competitive capacity.

2. Knowledge management and competitive capacity should be measured from different perspective also like customer perspective.

16. Limitations

All efforts were made to maintain objectivity, reliability and validity of the study, yet certain limitations could not be ignored. These limitations are discussed as under:

1. The data was collected from private telecommunication companies only.

2. Proper list of employees working in different companies were not provided by the management.

3. The study has measured KM on the basis of employees' responses which might have been guided by their likes and dislikes.

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