Inventory for Critical Managerial Soft Skills (ICMS) – Development and Standardisation

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Doi: 10.19044/esipreprint.8.2022.p116

Approved: 16 August 2022
Posted: 18 August 2022

Cite As:
Chandra Vadhana R. & Zakkariya K.A. (2022). *Inventory for Critical Managerial Soft Skills (ICMS) – Development and Standardisation*. ESI Preprints. https://doi.org/10.19044/esipreprint.8.2022.p116

Abstract

Purpose: This paper presents the findings of a group of empirical studies for a conceptual and theoretical validation of the Critical Managerial Soft Skills (CMS) Model and then presents the psychometric properties of a newly developed tool - The Inventory for Critical Managerial Soft Skills (ICMS) for assessing the same.

Design/methodology/approach: The CMS model was validated by a set of qualitative and quantitative studies among employers to confirm the importance of soft skills and to derive the critical soft skills framework (N-95, 206) and this served as a basis of the tool construction. ICMS has been then psychometrically validated for the group of management graduates by conducting a series of qualitative and quantitative research steps (N-975)

Findings: ICMS is a self-reported scale for measuring seven critical managerial soft skills of managerial candidates namely, Communication skills, Leadership skills, Interpersonal and Teamwork skills, and Self-Management Skills, Decision-making skills, Goal setting skills, and Task efficacy.

Research limitations/implications: The tool developed is limited to the measurement of only the seven dimensions which are derived as "critical" based on various stages of the work.

Practical implications: The tool can be used for recruitment screening and as a pre and post-training assessment tool for soft skills development of management students.
Social implications: The tool can be used during management education to help the students understand their levels of soft skills and accordingly suitable measures can be undertaken to improve upon during the course of study to enhance their employability.
Originality/value: The tool is fully original and has highly useful for researchers and practitioners as it has been empirically validated using appropriate and adequate statistical measures.

Keywords: Soft Skills, Managerial soft skills, Assessment, Psychometric tool, Employability, Management Education, Mixed Methods, Reliability, Validity, Scale development

Introduction

Hiring and retaining the right talent is a crucial factor in the survival and growth of any organization. However, understanding the candidate's competencies and screening them for alignment with organizational goals is still a worry for any hiring manager. Employers and recruiters have clearly and consistently established that they value the "soft skills" of an employee / potential employee during the hiring and retention process. (Luse, 1999; Wardrobe, 2002). Organizations today believe that "soft skills" are the most important ones in an employee /potential employee and all the technical skills can be trained as per requirement (Linkedin 2020; Ibrahim, Boerhannoeddin & Bakare, 2017; McMurtrey et.al 2008; Gallivan, Truex &Kvasny, 2002). Broadly, we can say that "Soft skills" consist of every other skill than the technical skill of a person. Although the soft skills required for various job profiles vary to some degree, certain basic soft skills are considered essential for today's business environment across various sectors (Paadi, 2014; Kyllonen, 2013). Again, there are a lot of differences of opinion about what makes up "soft skills" of managers and management graduates (Chandra &Zakkariya, 2014). The importance of these soft skills and the role of management institutes played in the development of these soft skills for future managers is pertinent because a manager's role is more connected to the 'softer' sides of a person and is also highly relevant in leadership development of any organization (Nida'a, & Worley, 2018).

Despite the importance and relevance of soft skills, we are yet to arrive at a proper soft skills training curriculum and assessment in most of the management degree programs (Morgan & Adams, 2009; Schulz, 2008; Ritter et al, 2018). Developing soft skills through passive or rote learning methods is also not possible. Suitable training methodologies and curricula

must be built for the development of soft skills in management graduates, for which a clear framework based on the employer's perspective is collected. This study contributes to the literature in this direction where employers' perspectives on critical managerial soft skills are collected, analyzed, and presented. This critical managerial soft skills framework can be used as a model for the development of a soft skills curriculum in the future. The next aspect related to soft skills is connected to its assessment. A valid and reliable tool for assessing soft skills could act as a better pointer toward future employee performance and the student is better able to meet the challenges of their work by knowing where they stand (Gibb, 2014). The development of assessment tools for the different soft skills across professional disciplines is also assumed to enhance other aspects of transformational leadership such as coaching and mentoring (Nida'a & Worley 2018). In this background, this paper presents the findings of the two sets of research works leading to the development of a standardized psychometric tool for the assessment of critical managerial soft skills.

Literature review

Managerial soft skills have assumed prime importance ever since business organizations started adopting professional managers in their business. Soft skills are personal attributes that enhance an individual's interactions, job performance and career prospects (Bridgstock 2009, Heckman & Kautz 2012, Treese &Park,2012, Jackson & Wilton 2017, Nusrat & Nas,2018). Several studies have been conducted in this area, especially to reiterate the necessity of these soft skills as an important part of the managerial role. Boyatzis (1982) was among the first to comprehensively describe and study the topic of managerial skills. Using multiple methods to study competencies, including projective tests, job element analysis, and critical incident interviewing, Boyatzis (1982) found evidence for six clusters which include goal and action management, leadership, human resource management, directing subordinates, focus on others, and specialized knowledge. These basic functions of management jobs can be described in terms of planning, organizing, controlling, motivating, and coordinating. These six clusters focus more on the "Soft skills" of managers.

A study was conducted by Nick Wilton (2008) among 1999 Business and Management Graduates in the UK, regarding what they ranked as the most important managerial skill in their first job and what they were taught as important in their business education. It was found that among the list of employability skills surveyed, communication skills, management skills, ability to work in teams and leadership skills were the first four most important skills which they used most in their first job; whereas their

business education focused on written communication, research skills, ability to work in teams and basic computer skills as the first four.

According to Schulz (2008), soft skills are commonly divided into two components: personal attributes and interpersonal abilities. Personal attributes refer to attributes such as optimism, common sense, responsibility, a sense of humour, integrity, time management, and motivation. Interpersonal abilities include empathy, leadership, communication, good manners, and sociability (Schulz, 2008). Datar et al (2010) outlined a similar argument in their book, "Rethinking the Business Education" by using a framework that was originally developed at West Point to describe the essential components of business school education: knowing (or knowledge), doing (or skills), and being (or a sense of purpose and identity). They also found that only a few of the B-schools among the topmost in the world like Stanford and Harvard try to address these issues and provide the students with value-added courses like Critical Analytical thinking, Leadership, Corporate Accountability courses, etc.

Rosenberg, Heimler, & Sofia Morote, (2012) states that "first, students need to understand that to be able to obtain employment in a highly competitive workplace, they need to be prepared with the skills that employers desire. Consequently, it is recommended that regardless of the academic discipline faculty should teach the soft skills that the industry wants and that students need so that graduates gain entry-level employment."

Employers' perspective on Managerial soft skills

Several studies conducted in various parts of the world tried to collect direct data from employers about their expectations or perspectives on soft skills. Jusoh, Mohd Rizal, & Choy Chong (2007), examined the qualities of fresh graduates in business from the perspectives of employers. Andrews & Helen (2008) tried to conceptualize and identify key individual- and business-related skills and competencies required by employers of business graduates and holders of other higher-level qualifications, and to discover whether business education programs at the higher level are meeting the needs of the European marketplace. Three significant themes emerged out of the research, each one focusing on different components of graduate employability: - Business Specific Issues (Hard business-related knowledge and skills); - Interpersonal Competencies (Soft business-related skills); - Work Experience, and Work-Based Learning. Khain Wye & Mee Lim (2009) led a study and showed that the undergraduates' skills as critical analysis, planning, problem-solving, oral communication, decision making, and negotiating report a slightly higher level of mismatch between employers' and undergraduates' perceptions on their importance and development in the University.

Sharma (2009) surveyed several recruiters to rate the top three soft skills and found that while communication skills were rated as the most important by 72%, teamwork followed a close second with 66% and then time management with 60%. William Hinchliffe & Jolly (2011) presented research in which over 100 employers in East Anglia were asked to record their perceptions of graduates concerning their employability. The findings suggest a composite and complex graduate identity, depending on employer size and sector. They proposed a four-stranded concept of identity that comprises value, intellect, social engagement, and performance.

Daud, Abidin, Sapuan, & Rajadhurai (2011) investigated the potential gap between important dimensions of business graduates' attributes and the actual performance of these graduates in their post□graduate employment and revealed that managers attach different weights to different aspects of graduates' performance. Razali et.al. (2014) have reported in their research paper "21st Century core soft skills research focus for integrated online project-based collaborative learning model" that the professional graduates of Malaysia are not getting the job as they lack the soft skills required by their employee at the time of their selection process.

In an elaborate mission of imparting, soft skills curriculum by Malaysian Institutions of higher learning, seven soft skills have been defined as most important for graduates. (Ministry of Higher Education Malaysia, 2006). They are Communication Skills (CS), Critical Thinking and Problem Solving (CTPS), Teamwork Skills (TS), Moral & Professional Ethics (EM), Leadership Skills (LS), Lifelong Learning & Information Management Skills (LI), Entrepreneurial Skills (ES). Agrawal (2014), in his Ph.D. thesis has attempted to develop an inclusive listing of what people denote by the term "soft skills" as well as a definition of the same by a systems approach. Based on the study, he has defined soft skills as "are insights – skills – traits – values and virtues that help to deal with the self and others – situations – and communication, work, and organization and finally with Technology –and surroundings"

Assessment of soft skills

Educational assessment is a process of gathering evidence, making judgments, and drawing inferences about student achievement and performance (Curtis, 2010). Pellegrino, Chudowsky, and Glaser (2001) described assessment in the following terms: "An assessment is a tool designed to observe students' behavior and produce data that can be used to draw reasonable inferences about what students know" (Pellegrino, Chudowsky, & Glaser, 2001, p. 42)

Although many institutions are beginning to integrate skill-based education, rigorous skills assessment reflective of the skills being taught has

been slower to develop (McConnell & Seybolt, 1991; Riggio, Mayes, & Schleicher, 2003) and it may be because of good reasons. Business schools have excelled at assessing students' abilities and knowledge while doing relatively little in the skills area (Bigelow, 1995). The lack of behavioural change evidence is partly a function of measurement issues. That is, it may be a testament to the difficulties that accompany the assessment and development of soft skills. Indeed, these skills are not only difficult to measure—they may take a lifetime to master.

Kantrowitz, Tracy's (2005) doctoral thesis was on the development and construct validation of a measure of soft skills performance. In her set of studies ,she examined the dimensionality of soft skills performance, developed measures to assess soft skills performance from self and supervisor perspectives, and validated the measures of performance in a nomological network of non-ability individual differences and existing performance measures.

In a study by Ngang & Chan (2015) aimed to identify critical issues of soft skills development through teaching professional training, they stressed that future research should focus on the appropriate assessment method to facilitate soft skills development. Thousands of literature evidence has been added where the importance of soft skills in the workplace and specifically in management has been established in the past decade. However, not many assessment tools – especially psychometric tools have been standardized in the context. Stephen Gibb (2014) has stressed the need for a theoretical model for the assessment of soft skills.

This paper, therefore, has been completed with the following two objectives. **1. To identify and arrive at a set of "Critical Managerial Soft skills" (CMS) which are necessary for an entry-level management graduate and establish the theoretical model. 2. To develop and validate the psychometric tool for the assessment of the CMS model.** This paper contributes to the contemporary soft skills and management education literature by extracting the dimensions of the critical managerial soft skills by conducting a series of studies to validate the model. The psychometric instrument developed and validated in this paper will also provide organizations with a readymade tool to assess the critical managerial soft skills of candidates during recruitment or training.

Methods

This study is based on Grounded Theory and mixed methods where exploration of the constructs is conducted in different ways like qualitative studies, experts' opinions (face-to-face interaction with experts and telephonic interaction) and content analysis to arrive at a preliminary list of soft skills. Triangulation was ensured to make the resultant set of soft skills

coherent. This later underwent a series of quantitative studies to arrive at a comprehensive factor list of soft skills. However, to derive the critical managerial soft skills, the next level of screening by experts was conducted. The resultant parsimonious list was named "Critical Managerial Soft skills". In the next phase, scale construction and scale validation were conducted as per psychometric tool validation processes. The survey design and scale validation methods used in this study were based on a post-positivistic paradigm (Phillips & Burbules, 2000) that asserts that knowledge is "based on careful observation and measurement of the objective reality that exists 'out there' in the world" (Creswell, 2010) and consider surveys as logical, deterministic, general, parsimonious, and specific (Babbie, 1990) data collection tools that enable statistical analysis with scientific rigor (Creswell, 2005; 2010). Statistical Tools such as SPSS and AMOS were used to ascertain the psychometric properties of the scale. Table I below shows the various steps of qualitative and quantitative research phases and steps along with outcomes for objective one – the Validation of CMS model (Phase One). A total of five different studies conducted one after another led to the derivation of the theoretical validation of the conceptual model of CMS. Figure I shows the Conceptual Model for "Critical Managerial Soft Skills" which was derived in the process of research methods conducted in Phase 1. Table II shows the Phase Two research stages and results for objective two where a series of quantitative research methods were used for the derivation of psychometric properties of ICMS. Each of the Phase's results is discussed in detail under the results and discussion section.

Table I. Research Phases and Steps for Objective One / Phase One

Research Stages	Research Title	Methodology Adopted	Outcomes & Findings
Study One: *(Qualitative and Quantitative methods)*	*Content analysis of current methods of soft skills training and assessment in B-schools* (200 B-Schools Admission Advertisements)	Conducting content analysis by statistical methods, based on the frequency of occurrence of the required parameter	• Important focus areas of the Indian B-schools while offering management programs. • Lack of psychometric assessment tools for assessment of soft skills.
Study Two: *(Qualitative Methods of Interviewing and Conversation*	*Literature Review & Expert Discussions*	A total of 15 Subject matter experts were consulted to arrive at "soft skills items"	A list of 156 items that hints "Soft skills" was made.

Analysis)			
Study Three:	*Qualitative Survey among employers (95 Samples)*	An open-ended qualitative survey helped in confirming the 156 item list generated which further underwent reductions based on similarity.	A more refined list of 128 items was made based on the content analysis.
Study Four	*Quantitative survey among employers (206 samples)*	The 128 items questionnaire was rated by HR professionals based on their importance using a rating scale of 1-10	Statistical analysis like cluster analysis, exploratory factor analysis, and confirmatory factor analysis led to 14 soft skills factors.
Study Five *(Expert Validation)*	*Derivation of Conceptual Framework for this study*	These 14 factors then underwent further scrutiny by experts to derive "Critical" soft skills and eliminate the "Good to have" skills. This was done to limit the number of factors for the scale construction phase.	A total of 7 soft skills were then finalized as the conceptual model for this study.

Fig 1. Critical Managerial Soft Skills – The Conceptual Model

Table II. Research Stages and outcomes for Objective Two /Phase Two

Research Stages	Research Title	Methodology Adopted	Outcomes
Stage One	*Item Generation*	The items corresponding to the 7 soft skills from the earlier study along with expert discussions	*The item generation meant that each original item was converted to a self-reporting item following rules of psychometric principles.*
Stage Two	*Tool Construction*	The items for each of the seven critical managerial soft skills were designed based on the previous steps findings as well as Subject experts' inputs.	*A total of 67 items were constructed at this phase.*
Stage Three	*Administration Of The Tool*	A sample of fresh Management graduates was invited to participate in the study by answering the test.	*The test administered to a total sample of 875 management students (including 200 in the pilot and remaining in the second level).*
Stage Two	*Item Reduction*	A Principal Component Analysis (PCA) is done and the rotated component matrix is derived using IBM SPSS statistics 20 software	*19 items were rejected and a final set of 48 items were finalized at this stage*
Stage Four	*Scale Validation*	Advanced Statistical Analysis (SEM using AMOS) conducted for arriving at psychometric properties	*The final Scale is ready with 37 items. The scale is named as Inventory for Critical Managerial SoftSkills (ICMS)*
Stage Five: Norms	*Norms Setting*	The test was administered to 100 samples (fresh management graduates)	*Norm Values for each subscale are arrived at and presented.*

Results and Discussion

Objective One /Phase one

Phase one of the studies was to come at a theoretical validation of the conceptual model of "Critical Managerial Soft skills" (CMS). This was achieved by conducting a series of five connected studies (as shown in Table I). Study one helped in understanding the relevance of the study and how the concept of "soft skills" of management graduates need to be better defined.

A detailed content analysis of advertisements by 200 institutes showed the lack of importance placed by management institutions in using "soft skills" as an advertisement factor for admissions. There was also less than 10% mention of usage of psychometric tools in assessment and training of soft skills. The second study involved a detailed literature review and a derivation of a "first set" of soft skills items. A detailed interview with 15 subject experts on the list enabled at deriving at a 156 item comprehensive soft skills at the workplace which is relevant for a management graduate. The interviews were analyzed using content analysis and conversation analysis methods. Study three was conducted in parallel by sending out a simple open-ended questionnaire to 95 employers asking them to share their views regarding what were the most important soft skills for a management graduate. A content analysis of this survey along with the expert opinion led to the making of a 128 item structured questionnaire. This questionnaire was then sent to a further 206 employers who rated the items based on importance. This dataset further underwent statistical analysis using SPSS and the EFA results derived a 14-factor list of soft skills. However, considering the objective of arriving at a more concise list of factors to enable the psychometric tool construction, it was decided to choose the top-rated seven soft skills only. The 14 factors were also reviewed by experts to make the Content validity index and also to arrive at "critical" and "good to have" factors. This analysis led to the finalization of the seven critical managerial soft skills which again confirmed the CMS model (Figure 1). The eliminated soft skills factors are also important in the context of the "soft skills" of managers. However, they do not fall into the CMS framework.

Objective Two / Phase Two

In this phase, the construction, item reduction, and validation of the scale for CMS were completed. The research studies as shown in Table II helped in establishing the reliability and validity of the newly developed scale.

According to Churchill (1979), specifying the domain of the construct, generating items that exhaust the domain, and purifying the resulting scale should produce a measure that is content or face valid and reliable. The Face validity and Construct Validity of this study is established where the exhaustive list of items was reduced through the processes of EFA and CFA conducted in phase one to arrive at the CMS model. The Model validation and latent structure analysis were performed using CFAs conducted in three different stages established the other validities and also derived the psychometric properties of the scale.

- In stage one, the study conducted individual CFAs for all seven dimensions (e.g., communication skills, decision-making skills, goal setting skills, leadership and initiative skill, self-management skill, task efficiency skill, and team working skills). These individual CFAs were performed mainly to assess the validity of the items covering the respective dimensions. In this stage, the study also eliminated those items with low CFA factor loadings.
- In this second stage, the study conducted an overall CFA model, where all the scale dimensions were allowed to correlate with each other. The major objective of this stage of analysis is to check the validity and reliability of the scale dimensions, specifically convergent and discriminant validity.
- In the third stage, the study checked a model, where we analyzed the second-order CFA model. In this model, the study considered all these seven dimensions as the first-order construct, reflecting the global higher-order construct. In this stage, the study compared this second-order CFA model with the correlated CFA model and analyzed the fit. This stage of analysis helps the study to confirm the latent structure of the proposed scale.

Convergent validity

In this study, we tested the convergent validity of the scale measures using three different measures. The first measure used is CFA factor loadings. It was recommended that if the CFA factor loadings are above 0.50 and loaded high, then it indicates the evidence of convergent validity. Further, another measure generally used by researchers to confirm the convergent validity is called: Average Variance Extracted (AVE). If the AVE values are above 0.50 it also indicates the convergent validity of the scale measures. Finally, it is also suggested that if the CR values are above 0.50 it also informs the evidence of convergent validity. In the current study, we used all these three measures to check the same.

Discriminant Validity

To examine the discriminant validity the study followed an important discriminant validity check procedure recommended by Hair et al (2010). In this procedure, it is recommended that if the AVE values of the dimensions are greater than the correlation square between the construct pairs it indicates the discriminant validity.

In addition to the aforementioned measures, a variety of goodness-of-fit indices are also available to indicate the adequacy of measured constructs to a model, but there seems to be little consensus on what are the appropriate indices (Hinkin, 1995). Hinkin (1995) noted that the significance of Chi-

square was reported most frequently, and the smaller the chi-square value, the better the data fit the model. However, chi-square is very sensitive to sample size, diverse indices have thus been developed for assessing the overall goodness of fit. A ratio of the chi-square value to the degrees of freedom of 5 to 1 was a practical rule of thumb (Hinkin, 1995). Although evaluation of fit indices is somewhat subjective, the higher values, the better the model fit to the empirical data. Besides, Hinkin (1995) reported that other fit indices (e.g., CFI, GFI, TLI, etc.) above 0.85 were considered acceptable. The concept of parsimony serves as a criterion for choosing between several alternative models proposed in the study.

Considering the recommendations of Hair et al. (2010), the study analyzed the goodness of fit of the overall CFA model that is the correlated CFA model. From the analysis, it was observed that the overall correlated CFA model indicated a good fit ($\chi 2$ = 4334.12, CFI = 0.90, GFI = 0.90, SRMR = 0.040, RMSEA = 0.050, TLI = 0.92). It also confirms the goodness of fit of the measurement model. All these directed the study that the scale used to measure different dimensions are valid and reliable, therefore, proceed for confirmation of the construct validity.

Besides, the examination of estimated CR values supported that for all dimensions the values were above the suggested cut-off of 0.50. Finally, the examination of AVE values also supported that for all dimensions, the calculated AVE values were above the suggested threshold of 0.50. All these confirmed that the scale measures used to capture different dimensions carrying sufficient convergent validity.

Also, the examination of AVE values with the correlation square between the constructs revealed that in all the cases the calculated AVE values were greater than the pairwise correlations. Thus, the study confirmed the fact the scale measures used to measure different dimensions are divergent or it carries an adequate level of discriminant validity.

In the next stage, the study conducted a CFA, where all the seven dimensions were modelled as the first-order construct. This first-order construct was modelled as the reflection of the higher-order construct. The objective of this stage of analysis is to check the latent structure. This is mainly conducted through the comparison of model fit of the earlier model (correlated model) with the second-order model. As expected, in the second-order model the study received satisfactory goodness of fit indices. The comparison indicated that the second-order CFA model fits well with the data in comparison with the correlated model. Table III provides the comparison of the model fit indices of the second-order model with the correlated model. Hence, the study confirmed that the scale carries a second-order dimensional structure.

Table III. Comparison of the model fit indices

Fit indices	**Correlated model**	**Second-order factor model**
χ^2	4334, $p < 0.01$	**4304, $p < 0.01$**
χ^2/df	1.66	**1.55**
CFI	.90	**.91**
IFI	.911	**.92**
GFI	.90	**.92**
TLI	.92	**.93**
RMR	.050	**0.46**
SRMR	.040	**0.40**
RMSEA	.050	0.45

Table IV and V give the reports of the Item Reduction and the Reliability and Validity Scores of the Tool.

Table IV. Item Reduction Report

Name of Scales	**Original Tool**	**After EFA**	**After Independent CFA**
Communication skills	10 items	8 items	7 items
Decision making skills	9 items	6 items	4 items
Goal-Setting Skills	5 items	4 items	4 items
Leadership and Initiative skills	11 items	8 items	5 items
Self-Management Skills	8 items	6 items	6 items
Task Efficacy	8 items	6 items	6 items
Interpersonal and Teamwork Skills	16 items	10 items	5 items
Total Inventory	**67 Items**	**48 items**	**37 items**

Table V. Reliability and Validity Scores of Critical Managerial Soft Skills Scales

Scales	Construct Reliability (CR)	Validity Index (AVE Score)
Communication skills	0.78	
		0.767
Decision making skills	0.68	0.785
Goal Setting Skills	0.801	0.835
Leadership and Initiative skills	0.77	
		0.78
Self-Management Skills	0.69	0.776
Task Efficacy	0.691	0.734
Interpersonal and Team work Skills	0.721	0.715
Total Scale		

The naming of the Final Version of the tool

Based on the above statistical results, we finally derive the Inventory for Critical Managerial Soft Skills - the final version. The final tool, therefore, has **37 items and assesses the seven critical managerial soft skills.** The tool is named as "**Inventory for Critical Managerial Soft Skills" and is abbreviated as "ICMS"**. The final version of the tool is presented in **Exhibit 1 as below.**

Exhibit 1. INVENTORY FOR CRITICAL MANAGERIAL SOFT SKILLS (ICMS) –FINAL VERSION

Instructions to candidates: Please select the best response from the below items which you think is true in your case. Kindly do not think for long and put a tick mark for the option that comes first to your mind.

SD- Strongly Disagree	D- Disagree	Neutral	Agree	Strongly Disagree

Sl no	Item	SD	D	N	A	SD
1	I set clear goals for accomplishing my tasks.					
2	I am always ready to take up new projects in our class/workplace					
3	I can take appropriate decisions related to myself or my works					
4	I am mostly pleasant and happy					

5	I can prepare my assignments, reports, records, etc systematically as expected by my faculty/ supervisors/higher authorities					
6	I have a clear understanding of my strengths and weaknesses					
7	I usually take initiative for new projects in our class /workplace					
8	I strive to attain perfection in every job					
9	I maintain a good level of eye contact with the audience while communicating or presenting					
10	I always have a timeframe for attaining my goals.					
11	I can evaluate the consequences while making decisions					
12	I can understand the subtle differences in the performances of others in a team.					
13	I am aware of my limitations.					
14	I follow up with every group member on the status of an assignment regularly					
15	I can understand the difference between big mistakes and small errors.					
16	I consistently follow up on the commitments made by people					
17	I am a confident person					
18	Normally the goals I set are achievable					
19	I collect and analyze all information needed for doing my job effectively.					
20	I train/teach my classmates on tough topics during my free time.					
21	I can influence people to work towards the goals we set.					
22	I am usually enthusiastic while doing all tasks entrusted to me					
23	When a task is assigned to me, I clarify all the resources needed for completing it.					
24	I always express my opinions in a discussion					
25	I am capable of splitting the tasks among group members when I am the group leader.					
26	I always motivate others					
27	I can express my problems to my teachers/faculty when needed					

28	I regularly update myself with the latest information in my field of interest.					
29	I can adjust my body language according to the situation or topic of presentation.					
30	My friends appreciate my decision making capability.					
31	I help others to identify and improve on their weaknesses					
32	I am confident of delivering presentations as part of all jobs assigned to me.					
33	I maintain a "to-do" list or a " plan of action " for any task					
34	People come to me whenever they need a solution for certain problems					
35	I understand and correct any bad gestures I may have while communicating or presenting					
36	I do not set unrealistic goals in my personal or professional life					
37	I try to promote my college/organization among others					

Content Validity Index

Twelve Experts consisted of the following categories were asked to rate each of the items (37 items) based on the relevance of the items towards the scale and Clarity of Items towards the scale. The Content Validity Index (CVI) scores are considered to be high if the scores are above 0.7. If any of the scales or items possessed a CVI score below 0.50, it shall be rejected. In the case of ICMS, the CVI analysis has given substantially high scores for the scales and hence the Content Validity for the tool is established.

Derivation of Norm Values

Any standardized psychometric tool shall be accompanied by norm values to effectively administer them. Accordingly, one more final data collection was attempted. This time, the ICMS Final version was administered to a group of 100 Management graduates and the scores were tabulated as following to arrive at the final norm values. (Table VI)

Table VI. Consolidated Norm Table For A Sample Of 100 Management Graduates

SL NO	Scale Name	MEAN VALUE	TOTAL SCORE POSSIBLE	AVERAGE SCORE
1	Communication Skills	4.40715	40	35.31
2	Decision Making Skills	4.2913	25	21.35
3	Goal setting Skills	3.3624	20	12.34
4	Leadership Skills And Initiative	4.36	25	21.8
5	Self-Management Skills	4.4157	35	31.03
6	Task Efficacy	4.306	30	25.9
7	Interpersonal and Teamwork Skills	4.305	20	17.5

Design of Answer Key and Score Interpretation for ICMS

The norm values that we derived are used to design a Scoring Key for the ICMS final version. The answer key will enable a test administrator to score the items and compare with the norm values for interpretation and provide suitable advice/intervention for the candidate. The ICMS Scoring Key is shown in **Exhibit 2.**

EXHIBIT 2: ICMS SCORING KEY

Instructions to Test Administrator

The Inventory for Critical Managerial Soft Skills (ICMS) is used to assess the critical managerial soft skills of a candidate. The tool is a self-rating standardized psychometric tool and shall be administered to understand the status of critical managerial soft skills of a candidate. The critical managerial soft skills assessed in this tool are the following.

Communication Skills: This stands for the set of skills which helps a candidate to communicate for professional purposes using oral skills - which includes interpersonal communication, presentation skills, and writing skills in the form of reports or official documents

Leadership Skills: This stands for a set of skills which enables a candidate to take leadership roles, take initiative and responsibility related to the task at hand

Interpersonal and Teamwork skills: This stands for skills that are crucial for creating and maintaining a cordial relationship with colleagues and superiors.

Self–Management Skills: This stands for the level of awareness about self; including their perception of the individual's strengths and weaknesses.

Goal Setting skills: This stands for the candidate's capability to understand and articulate long term and short term goals which is important at work

Decision-Making Skills: This stands for those skills which enable the capability to solve problems and to take suitable decisions as per the need of the organization/situation.

Task Efficacy: This stands for the candidate's capability to deliver results and task completion as per mandates.

SCORING METHOD

The tool is designed on LIKERT SCALE for agreeableness. The Scoring is done in the following manner

Strongly Disagree - 1 point
Disagree - 2 points
Neither Agree nor Disagree - 3 points
Agree - 4 Points
Strongly Agree - 5 Points

Each of the items is scored points as per the candidate's response. The items corresponding to each of the scales are given in the ICMS Norm Table below. The Norm Values are also listed in the same table.

ICMS Norm Table

SCALE	**Items under the scale**	**Norm Value for MBA Fresher Adults aged 22- 30)**
Communication Skills	Item numbers 5 , 9, 19, 24, 27,29, 32 , 35	Norm Value: 35.3 /40
Decision Making Skills	Item Numbers 3, 11, 15, 30	Norm Value: 17.4 /20
Goal Setting Skills	Item numbers 1,10, 18, 36	Norm Value : 12.39/ 20
Leadership Skills & Initiative	Item Numbers 2,7, 14, 21 , 26	Norm Value: 21.8/25
Self - Management Skills	Item numbers 4,6,13,17,22, 28	Norm Value: 26.8/30
Task Efficacy	Item numbers 8,16,23, 33,34, 37	Norm Value: 25.9/30
Interpersonal and Teamwork Skills	Item numbers 12,20,25,31	Norm Value: 17.45/20

SCORE INTERPRETATIONS

Based on the norm values, the administrator can guide the candidate on specific areas of soft skills improvement.

SCALE	**SCORE VALUE**	**INTERPRETATION**
Communication Skills	Below 33	Low
	34- 36	Average
	36 -39	High
	40	Overconfident
Decision Making Skills	Below 15	Low
	16-18	Average
	19	High
	20	Over Confident
Goal-Setting Skills	Below 11	Low
	12-14	Average
	15-18	High
	19-20	Over Confident
Leadership Skills &	Below 20	Low
	21-22	Average

	23-24	High
	25	Overconfident
Self - Management Skills	Below 25	Low
	26-27	Average
	28-29	High
	30	Overconfident
Task Efficacy	Below 25	Low
	25-27	Average
	27-29	High
	30	Overconfident
Interpersonal and Teamwork	Below 16	Low
	17-18	Average
	18-19	High
	20	Over Confident

Implications and Future research areas

This study agrees to several previous studies in the field of employer's perception of soft skills (Andrews & Helen (2008), Kantrowtiz (2005), Khain Wye & Mee Lim (2009, William Hinchliffe & Jolly (2011), Daud, Abidin, Sapuan, & Rajadhurai (2011), LaPrince (2013), Nianeni et al (2019) to name a few) where it has been found that "soft skills" and its various dimensions contribute to the graduates' effectiveness at a job. In a very recent paper by Dubey & Tiwari (2019), for the operationalization of soft skills attributes and determining the existing gap in novice ICT professionals, the six soft skill factors identified as Personal skill, Leadership, interpersonal skill, team skill, organization skill, and enterprising skill. The ICMS confirms with this study as some of the skills identified as important in this study are the same as the CMS framework. But it differs from some others as enterprising skill and communication skills.

This study also corroborates a very recent research study by Ricchiardi & Emanuel (2018) conducted at the University of Turin which has introduced a theoretical and methodological reflection about soft skills assessment and development in its students, through the Passport.Unito Project. This project uses a model of 12 soft skills area of a task (problem-solving and decision making, time and space management, adoption of strategies adequate in tackling the task); area of the self (self-enhancement, emotional self-regulation, enterprise); motivational area (goal orientation, causal attribution, resilience); area of the interpersonal relationships (teamwork, communication, conflict management). They also presented the psychometric properties of the Passport.Test which a self-assessment tool for

the above soft skills. The ICMS tool differs from the fact that this is designed specifically for the critical managerial soft skills and not for all graduates. However the seven soft skills identified can be equally applicable for all graduates as well. The factors used in Passport.Test like Problem-solving and decision making, self-enhancement, goal orientation, teamwork, and communication are some of the key soft skills measured by ICMS as well. A detailed study on the concurrent validity of ICMS with Passport.Test can be attempted in the future.

More studies on the various remaining dimensions apart from these seven critical managerial soft skills presents a vast research scope. Research in any area is substantially enhanced by the ability to measure a construct. The development and validation of the ICMS instrument open the doors for further validation of the instrument. Testing for convergent validity with other constructs in the soft skills inventory/employability and discriminant validity with constructs such as emotional intelligence or workplace performance measures are recommended. Validating the instrument for other cultural contexts should be considered.

Limitations

This work has its limitations just as in any research. Firstly, the ICMS tool assesses only the seven Critical managerial soft skills and cannot be considered as a comprehensive assessment by itself. There could be other soft skills that can be highly relevant to other groups. A test only measures what is made for and hence ICMS measures what it is designed for. Newer models of soft skills assessment especially using technology has still various problems and are yet to arrive at more clarity. Rasipuram & Jayagopi (2020) have reviewed existing methods that use behavior tracking and mapping behavior to perception for assessment of Big five personality, leadership skills, communication skills, and similar soft skills of candidates which employers use during recruitments. They propose that instead of using a single psychometric tool for assessments, employers shall use multiple methods to arrive at a decision. Therefore it is advisable to use the ICMS tool along with other assessment methods as a confirmatory method than as a single method.

In a very recent research study by Tsirkas, Chytiri & Bouranta (2020), it was found that there is a gap between employees' and their subsequent employers' perceptions of employees' soft skills. Employees seem to regard their skills more highly than do their employers, whereas employers seem to consider employees as not properly equipped with the necessary soft skills. These two studies point to the fact that the usage of the ICMS tool shall be done along with other assessment methods.

Hughes (2018) in his seminal book chapter on Psychometric Validation, found that When producing a new psychometric or trying to sell one, researchers or test publishers can currently make a convoluted, lengthy, and convincing 'validity argument' whilst ignoring consequences completely. He further proposes a new model of including the accuracy and appropriateness of a test. The accuracy of a psychometric can be established through examination of participant response processes, psychometric content, and the structure of psychometric content. Whether it is appropriate to use a psychometric for a given purpose can be established through examination of the relationship between psychometric scores and other variables, the potential or actual consequences of psychometric use, and the practical feasibility of psychometric use. Accordingly, this paper establishes the accuracy of the ICMS Tool in its content and structure but does not establish the response processes and stability across groups. The appropriateness of the tool is established by the presentation of the convergent, discriminant, and concurrent validity measures. However, the measures on the consequences and feasibility are not conducted in the present study.

One another limitation is that it does not arrive at the Predictive Validity of the tool. Predictive validity can be arrived at only with the application of the tool in a longer context and checking various datasets of candidates who perform better at work based on the results of the tool. It has to be understood that predictive validity is validity which is evolved through years of application of the tool and refining the tool. Time-lagged or Longitudinal SEM has to be conducted in the future to arrive at the scores in predictive validity. These are also future areas of research recommended.

Conclusion

The findings of this study provide theoretical and empirical support to the ICMS model through evidence of construct validity, content validity, face validity, reliability, and factor structure reflecting its conceptual foundation. The common themes, depicted in the CMS Model help in narrowing down the most important skills - the foundation skills. This study thereby strengthens the research on soft skills and assessment by providing empirical evidence to the theory-building process in the area of soft skills development and assessment. The study has contributed to the literature on soft skills by confirming the model of critical managerial soft skills as well as providing a standardized tool.

The ICMS is a practical tool for soft skills assessment and can be used as a precursor for personal change and the development of management students and graduates. With the ever-increasing importance of soft skills in the workplace more and more organizations need practical tools and

solutions for effective strategies and practices. The critical managerial soft skills framework will enable organizations to understand the phenomenon of soft skills and take a more holistic approach to dealing with individual capabilities. The tool could also help an individual to plan and analyse their skill development areas. With the development of a multidimensional model of soft skills and a clearer understanding of the various dimensions, there is now an opportunity to further explore the distinct dimensions.

Soft skills – the hitherto elusive set of the phenomenon in the past decade is now getting clarity with the advent of research works in multiple quarters – education, organization, and technology. This study conducted therefore is a pioneering effort in trying to design a psychometric tool for the critical managerial soft skills. To conclude, this is the beginning of more advanced research and possibilities in the area of soft skills assessment.

Acknowledgments

The authors would like to express sincere gratitude to all the subject matter experts and statistics experts who helped in the research work at various phases. We also would like to thank the participants of the study without whose genuine participation, standardization would not be effective.

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