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Changing Dynamics of Procurement in MSME and SME Industries in India

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***Abstract*: *Introduction*: The market is drastically changing, so are the industries. With every state of technology finding its place in the market, the industry is forced to adapt to such changes and it becomes the new normal. With the advent of COVID-19, the technologically challenged companies were the most impacted and if we look into the industry segment dimension, it's the MSME's and SME's that are still struggling to find their pace. Will they continue on their earlier format or adopt the state of technology and enter into the digital space? Well, even if they don't, they will have to, sooner or later. *Purpose*: The study focuses on procurement practices, that MSMEs & SME's are currently operating on and where they are heading in the next 10–15-year time frame. COVID-19 has brutally exposed and severally impacted the business and those who were operating on technology-challenged platforms are the worst affected ones. The study also lays stress on the digital procurement practices and could this be the next new normal for these industries as well. *Methodology:* The study comprises of primary research with two phases of an interview with MSME and SME industries with a sample space of 108 and also focuses on several procurement practices and their hierarchy preferences through AHP (Analytic Hierarchy Process) and Factor Rating Method for supplier selection. *Findings:* The study will help to evaluate the current position of both the sectors and their current standard operating procedure and what could be the new normal for these industries in the next 10-year time frame.**

***Keywords*: Procurement, Digital Procurement, MSME, SME in India, Primary Research, AHP.**

1. Literature Review

In this dynamic context, to be responsive to changes in business requirements and environments, Digital Procurement must provide quality products, services, and processes to gain market presence and competitive edge. One could infer that marketplace flexibility is required to meet the quality needs of a diverse range of customers. Given that just over a decade of Digital Procurement research has been conducted, we argue that it is time to take stock of the wealth of research on Digital Procurement to understand the evolution and analyze the need for future research within this field. In its simplest form, a Digital Procurement can be defined as an online intermediary networked information system through which multiple buyers and sellers interact, exchange information about prices, product offerings, facilitate transactions between them, and generally creating markets for corporate purchases (A. Lancastre and L. F. Lages, The relationship between buyer and a B2B e-marketplace,2006), (A. Smart and A. Harrison, Online reverse auctions and their role in buyer-supplier relationships,2003). The systematic literature review presented here explores and presents the interrelationships between Digital Procurement in marketplace research during this period and the changes and focus in the domains and characteristics considered important.

Flexibility is highlighted as a key factor when considering which marketplace platforms to use - providing an opportunity for firms to increase overall performance and better facilitate inter-organizational relationships and transactions. (H. H. Chang and K. H. Wong, Adoption of e-procurement and participation of e-marketplace on firm performance,2010) Moreover, organizations can re-orientate to focus on Digital Procurement as opposed to traditional hierarchy-based economic activities and decision making. In unison with corporate change, the Internet has changed how organizations do business by reshaping traditional buying-selling relationships, improving core processes, requirements and providing opportunities to reach new markets. Globalization, deregulation, increased competition, mergers and acquisitions, and the like all reveal organizations in transition, adapting to a continuously changing business environment. (M. Lycett, R. D. Macredie, C. Patel, and R. J. Paul, Migrating agile methods to standardized development practice,2003).

Attention from both research and practitioner communities is largely due to Digital Procurement's providing a relatively cost-effective platform for companies to enhance transaction cost efficiency and improve supply chain performance (J. Y. Bakos, A strategic analysis of electronic marketplaces,1991). In recent years, e-procurement and the e-marketplace have penetrated several new domains such as manufacturing, pharmaceutical, finance. More firms are adopting e-procurement marketplace trading to achieve additional effectiveness and efficiency, with the majority of firms being satisfied with their performance (M. Rask and H. Kragh, Motives for e-marketplace participation, 2004).

2. Introduction

We are in the midst of a digital revolution. We are in the midst of a digital revolution. An approximate 60% of the world's population will access the internet exclusively via

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mobile devices by 2030, with the number of such devices predicted to exceed an average of more than six per person. In the past two years, over 90% of all the data now available has been generated, and this figure is projected to double every two years. Large globalized firms, many of them traditionally pioneers and players in their industries, face new challenges every day: new rivalry, fresh business models, and migration of value, intermediation, and disintermediation. The comparatively stable business climate of the 2000s is a thing of the past, and challenges from every direction loom, some with irreversible repercussions.

1. We are seeing a new era of digital disruption: Uber's appearance in several countries has led to a decline in taxi sales of 30 to 40 percent; Airbnb's estimated market capitalization is as much as the world's largest public hotel business (and almost twice the second). These are only two manifestations of a pattern that has been well reported. For big businesses, the adaptation to business models is a question of survival. There is no scarcity of success stories: internet banking for major banking companies; Business 4.0 development; retail multichannel distribution; Uberization, and more.
2. In particular, procurement is forced to build on these improvements, which reflect the chance to reach the next cost optimization frontier and gain previously unheard-of cost savings. Also, there are greater efficiencies to be accomplished in the working of the procurement function: digitally activated communication with internal customers and vendors, automated/robotized processes and operations, start-up collaborations.
3. Purchasing is a very data-intensive function and therefore ideally suited to profit from competitive technologies. Initial approaches already exist that enable procurement departments to forecast demand without being dependent on obtaining the required information in time anymore. Completely new approaches to optimizing purchasing processes will evolve. Thus, "agility" is the essential advantage of a digital relationship with suppliers. The purchasing function not only improves its ability to react to internal requirements but also changes in the sales market. The "informative" dependency of purchasing on other corporate functional areas is significantly reduced.
4. The digital journey starts “offline” - there is no digital connection between buyers and suppliers in place. “Connected” represents for example company websites where suppliers have limited access to past evaluation data or future demand of the company to place an offer or take part in an online auction. In the “integration” phase, traditional e-procurement solutions or isolated shop solutions for single suppliers (such as procure to pay) are implemented. “Integrated” covers virtual supplier platforms for example by using Virtual Glasses to support buyers in their production or construction processes. Another example can be integrated purchasing platforms where suppliers support each other. If one supplier has quality issues and is not capable of delivering the procurement item in time another supplier will take over the order. Suppliers organize themselves in such a way that they meet the purchaser’s requirements without the involvement of the purchasing department. The final stage of “Digital Business” comprises supply analytics, “Cognitive Purchasing” or digital price organization models. Cognitive procurement refers to methods that use disruptive technologies, e.g., to use buyer-supplier-relationships to better achieve the objectives of the purchasing company.

A. McDonald

McDonald's in Italy decided to simplify their procurement process and make the transition from selection to negotiation to handling the whole partnership online. To allow this, they were looking for a partner who could deploy a platform where suppliers could register and see immediately what kind of requests they could expect from McDonald's and access all the data they required. The portal can mainly be used in two areas: marketing for sales, or looking for new suppliers and goods, and negotiation process management. McDonald's wanted to maximize capital, increase process performance, minimize time to market, and give more choice than in the past from a wider and better-organized supplier list. A fundamental factor in speeding up McDonald's vendor selection process was an enhanced accredited supplier list: vendors will be able to access the portal, answer specific questions, apply the requested documents immediately, and play a constructive role in the certification process. It became an important collaboration and coordination mechanism between the business and suppliers until the portal was introduced in the McDonald's Italy divisions, and the digitization of data that was usually used in negotiating processes was then a reality. Not only were the papers involved no longer in paper form, but they were not even sent via email, they were done right in the system smoothly and effectively.

B. Comdata

Comdata is a leading, imaginative, multinational service company with 30 years of expertise in Customer Engagement and Process Management. Following its 2015 acquisition by private equity company Carlyle, Comdata embarked on a mission to introduce a new, harmonized procurement operating model to maximize spending visibility and control, thereby minimizing costs and generating savings. Inorganically, Comdata expanded through the acquisition of companies in related lines of business, leading to a largely fragmented IT landscape with minimal visibility and overspending of control. In light of this, in 2019, Comdata launched a program through its legal entities, "The Comdata Way," to centralize the company, harmonize processes, procedures, and practices within the community. Procurement was a focus field, so Carlyle took part in the challenge with his deep theoretical experience and collaborative team working culture. With the vast operational span of Comdata, targets to harmonize spending procedures around the organization were set to be a challenge. There was not a centralized procurement department. Instead, countries worked separately with mostly business-

driven procurement, and where geographies had a procurement department, the division of roles with other functions, e.g., Management of buildings, or administration, was uncertain. Comdata aimed to create a centralized procurement department to ensure governance and coordination between procurement and corporate strategy, as well as to run strategic sourcing activities on projects at the global level, recognizing the current model did not deliver the required savings and visibility. Comdata required improvement in many areas to enforce this. The company took numerous steps to enhance its procurement abilities such as - to enhance the precision and visibility of its spending results the ERP method was used before the acquisitions occurred and to take a more tactical approach to the source a transactional approach to buying was implemented by the procurement teams.

C. Intel

To control its sourcing feature, the multinational manufacturer turns to cognitive computing and makes sense of a vast amount of data related to the selection and monitoring of suppliers. The modern age of computing was made possible by chipsets, processors, and memory storage devices produced by Intel Corporation while producing a nearly infinite supply of data. Intel is now using the same wealth of knowledge to transform its activities. Intel partners with some 19,000 suppliers to provide manufacturing-required products, manpower, and equipment. But how does it say which components or services are better for a specific component or service? A finely tooled supply chain can bring to an abrupt halt any number of supplier failures or disturbances. To increase its level of supplier intelligence, Intel set three primary goals: allowing product managers to make optimal sourcing decisions, tracking and consistently improving selected suppliers on those decisions.

3. Indian Industrial Scenario

The Micro, Small, and Medium Enterprises (MSME) sector has emerged as a very important sector of the Indian economy, making a major contribution to the generation of jobs, creativity, exports, and inclusive economic development. The cornerstone of our country's socio-economic growth is Micro, Small, and Medium Enterprises (MSME). It also accounts for 45% of overall factory output, 40 percent of total exports and makes a very valuable contribution to GDP. The MSME manufacturing segment accounts for 7.09 percent of GDP. Also, MSMEs contribute to 30,506 programs. The MSMEs' overall contribution to GDP is 37.54 percent. The MSMED Act 2006 was enacted to provide an enabling policy atmosphere for the promotion and growth of the sector by identifying MSMES, creating a mechanism for the development and enhancement of the competitiveness of MSME enterprises, ensuring the flow of credit to the sector, and paving the way for preferential government procurement of merit for MSES products and services, resolving the problem of credit flow to the sector and opening the way for government procurement of merit for MSES products and services. Currently, the industry is poised with n number of problems, few of them are:

1. Lower technology levels: With certain exceptions, the MSME sector in India is distinguished by low levels of technology, an immense limitation in the developing global market. As a result, during competition from imports, the survival of a substantial number of MSMEs would be threatened. This hinders the development of innovation-driven businesses that do not belong to the IT industry, where efficient technologies can work out most process roadblocks and enable businesses to focus on their core innovation sector.

Insufficient infrastructure: The supply of infrastructure, technologies and skilled labor must be in line with global developments to ensure MSME competitiveness. MSMEs are found in industrial estates that are decades old, run in urban areas, or have developed in rural areas in an unorganized way. The quality of infrastructure in such areas, including electricity, water, highways, etc., is bad and unreliable. Although these serve as risks to MSMEs, their analysis weapons suffer the greatest effect as they do not have the firepower to innovate. Lack of skilled manpower: While India has a wide human capital pool, the industry still lacks the qualified manpower needed for manufacturing, marketing, operation, etc. There is still a lack of a science community, too. The quantity and quality of world-class research required from them are not provided even by leading technical institutes. This adds to a significant dearth of institutions of qualified scholars. Problems of storage, designing, packaging, and product display: MSMEs are faced with storage, display, and interface issues for their goods. A significant restriction is the non-availability of selling outlets for their goods. Moreover, MSMEs are also faced with the issue of insufficient infrastructure to sell their goods to remote parts of the world. So, even though a corporation innovates, a primary problem remains successful monetization

4. AHP

The Analytic Hierarchy Process (AHP) is a tool for arranging and evaluating complex decisions, using math and psychology. In the 1970s, it was developed by Thomas L. Saaty and has since been refined. It requires three components: the end objective or question you are seeking to address, all potential solutions, named alternatives, and the parameters by which you can test the alternatives. By quantifying the parameters and alternate alternatives, AHP offers a logical basis for a necessary choice and connects those elements to the ultimate purpose. By pair-wise comparisons, stakeholders compare the relevance of parameters, two at a time. When finding choices on complex subjects with high stakes, the AHP is most helpful. It stands out from other types of decision-making as it quantifies conditions and choices that, with hard numbers, are typically impossible to quantify. AHP lets decision-makers find one that better fits their beliefs and their perception of the situation, rather than recommending a "correct" decision.

Table 1
Pre COVID- Pairwise comparison matrix

	Total Landed Cost	**Responsiveness of Supplier**	**Distribution network**	**Quality**
Total Landed Cost	1	6	5	8
Responsiveness of Supplier	1/6	1	3	4
Distribution network	1/5	1/3	1	3
Quality	1/8	1/4	1/3	1

Table 2
Normalized pairwise matrix

	Total Landed Cost	**Responsiveness of Supplier**	**Distribution network**	**Quality**	**Criteria weights**	**Percentage**
Total Landed Cost	0.673400673	0.791556728	0.535714286	0.5000	0.625167922	63%
Responsiveness of Supplier	0.107744108	0.131926121	0.321428571	0.2500	0.2027747	20%
Distribution network	0.134680135	0.04353562	0.107142857	0.1875	0.118214653	12%
Quality	0.084175084	0.03298153	0.035714286	0.0625	0.053842725	5%
					1	100%

1= Equal importance
3=Moderate importance
5=Strong importance
7= Very Strong importance
9=Extremely strong importance
2,4,6,8 =Intermediate importance to the immediate corresponding number
1/2, 1/3, 1/4, 1/5…..= Inversely important

λMax		
4.249954322		
Consistency Index	**(λMax-n)/n-1**	**Where n is the number of factors taken into consideration**
0.083318107		
Consistency ratio	**CI/RI**	
0.093615851		

CR is acceptable only if the value is less than 0.10 which is achieved in the above AHP. The model is perfectly fit. (* AHP Calculation refer Appendix 1 & 2).

Dominant Procurement Factors Post COVID	**Number**	**%**
IT Presence	33	31
Digital Procurement	23	21
Ethical code of conduct	10	9
Size and production capacity	9	8
Flexibility of the product	3	3
JIT delivery	4	4
Company competence	2	2
Recycling possibilities of the product	4	4
Warranty	6	6
Price discounts	5	5
Continual improvement of the products	2	2
Others	7	6
Total	108	100

scale of 1-9 how important do you consider the total landingcost

Table 3
Post COVID- Pairwise comparison matrix

	Total Landed Cost	**Responsivenessof Supplier (must be IT-enabled)**	**Distribution network**	**Quality**	**Digital Procurement**
Total LandedCost	1	7	3	8	5
Responsivenessof Supplier (must be IT-enabled)	1/7	1	5	6	7
Distribution network	1/3	1/5	1	5	3
Quality	1/8	1/6	1/5	1	5
Digital Procurement	1/5	1/7	1/3	1/5	1

Table 4
Post COVID- Pairwise comparison matrix

	Total Landed Cost	**Responsiveess of Supplier (must be IT enabled)**	**Distribution network**	**Quality**	**Digital Procurement**	**Criteria weights**	**%**
Total LandedCost	0.556235399	0.822677698	0.314795383	0.3960	0.2381	0.465568664	46.5%
Responsiveess of Supplier (must be IT enabled)	0.079430415	0.117525385	0.524658972	0.2970	0.3333	0.270395562	27%
Distribution network	0.183557682	0.023505077	0.104931794	0.2475	0.1429	0.14047529	14%
Quality	0.069529425	0.019509214	0.020986359	0.0495	0.2381	0.079525037	8%
Digital Procurement	0.11124708	0.016782625	0.034627492	0.0099	0.0476	0.044035447	4.5%
						0.955964553	100%

ƛMax
5.061860346

Consistency Index	**(ƛMax-n)/n-1**	**Where n is the number of factors taken into consideration**
0.015465086		

Consistency ratio	**CI/RI**
0.017376502	

CR is acceptable only if the value is less than 0.10 which is achieved in the above AHP.The model is perfectly fit.
(* AHP Calculation refer Appendix 1 & 2)

5. Conclusion

Through Pre COVID survey, we brought on 4 dominant factors that are mostly considered by MSME. With an intended sample space of 200+, we rolled the mail to peoples engaged in different MSME & SME industries. Out of 300 mails rolled 108 people from a different industry filled the google form. Through AHP we wanted to know which factor is dominant while considering the purchasing decision. The questionnaire was so framed to capture the inputs on different variables such as on a concerning quality. The inputs provided was then drafted in the AHP format. Total landing cost became the dominant factor as each one is focusing on lowering the raw material procurement cost to the minimum level to leverage on their profit margin. Total Landing Cost contributed 63% followed by Responsiveness of the Supplier i.e., 20% followed by distribution network and quality with 12% and 5% respectively. The questionnaire also comprised of which will be the dominant factor post-COVID. The response from 108 was indifferent

dimension which few dominant factors being IT Presence, Digital Procurement, Ethical code of conduct and Size and production capacity being dominant few which comprised of 31%, 21%, 9%, 8% respectively. The remaining 26% comprised of Flexibility of the product, JIT delivery, Company competence, Recycling possibilities of the product, Warranty, Price discounts, Continual improvement of the products, Others with each contributing less than 6%. For Post COVID, a fresh survey sheet was floated to 108 respondents who went ahead with the survey. We clubbed IT Presence with Responsiveness of the Supplier and added Digital Procurement and went ahead with the AHP construction. After receiving inputs from 53 out of those 108, the result of AHP Matrix stood as Total Landing Cost still being dominant but it noticed a significant fall and stood at 46.50%. There was a spike in Responsiveness of Supplier (must be IT-enabled), which stood at approximately 27%. Digital Procurement stood at 4.50%. The logical conclusion that can be drawn from the AHP both pre and post COVID is that to be in pace with the changing technology, the industry is in consideration for accepting the digital technology and once they are IT enabled, focus on Total Landing Cost will keep on decreasing and more reliance would be given to other factors which would enable the industry to deliver a quality product and with absorptions of technology, the cost can be brought down reducing labor-intensive work.

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Appendix-1

Pairwise comparison matrix

	Total Landed Cost	Responsivenessof Supplier	Distribution network	Quality
Total Landed Cost	1	6	5	8
Responsiveness ofSupplier	1/6	1	3	4
Distribution network	1/5	1/3	1	3
Quality	1/8	1/4	1/3	1
Sum	1.485	7.58	9.333333333	16

After putting the values from the survey sheet, data has been put in their respective cell and the inverse of the similar value is put in the corresponding relation cell-like Total Landing Cost to Responsiveness of Supplier is 6 therefore Responsiveness of Supplier to Total Landing Cost will be 1/6 (inverse of the value). After that sum of each row is taken. For example, Total Landing Cost = 1+1/6+1/5+1/8

= 1.485

Normalized pairwise matrix

	Total Landed Cost	**Responsiveness of Supplier**	**Distribution network**	**Quality**	**Criteriaweight s**	**Percentage**
Total Landed Cost	0.6734 00673	0.791556 728	0.5357 14286	0.5 000	0.6251 67922	63%
Responsiveness of Supplier	0.1077 44108	0.131926 121	0.3214 28571	0.2 500	0.2027 747	20%
Distribution network Quality	0.1346 80135	0.043535 62	0.1071 42857	0.1 875	0.1182 14653	12%
	0.0841	0.032981	0.0357	0.0	0.0538	5%
	75084	53	14286	625	42725	
					1	100%

Firstly, each value in cells was converted into decimals by dividing the cell value with their corresponding column sum. For example: for Total Landing Cost: 1/1.485 = 0.673400673. A similar activity is carried of each cell.

For Criteria Weight, values of corresponding rows are taken and divided by several factors. For Example: Criteria Weight for Total Landed Cost = (0.673400673+ 0.791556728+ 0.535714286+ 0.5000)/4= 0.625167922. For Percentage, Criteria Weight is multiplied by 100.

Verification						
	Total LandedCost	Responsiveness of Supplier	Distribution network	Quality	Weighted sum	Weighted sum/Criteriaweights
Total Landed Cost	0.62516 7922	1.216648201	0.591073 265	0.43 0742	2.8636 31188	4.580579214
Responsiveness of Supplier	0.10002 6867	0.2027747	0.354643 959	0.21 5371	0.8728 16427	4.304365516
Distribution network	0.12503 3584	0.066915651	0.118214 653	0.16 1528	0.4716 92064	3.990131948
Quality	0.07814 599	0.050693675	0.039404 884	0.05 3843	0.2220 87275	4.124740611

For Verification, the Value of each cell is derived by multiplying the value of the pairwise matrix with the criteria weight. For example, Total Landed Cost to Total Landing Cost Cell = 1*0.625167922 which is 0.625167922. Similarly, for Total Landed Cost to Responsiveness of Supplier = 6*0.2027747 which is 1.216648201.

Weighted Sum for Total Landed Cost= (0.625167922+ 1.216648201+ 0.591073265+ 0.430742) = 2.863631188

For Weighted sum/Criteria weights of Total Landed Cost = 2.863631188/ 0.625167922 = 4.580579214

Sum of all Weighted sum/Criteria weights = 4.249954322 which is ƛMax Consistency Index = (ƛMax-n)/n-1 where n is the number of factors which in this case is 4

= (4.249954322-4)/4-1

= 0.083318107

Consistency ratio = Consistency Index/ Random Consistency Index

= 0.083318107/ 0.89

= 0.093615851

0.89 is taken from Random Consistency Index Table mentioned in the paper.

Number of Variables	1	2	3	4	5	6	7	8	9	10
Value	0	0	0.52	0.89	1.11	1.25	1.35	1.4	1.45	1.49

For the Model to be accepted Consistency ratio should be < 0.10 which is achieved in this case

Appendix-2

A similar process was followed for post-COVID data, with the only difference that the total number of Variable (n) = 5

Pairwise comparison matrix					
	Total Landed Cost	Responsiveness of Supplier (must be IT enabled)	Distribution network	Quality	Digital Procurement
Total Landed Cost	1	7	3	8	5
Responsiveness of Supplier (must be IT enabled)	1/7	1	5	6	7
Distribution network	1/3	1/5	1	5	3

Quality	1/8	1/6	1/5	1	5
Digital Procurement	1/5	1/7	1/3	1/5	1
Sum	1.7978	8.5088	9.53	20.2	21

Normalized pairwisematrix							
	Total LandedCost	Responsiveness of Supplier (must be IT-enabled)	Distribution network	Quality	Digital Procurement	Criteria weights	Percentage
Total Landed Cost	0.556235399	0.822677698	0.314795383	0.3960	0.2381	0.465568664	46.56%
Responsiveness of Supplier (must be IT enabled)	0.079430415	0.117525385	0.524658972	0.2970	0.3333	0.270395562	27.04%
Distributionnetwork	0.183557682	0.023505077	0.104931794	0.2475	0.1429	0.14047529	14.05%
Quality	0.069529425	0.019509214	0.020986359	0.0495	0.2381	0.079525037	7.95%
Digital Procurement	0.11124708	0.016782625	0.034627492	0.0099	0.0476	0.044035447	4.40%
						1	100.00%

Verification							
	Total Landed Cost	Responsiveness of Supplier (must be IT enabled)	Distribution network	Quality	Digital Procurement	Weighted sum	Weighted sum/Criteria weights
Total Landed Cost	0.465568664	1.892768932	0.421425869	0.636200	0.220177	3.415963763	7.337186
Responsiveness of Supplier (must be IT enabled)	0.066483205	0.270395562	0.702376448	0.477150	0.308248	1.516405439	5.6081
Distribution network	0.153637659	0.054079112	0.14047529	0.397625	0.132106	0.745817248	5.309242
Quality in line with Digital	0.058196083	0.044885663	0.028095058	0.079525	0.220177	0.210701841	2.649503

Procurementt							
Digital Procurement	0.093113733	0.038612486	0.046356846	0.015905	0.044035	0.193988072	4.405271

Consistency Index = (λMax-n)/n-1 where n is number of factors which in this case is 4
= (5.061860346-5)/5-1
= 0.015465086
Consistency ratio = Consistency Index/ Random Consistency Index
= 0.015465086/ 1.11
= 0.01393251
1.11 is taken from Random Consistency Index Table mentioned in the paper

Number of Variables	1	2	3	4	5	6	7	8	9	10
Value	0	0	0.52	0.89	1.11	1.25	1.35	1.4	1.45	1.49

For the Model to be accepted Consistency ratio should be <0.10 which is achieved in this case