TECHNOLOGICAL SUPPORT FRAMEWORK FOR INDIAN SMALL AND MEDIUM SCALE ENTERPRISES OVER CLOUDS

Aparajita Dixit
MSRDC- Maharishi Arvind Institute of Science and Management, Jaipur
under RTU Kota, dixitaprajita28@gmail.com

Durga Prasad Sharma
MSRDC-MAISM (RTU), Research Centre Jaipur & AMUIT, MOEFDRE under UNDP
dp.shiv08@gmail.com

Suresh Kumar Sharma
Sri Karan Narendra Agriculture University, Jobner
suresh.cs@sknau.ac.in

Abstract—For any country's economic development, small and medium-sized enterprises (SMEs) are seen as the driving force behind growth. The sustainability of this employment provider for 26 million people is, therefore, a critical and vital element. India, in the post-independent era, took technological development as a high priority on its planning agenda. Thus, technological growth has been a part and parcel of its industrial development activities. India's government estimates that of the 13.2 million small and medium-sized enterprises (SMEs) in the nation, around 8% of the GDP, 400 modern Small-Scale Enterprises (SSEs), and 2000 rural and artisan-based clusters exist. Information Technology (IT), automobile cyber security, data science, sales, and banking usage adopted by large companies in various activities of their business have been researched to a significant extent. However, there exists limited research on IT, automobile cyber security, data science, sales, and banking usages by SMEs, especially in the Indian context. SMEs are often not motivated to adopt technology because of resource unavailability. Researchers set out to learn how workers of small and medium-sized businesses (SMEs) see cloud computing services. A survey of 167 people working in Indian SMEs yielded the results of the quantitative investigation. On the other side, an effort has been made to study SMEs' methods for IT, automobile cyber security, data science, sales, and banking adoption in their daily business activities among two types of Indian SMEs, namely IT, automobile cyber security, data science, sales and banking SMEs & Auto Component SMEs (SMEs)of both small and medium-size.

Keywords—Indian SME, IT, automobile cyber security, data science, sales and banking, Cloud, Big data

I. INTRODUCTION

Computing as a utility is an old idea with a new name: cloud computing, coined by Parkhill in 1966. Cloud computing is built on notions that aren't new, thanks to its dependence on the internet and its connection to virtualization and grid computing. The proliferation of the

Internet, greater bandwidth, mobile devices, and user mobility needs have all contributed to its present prevalence. Micro and small companies (SMEs or SMBs) are said to choose cloud computing due to the potential advantages it offers. However, the demands and expectations of small organizations vary from those of big enterprises when it comes to cloud computing. A large number of businesses make up an economy, the vast majority of them are Indian SMEs (SMEs). They contribute considerably to each country's Gross Domestic Product (GDP) as well as its labor market, so playing a critical role in the development of each market. Because of this, adopting new techniques or offering new systems to assist Indian SMEs in becoming more effective and efficient is advantageous not only to Indian SMEs but also to the industry as a whole, as proposed in this paper. Utilizing suitable technologies such as the internet may assist Indian SMEs in being more efficient, and this is one of the techniques that can help them do so. SMEs in India encounter a variety of obstacles [1]. The most significant difficulty is a lack of sufficient resources. Furthermore, as compared to major corporations, small businesses have a lower tolerance for the costs and risks associated with adopting new technologies. SMEs are very cost-aware, and they should strive to keep their expenses under control. Although adopting new technology might assist Indian SMEs in gaining a competitive edge, doing so comes at a considerable financial cost. Fixed expenses, operating costs, and training costs are all distinct sorts of expenditures that are often incurred as part of any information technology investment project. On the other hand, the actual cost of a project is often larger than the original estimate [2], An information technology service paradigm in which computing services are supplied to consumers across the network an independent of device and location way, regardless of device and location, is known as "cloud computing" (2011). Considering the fact that shared resources are required and used in the provision of the services, their definition is [3].

Figure 1: Working mechanism of cloud computing [4]

National Institute of Standards and Technology (NIST) defines "Cloud Computing" as the ability to quickly provision and release computing resources (e.g. networks, servers, storage, applications, and services) from a shared pool with minimal management effort or service provider in the United States. Three service models and four deployment models make up the model's core five characteristics. models. Next, we'll talk about the many types of services and how they're offered. Cloud computing, on the other hand, has five important characteristics: broad network access, on-demand self-service, quick flexibility, measurable service, and resource sharing. [5].

1.1 Cloud Computing Definite Approach

CC is a concept for offering a variety of information technology services remotely through the Internet and/or through a networked information technology environment. Word 'cloud' is metaphorical and refers to a big pool of useful resources e.g. technology & software that seem to be freely available over the Internet, as opposed to a physical location. CC provides computer services in a commoditized way, similar to the way utilities such as water, electricity, gas, & telecommunications are provided. Cloud computing is regarded as the fifth utility since it offers a basic level of computer service for daily usage, which is why it is referred to as such. It is clear from the literature that there are numerous different interpretations of CC, and that there is no universally accepted definition of CC that can be applied across all of the literature. When it comes to certain interpretations of CC, the idea would be that cloud service is provided by 3rd party [6].

1.2 Some Indian SMEs Definitions

According to Ward (2005), there is no basic aspect for Indian SMEs since the term varies depending on who is describing it and where it is being defined. For example, in Canada, an Indian SME is described as an organization with less than 500 people, while a small firm is defined as one with less than 100 workers (in the US). The World Bank, on the other hand, defines a SME as one with less than 500 workers. SMEs in India may be classified in two ways: according to the number of workers in the firm and/or according to the value of the enterprise's fixed assets

According to Boon (1989), the scale of the enterprise's employment is the most significant consideration utilized in Ghana when evaluating potential employees. However, when defining INDIAN SMEs based on fixed assets, caution should be used because of the continual depreciation in currency rates, which often renders such a definition out of date as a result. The United Nations Industrial Development Organization (UNIDO) defines Indian SMEs in developing nations based on the number of workers in a business. A small firm employs between 5 and 19 people, and it may be shown by the common small shops found in cities such as hair salons and chop bars, which are examples of small enterprises. A medium-sized business employs between 20 and 99 people, and this category includes manufacturing and exporting firms. [7].

Using a problem statement and dataset, this article examines the introduction of Indian small and medium-sized enterprises (SMEs) to the cloud. The results of the experiment are presented in the experimental part, which concludes with a final observation and a plan for the future.

I.   LITERATURE REVIEW

Indian SMEs using Data analytics contribute to the understanding & providing information of massive data sources (e.g., easily understandable dashboards and visualizations), thereby facilitating better information transmission and establishing a platform for decision-making based on data. The rest of this section presents the main concepts which underpin and make data analytics possible. It serves as a basis for data-driven decision-making, whose impact on firm-level productivity has been studied by several authors to our knowledge, at present, there is some review of the current work in this research area.

Public SaaS platform, that used SOA structure to integrate business software for manufacturing with a single gateway for BPR to go online with all sorts of applications, including email, ERP,

SCP, and more. effective transition cloud service bus to adapt to the use of Service-Oriented Architecture (SOA) applications & enables incorporation of simple software techniques for data access, user control, overlapping authorization, &, others. By its openness, SOA will allow for a more extensive range of applications to be successfully embedded on a cloud computing platform without the need for modifications. CN-online SaaS platform delivers commercial service for Chinese organizations, therefore verifying architecture. This study uses a questionnaire survey of 72 small businesses in Huainan city to collect information about the characteristics of SMEs and combines it with the information on access to knowledge about the various funding channels, business structures, financial situations, investment structures, risk, as well as financial institutions to then identify components of the small businesses in the area. Finally, this author describes some concrete measures to help small and medium-sized firms get finance more easily [8,9].

An index system for evaluation of a BPR competition. It seeks to carry out a complete analysis of the SMME's competitive advantage objectively and then formulates a strategic competitive strategy appropriately. The evaluation method of SMME's competitive advantage is constructed based on weighting indices by the AHP method & to calculate SMMEs competitive advantage comprehensive index incorporates weighting index values by the AHP technique. It computes a proper evaluation index that breaks through the restriction of customary assessments [10]. AHP sensibility analysis is also included. Their approach was proven to be effective with an empirical study that examined data on SMMEs from financial databases on cninfo.com. this study explored cooperation between government, SMEs, and entrepreneurial businesses based on the triple spiral theory. This study examines the influences on the advancement of tech SMEs using the analysis methodology and linear regression technique and finds that govt policy and the entrepreneurs' professional quality are the essential endogenous and exogenous instrumental in influencing the growth of tech SMEs. Also, various measures are proposed to affect this change [11,12].

Some work presents a comprehensive examination of cloud-borne value drivers & cloud-accelerated influence & gives an in-depth look at startups & SMEs operating in both B2B & B2C markets. Separate case research of the textile & apparel industry reveals how different components & features of CC can play a role in building lasting value and encouraging competitive advantage. The research presented is on SMEs in India's usage of cloud computing. Investors are required to concentrate on their core activities while outsourcing the full technology supporting operations with the arrival of cloud applications. Numerous companies have embraced this method, which has helped reduce operational costs while still being attentive to consumer needs. Although, adoption has been very low among SMEs. Initial research indicates a wide range of conditions in which people choose to embrace cloud computing services. As was shown, SMEs may greatly benefit from extending cloud services for intensive computational tasks, like data mining, modeling, & simulation. Re-establishing benefits to small and medium-sized businesses includes reduced investment in hardware, better application & service use in existing data centers, lower maintenance costs, & faster software upgrades. SMEs can use the information to improve decisions on cloud computing adoption [12-15].

Only primary data gathered through a sample survey is utilized in the research. The focus was mostly placed on the comprehension of the MIS usage issues that hold it back. To collect information for the analysis, a pretested & mentioned challenge was used. The findings suggest that whereas just 5 of the 30 small-size firms utilize MIS for supporting decision-making, as many as 16 of the 20 intermediates to large-scale firms have done so. After the researchers want to know to consider various issues that could be plausible explanations for non-MIS use in their firms, they were asked to provide comments on the following subjects: To enable MIS utilization in small businesses, one must expand the distribution of information about possible computer applications and the advantages that they provide. Such information transmission is necessitated via numerous training programs, seminars, and conferences. This has the added effect of increasing the usage of MIS in companies. there has been a complex and dynamic industry, which has necessitated more customer customization for production organizations for years [16]. In addition, paired with an intricate system of business factors such as widespread marketplaces, technology, and industries, businesses face significant hurdles when it comes to manufacturing. With changing product needs, at the same time with a rising number of variants, an ongoing transformation of production structures is required. As a result, it is critical to measure a company's manufacturing adaptability. The preceding article highlights the gains in medium-sized production study findings. Results obtained with the IT framework WertProNET demonstrated the influence of production modifications on the operation of the plant and the avoidance of excessive expenses due to wasteful resource utilization [17,18].

Qualitative data collecting and analysis are employed in the study. The results are designed to assist small and medium-sized businesses (SMBs) in understanding how to overcome several obstacles, including lack of access utilization and sharing of reliable and comprehensive data. Even if the trend is on the rise, research shows that there are several problems with using CC, including illiteracy, lack of infrastructure, & security issues. These findings present business ideas for SMEs to maintain their presence in the business sector. the study outlines topics relevant to this research, e.g., e-business development, the idea of CC, and ways in which Malaysian SMEs might benefit [19]. The main goal of this study is to research CC best practices in the Malaysian SME e-business setting. It is important to note that when gathering information on how the CC might strategically offer chances to the SMEs in Malaysia, this study also reviewed the various qualitative methods that were used. The collection of suggestions derived from this research will provide Malaysian SMEs with both e-business and CC technology guidance. This study recommended encouraging SMEs to remain aware of CC for their e-Business. The research was their guide when creating this SPDT logic model, and in a case study of an SME, Company H, we implemented and evaluated the logic model. They also reviewed the USPTO's patent database & patent data to understand better the firm's expertise & future development needs in the realm of technology. The use of techniques known as patent co-citation analysis (PCA) & cluster analysis was used to help uncover eleven technology groupings. The clusters played a vital role in providing Company H with critical technological knowledge in the form of SPDT. Lastly, they propose three R&D strategy recommendations and six patent deployment models to assist with patent-focused R&D decision-making for Company [20,21].

II.   RESEARCH METHODOLOGY

A.   Problem Statement

In today's landscape of big data, ever-increasing volume, unstoppable velocity, and complexity of working with unstructured data along with costs are a critical challenge for SMEs or small data centers, in addition to this multiple diverse, rapidly growing vast amount of data demand real-time analytics for getting new insights and better in decision making for growth and profitability of the businesses. The rate with which data is growing is exceeding the available storage capacity of Indian SMEs and small data centers /data warehouses. Scalability is the major challenge that traditional RDBMSs (relational database management systems), and data warehouses are facing these days. It has been studied in many types of research that initially RDBMSs and Data Warehouses technologies were designed without considering that data in the future will be generated with exponentially higher velocity, higher variety, and higher volume. When the size of data grows, more database servers will be required and also retrieving and manipulation becomes difficult. The cause of unpredictable unstructured and semi-structured data growth is difficult to analyze by using RDBMS and DW house because they are schema-oriented data storage and manipulation that needs information to be authorized against a diagram before an organization's data warehouse can consume. Due to this diversified data set processing and analysis are becoming a critical challenge. As a result, many organizations like SSEs aren't keeping their big data to realize their benefits and gain value from a multidimensional view of their business but 95% of most organizational data is unstructured data. Real-time data processing and analytics are also of considerable challenge for resource constraint organizations (SSEs) and small data centers (storage and processing capabilities) the rate at which this huge volume of data is generated through these systems is beyond the processing capability of traditional RDBMS and DW House. Applying such a vast amount of unstructured and semi-structured data to structured data also required a lot of effort and time. Furthermore, when used to analyze exceptionally large amounts of data, hardware solutions may be prohibitively expensive, requiring a significant investment in hardware and software license fees in addition to the expenses of maintaining big data infrastructures. Indian SMEs having limitations in storage size and processing capabilities have faced high costs in growing their hardware i.e. storage device) to handle and accommodate dramatically increasing data, in addition to that they may not have data science experts. Consequently, they are not fully potential and capable of processing, analyzing, and able to gain a multidimensional view of their business performance improvement. However, Managing Big Data requires fundamental changes in the infrastructure capacities and architecture of data management systems in a cost-effective manner for SSEs having limitations in storage size and processing capability. This research proposal tries to investigate the scalability, cost-effectiveness, and high processing and computational performance of data for Indian SMEs to support them to use technology support analytics in their decision-making processes and empower them for survival in the highly competitive environment.

B.   Proposed Methodology

In this section, we have to achieve the specific and general objective of research & answer the research questions, Survey both Indian MSMEs (SMEs) under consideration of Big Data Analytics with High performance, Scalable resources, and cost-effectiveness in selected

organizations, and this phase a Big Data Analysis Framework will be designed for SSEs with selected parameters i.e., performance, scalability and cost over Cloud. Here the study designs research to use IaaS and SaaS over Community Model with Apache Hadoop amp; Map Reduce for Big Data Analysis in proposed Framework. Finally, Open Nebula and Aneka are proposed to be used for designing the system Framework. The research design proposed for this study is qualitative as a major and quantitative as minor only for selected SMEs survey. These all phases are described one by one in detail:

a)   Research Approach

To achieve the specific and general objective of the research study & answer research questions, the following research methodology is proposed to be used. The research design proposed for this study is qualitative as a major and quantitative as minor only for selected SMEs survey.

• Survey for both SMEs under deliberation of Big Data Analytics with High performance, Scalable resources, and cost-effectiveness in SME

• Technical observation for SME's Data Analytics with High performance, Scalable resources, and cost-effectiveness with selected organizations using a literature Survey.

• Collect open-source data sets as a sample for experimentation analysis from companies that provide larger scale-free data sets in a different format.

• Selection of Cloud Service Models, Cloud Deployment Models, and Framework

• Designing Tools and Big Data frameworks i.e., Apache Hadoop framework and suitable tools for Big Data Analysis using feature-based best fit strategy under specified scope and limitations.

• Analyze the data for getting the hidden knowledge that can support the decision-making process and ensure the potential use in SMEs

• Designing a most suitable Data Analysis Model/Framework over Cloud for SMEs with selected parameters i.e., High Performance, Scalability of Resources, and Cost-effectiveness

• Validate the Model/Framework in either a simulated environment or using the real site of the selected SME.

• Digitalization of manual data is a widely adopted phenomenon in today's enterprise information management systems. Today every organization is trying to shift its information communication, computing, and collaboration processes over automated systems.

b)   Proposed Research Methodology

According to data gathered in the survey form and submitted by those companies who replied, the information technology infrastructure state of IT SMEs or auto-component SMEs is evaluated. The 77 Industry, as well as the Auto-component Industry (ACI), were divided into two categories based on the size of the firm, namely SMEs. The 183 SMEs selected comprised 122 small &SMEs (66.7%) as well as 61 medium-sized enterprises (33.3%) from both industry sectors combined. i) A microenterprise is defined as an enterprise where the funding in a plant as well as industrial equipment does not exceed Rs. 25 lakhs; ii) A small enterprise is defined as an organization where funding in a plant as well as machinery is more than Rs. 25 lakhs but does not exceed Rs. 5 crores, and Small-scale units were also in operation before the nation

declared independence. Originally, the term "small-scale industry" referred to both rural and urban cottage industries in the United States before it won its independence from the United Kingdom. As a consequence, Indian small and medium-sized enterprises (SMEs) did not have the technology at the time. SMEs from the pro-independence period was thus omitted from the present sample. The information in Table ranges from SMEs that were founded as early as 1957 to SMEs that were established as recently as the first quarter of 2011. These Small and Medium-Sized Company Enterprises (SMBs) were polled on their strategic IT use for business competitiveness. SMEs that were created more than six decades ago showed no evidence of employing information technology, but the data clearly shows that SMEs began to use information technology in significant numbers after 1990. It has been noted that the post-liberalization period (i.e., after 1990-91) marked a turning point in the usage of IT majority of SMEs that were created between 1990 and 2010 had a high level of IT use as well as an interest in applying IT strategies for the improvement of their operations.

c) Data Collection

Small and medium-sized enterprises (SMEs) that use CCS as part of their operations were included in the general study population, while the survey unit was made up of the company's workers. To conduct a basic transversal sort of study, a specified number of respondents were surveyed at the same time.

d) Questionnaire

A survey has been developed by our team (167). To participate in demand response, a small or medium-sized business (SME) must complete a questionnaire with the help of the service provider. Policymakers in India must continue to focus on issues related to the growth of small and medium-sized enterprises (SMEs). SME performance in India has been impacted by the current worldwide financial crisis, although this is only one example. We have included several questions in the cloud environment.
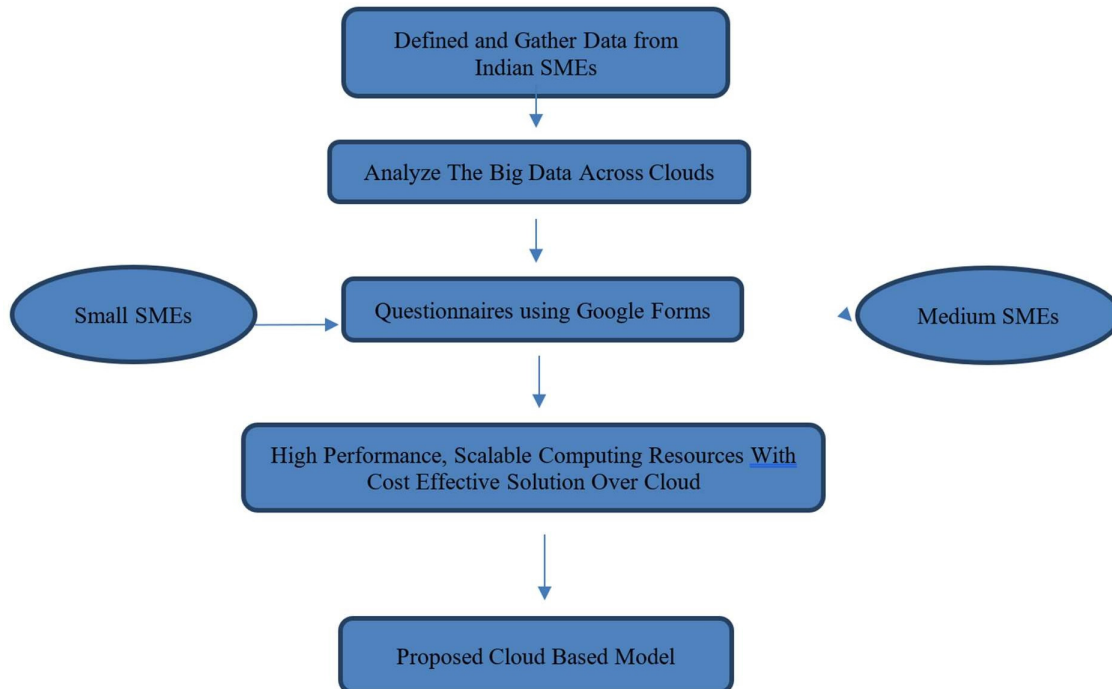
Figure 2: Block chart of Proposed Methodology

The principal objective of this study is to project a Data Analytics and Technology Framework over Cloud for Indian SMEs requiring high performance and high-capacity scalable resources in a cost-effective manner. The key focus of this research proposal is to examine current data processing technologies (about big data features) to support SMEs ' decisions making where scarcity of resources with high-performance computing capabilities and affordability are the most important issues. We focus only on selected SMEs for potential exploration of Big Data technologies over Cloud for Data Analytics using three parameters i.e., high-performance computing, scalability of resources, and cost-effectiveness that could be used as a baseline for implementation in Indian SMEs.
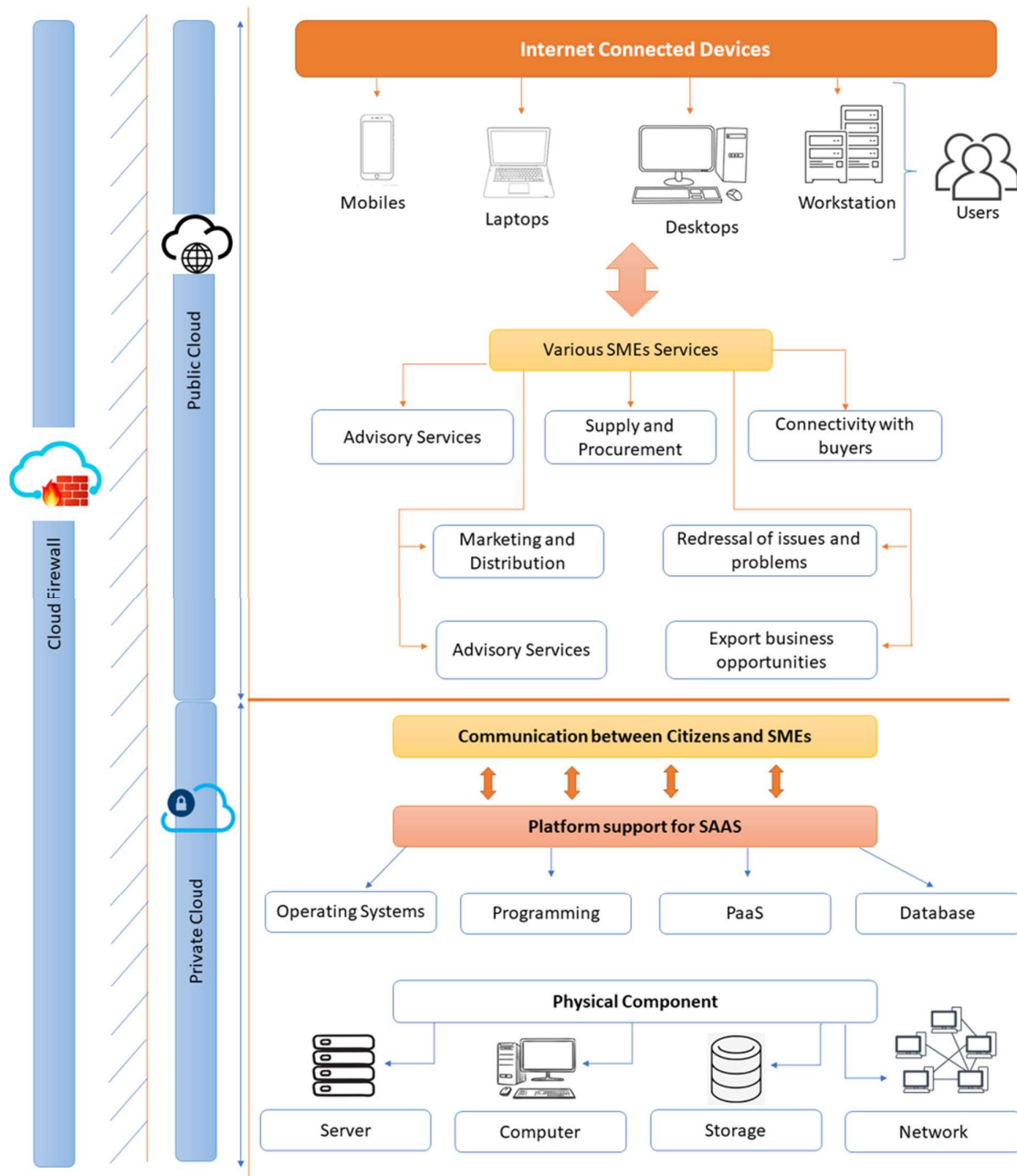
Figure 3: Proposed Support Framework for Indian SMEs over Cloud

The figure 3 represents the proposed study for cloud-based Framework for small and medium scale enterprises in India. The entire model is secured by a cloud firewall which filters any unauthorized request accessing the information from the model.

The Framework is divided into public and private cloud. The public cloud has two sections that is internet connected devices which represents how a user can access the information by using any of the gadgets like mobile laptops desktops etc. and the other section includes the services provided by SME like advisory services, marketing and distribution services, finance and investments, supply and procurement, redressal of issues and problems, export business opportunities, connectivity with buyers etc.

On the other hand, the private cloud has two sections that is communication between citizens and small medium scale Enterprises which includes the platforms support for SaaS. It includes operating system, programming language, platform as a service and database. The next section has physical components like servers, computers, the storage and the networks.

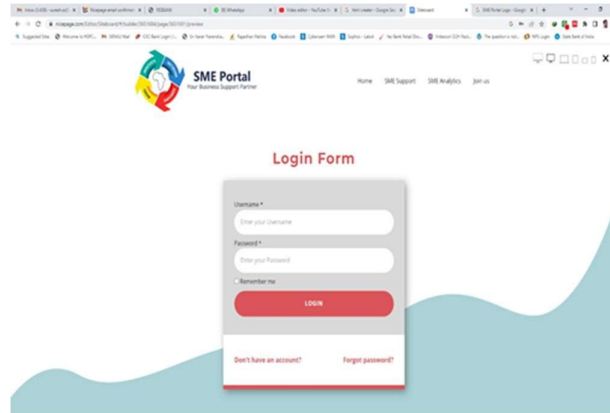The Screenshots of the same model shows the operational effectiveness and ease of use.

Figure 4 Login Screen of Portal

The figure 4 shows the login screen of the model in which an SME user can sign in easily with user friendly login page by providing the simple login information like name, password etc. A new user can also register on the portal easily.
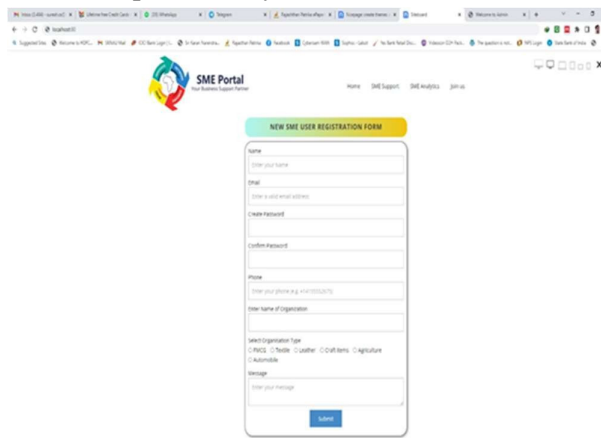
Figure 5 SME Portal Registration

In the new user registration window as shown in figure 5, for any SME vendor it is mandatory to clearly state the type of industry one is log in for. Say for example FMCG, textile, leather, crafts item, agriculture, automobile etc.
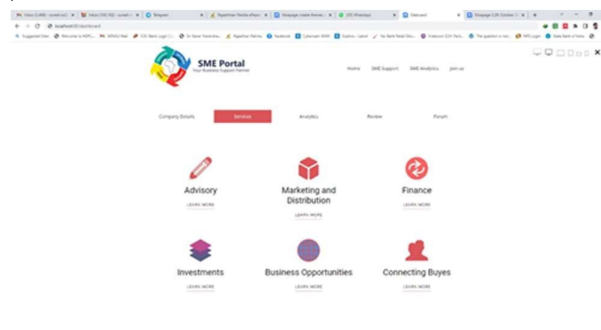
Figure 6 SME Portal Dashboard

The figure 6 shows the type of service any SME vendor can log in for. Here the portal provides many of the services to these small and very small businesses vendors like advisory service, marketing and distribution, finance, investments etc.

The portal also helps in connecting different buyers by this portal and also helps these SME vendors to enhance their businesses by providing business opportunities.

III.   RESULTS ILLUSTRATIONS

There has been relatively little study done on small businesses in India and throughout the globe about the use of information technology (IT) by SMEs in their businesses to grow their businesses. Additionally, scholarly research on the strategic use of information technology in small businesses is scarce. After interviewing 250 senior-level information technology professionals, Xerox Corporation as well as International Communications Research (ICR) discovered that 75% of them admitted that their organizations are still primarily paper-based and do not take benefit of digital storage to help control the database embedded in the paper records. The following results have been taken from our collected questionnaire.
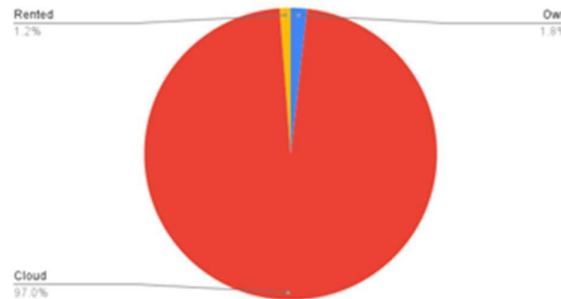

Figure 7: Percentage of Infrastructure of Company

The above figure shows the Percentage of Infrastructure of the Company. SMEs in the auto-component industry are far ahead of their IT counterparts when it comes to using the web for all business purposes in a significant manner in the medium size sector.
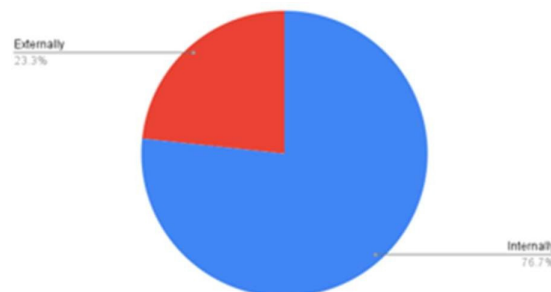

Figure 8: Processing is Done Internally or Externally

The above figure shows the internal or external processing that half of the sector requires to be produced conscious of the massive prospect of having a website to develop their organization

& support them connecting the market more rapidly and accurately at a lower cost in significantly less time and expense.
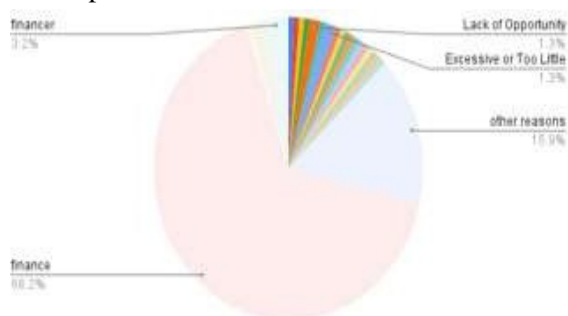

Figure 9: Reasons for Employees to Shift to another Job

The above figure shows the reasons for Employees to Shift to another Job. It displays two groups of industries: information technology and auto-components, as well as the effect of their Internet use on their everyday business operations, such as whether they utilize the Web and whether it is beneficial to them.
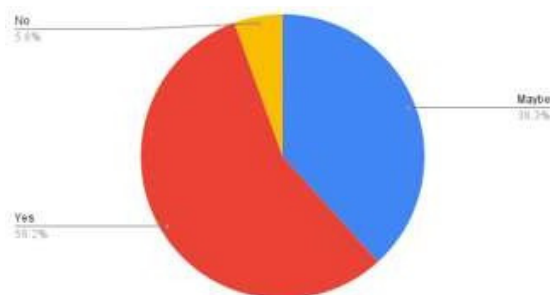

Figure 10: Service Availability of SMEs

As an important part of evaluating the impacts of policies, outcome indicators help policymakers determine whether current policies are working and if new ones are needed. To put it another way, they aid decision-makers in determining whether or not their policies are having the intended effect.

Table 1: SME's Turnover Wise Who Reported Increase in Sales by Industry Type Wise

SME Turn Over Range	Number of counts	Number of IT Industry	Industry Type	Total
			Number of Auto Component Industry	
Up to 50 Lakhs	Count	25	25	45
	% of Total	13.60%	13.60%	27.30%
51 Lakhs to 1 Cr.	Count	25	36	13
1 Cr to 25 Cr	Count	35	31	66
	% of Total	19.90%	17.60%	37.50%
50.1 Cr. To l00 Cr	Count	2	2	5
	% of Total	1.10%	1.10%	1.10%

There should be a minimum degree of expertise and certifications necessary for any private sector providers listed in this "official" database. SMEs would be encouraged and service quality would be ensured as a result.
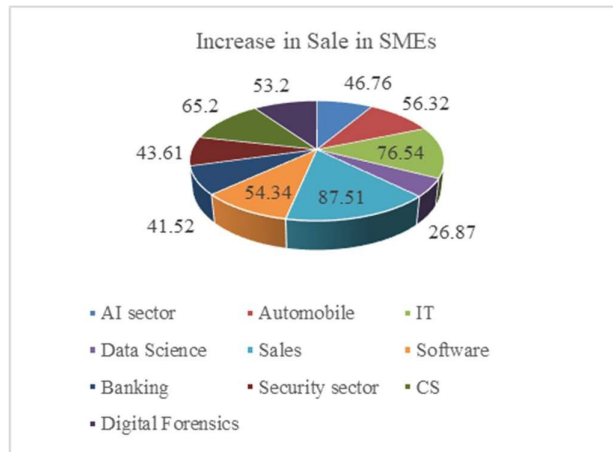

Figure 11: Effect of using IT on Sale by all SMEs

Of the total 183 SMEs surveyed, 43.7 percent of SMEs from both classifications of the industry showed a rise in sales as a result of using information technology in their daily business operations, while a small portion of 9.3 percent SMEs reported no boost in sales despite using information technology in their daily business operations. A considerable 47 percent of SMEs have not characterized themselves.
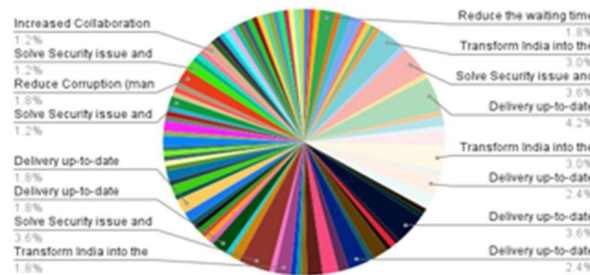

Figure 12: Implementation of Emerging Technology like Cloud Computing

A database of private-sector experts, specialists, and consultants should also be created and frequently updated by policymakers, and promoted among small and medium-sized enterprises (SMEs).
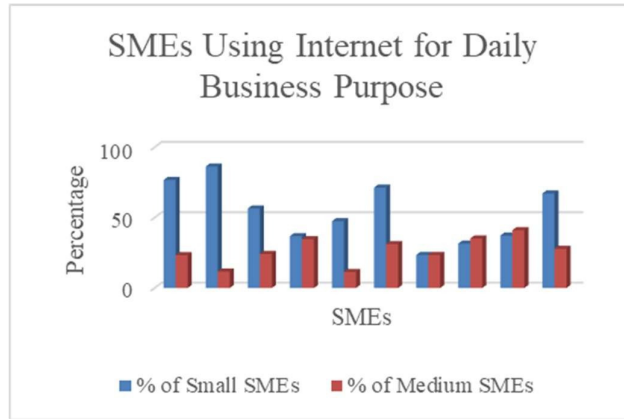
Figure 13: Internet Usage by IT Companies

The above table shows the internet used by the different IT companies founded during the post-liberalization period, regardless of industry or locality, were found to be IT, automobile cyber security, data science, sales, and banking aware and used IT to stay competitive for their sustainability and growth. Male IT literates outnumber female IT, automobile cyber security, data science, sales, and banking literates in both IT and Auto component sector SMEs, independent of company size, while IT literates in the IT industry (86 percent) were twice as many as IT literates in the automobile component industry (35 %).
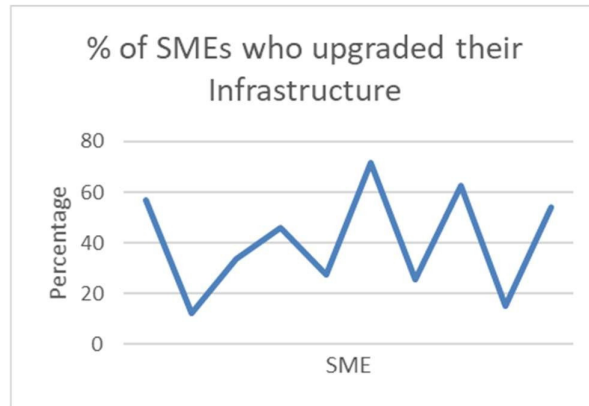

Figure 14: Percentage of SMEs and Their Business Infrastructure Up-Gradation

Only 30% of small and medium-sized businesses have upgraded their IT infrastructure to strategically use it for their business; the remaining 70% are either unaware of the benefits of strategically using IT in their business or maybe facing a major crisis with the turnover of IT-literate manpower or may lack adequate funds to acquire them. Only 25 SMEs from the IT sector and 22 SMEs from the Auto Component Industry want to invest in IT infrastructure because they believe that it is too expensive to constantly purchase new technologies. For these small businesses to develop, they must operate within the confines of their current infrastructure, which will need a significant amount of time and effort on their part. Figure 10 depicts the many ways in which information technology (IT) may improve business performance.
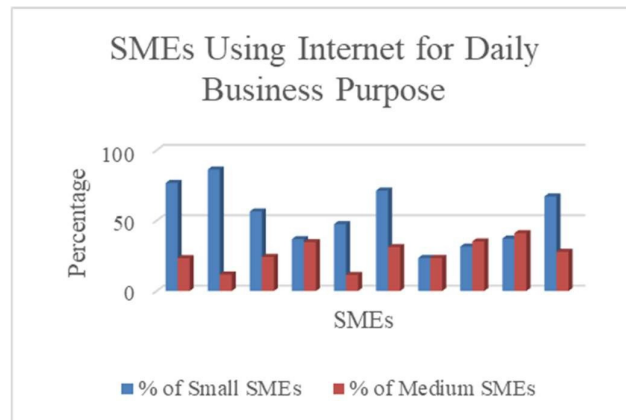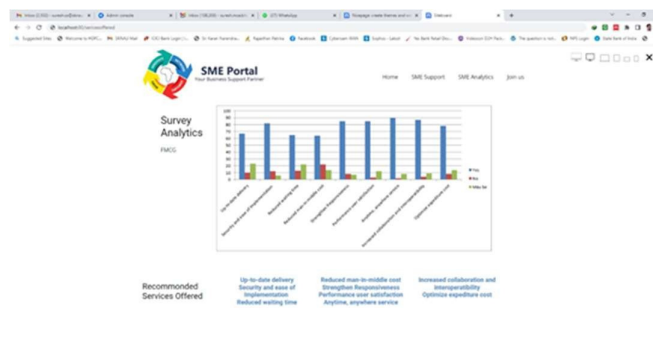
Figure 15 SME Portal Analytics

Figure 16 Output Screen SME Portal

The above result chart clearly indicates the major enhancement in output of those SME companies which have adopted our cloud-based model. The chart shows the various parameters of assessment and it is clear that those companies which have adopted cloud-based platform have shown more than 60% improvement in various parameters such as up-to-date delivery, security and ease of implementation, reduced waiting time, strengthen responsiveness etc. in comparison to those which have not adopted the cloud-based model.

Hence such kind of models can be utilized to explore the endless possibility of increasing the output with the economic effort and resourcefulness. Such platform is the need of the hour to propel the small and very small businesses of our country to grow at a rapid pace and improve the life style of these small vendors.

IV. CONCLUSION

In the study, 183 SMEs were selected from significant cities in India. The main outcomes of this analysis of data collected from the research were that of the overall SMEs survey conducted, 50 percent of IT, automobile cyber security (data science), sales as well as banking (SME), as well as 35 percent of auto component SMEs, had Used for their business activities to a significant extent, and that they were developed. In this paper, we analyze the questionnaire data during the post-liberalization period, regardless of industry or locality. Small and Medium Enterprises (SMEs) have a significant impact on most economies, especially in developing

nations. Small and medium-sized enterprises (SMEs) make up the majority of companies in the world and play a vital role in employment creation and global economic growth. About 90% of companies and more than half of the world's workforce is owned and operated by small and medium-sized enterprises. The AC industry, which appeared to be content with its operations without a corporate website, did not see the value of a corporate website in terms of business development. This feature makes use of the chance to enhance knowledge of the advantages and strategic benefits that a website may bring to non-IT, automobile cyber security, data science, sales, and banking SMEs. In contrast to major corporations, small businesses are less likely to be able to get bank loans and instead depend on internal finances or cash from family and friends to start and manage their businesses. Over half of formal MSMEs in developing countries are estimated by the International Finance Corporation (IFC) to have annual funding needs of $5.2 trillion, which is comparable to 1.4 times the present level of global MSME lending.

V.   FUTURE SCOPE

Customers, employees, and SME owners are all key stakeholders in today's business ecosystems, as are the government, suppliers, and connected businesses. They all engage in activities that take time and, as an outcome, cost money. Because SMEs often operate with limited resources, stakeholders must rely on a restricted number of inputs to ensure their long-term viability. This had a clear correlation with the company's expansion and, as a result, with the industry's growth. The survey discovered that 100 percent of SMEs in the -IT, automobile cyber security, data science, sales, and banking industries used information technology (IT) in some fashion, indicating that -IT, automobile cyber security, data science, sales, and banking is now an intrinsic part of this industry's SMEs. -IT, automobile cyber security, data science, sales, and banking were the motor that allowed SMEs to achieve their growth goals. As a result, increasing IT utilization will be strategically vitalizing to SMEs' long-term development. In 2007-08, India's SME sector was expected to have 134 lakh units, employing 322 lakh people, and accounting for 39 percent of the country's overall industrial value-added. Specified standing of SME area to the Indian economy, this work required to investigate the role of information technology in SME area in India, with a focus on SMEs from Mumbai and a few metros, namely Bangalore, Chennai, and Hyderabad, to determine how -IT, automobile cyber security, data science, sales, and banking can assist SMEs in gaining a sustainable competitive advantage in a globalized market. The study's main conclusions are that the majority of SMEs founded in post-liberalization passé, that is, subsequently "1990-91", are merely IT savvy and use -IT, automobile cyber security, data science, sales, and banking for business purposes. Emailing and marketing activities were found to be the most common uses of -IT, automobile cyber security, data science, sales, and banking, accounting for one-fifth of all everyday operations. Although there existed knowledge among the respondents, it needed to be activated to optimal usage &only one solution that might allow it area for use -IT, automobile cyber security, data science, sales and banking productively reasonable cost. There had been a study on big enterprises & they're -IT, automobile cyber security, data science, sales, and banking usages, but there had been relatively little research on the SME sector, which accounts for over 7% of India's GDP.

REFERENCES

[1]   R. Sandu and E. Gide, "Technological, Organizational and Environmental (TOE) Factors that Influence the Adoption of Cloud-Based Service SMEs in India," 2018 IEEE 11th International Conference on Cloud Computing (CLOUD), 2018, pp. 866-870, doi: 10.1109/CLOUD.2018.00123.

[2]   B. M. R. Wilson, B. Khazaei and L. Hirsch, "Cloud adoption decision support for SMEs using Analytical Hierarchy Process (AHP)," 2016 IEEE 4th Workshop on Advances in Information, Electronic and Electrical Engineering (AIEEE), 2016, pp. 1-4, doi: 10.1109/AIEEE.2016.7821809.

[3]   J. Keung and F. Kwok, "Cloud Deployment Model Selection Assessment for SMEs: Renting or Buying a Cloud," 2012 IEEE Fifth International Conference on Utility and Cloud Computing, 2012, pp. 21-28, doi: 10.1109/UCC.2012.29.

[4]   A. A. Achargui and A. Zaouia, "Hosted, cloud and SaaS, off-premises ERP systems adoption by Moroccan SMEs: A focus group study," 2016 7th International Conference on Sciences of Electronics, Technologies of Information and Telecommunications (SETIT), 2016, pp. 344-348, doi: 10.1109/SETIT.2016.7939891.

[5]   C. Srinuan, "Willingness to pay for cloud computing service of SME in Thailand," 2017 3rd International Conference on Information Management (ICIM), 2017, pp. 21-25, doi: 10.1109/INFOMAN.2017.7950340.

[6]   N. Nussbaumer and X. Liu, "Cloud Migration for SMEs in a Service-Oriented Approach," 2013 IEEE 37th Annual Computer Software and Applications Conference Workshops, 2013, pp. 457-462, doi: 10.1109/COMPSACW.2013.71.

[7]   N. M. S. Iswari, H. B. Santoso and Z. A. Hasibuan, "Cloud-based e-Business System for Small and Medium Enterprises: A Review of the Literature," 2018 Third International Conference on Informatics and Computing (ICIC), 2018, pp. 1-4, doi: 10.1109/IAC.2018.8780521.

[8]   Xin Sun and Qian Wang, "Open innovation in small and medium enterprise under the view of knowledge management," 2011 2nd International Conference on Artificial Intelligence, Management Science and Electronic Commerce (AIMSEC), 2011, pp. 4690-4693, doi: 10.1109/AIMSEC.2011.6010655.

[9]   A. Sun, J. Zhou, T. Ji, and Q. Yue, "CSB: Cloud service bus-based public SaaS platform for small and medium enterprises," 2011 International Conference on Cloud and Service Computing, 2011, pp. 309-314, doi: 10.1109/CSC.2011.6138539.

[10]   L. Bai and L. Wang, "The investigation and analysis of small and medium enterprises about financing in Huainan city," 2011 International Conference on Electronics, Communications, and Control (ICECC), 2011, pp. 3386-3389, doi: 10.1109/ICECC.2011.6068182.

[11]   Peng Fangchun, "On influential factors of SMEs financing: enterprise-scale, operation years, and financing demand differences," 2011 International Conference on Computer Science and Service System (CSSS), 2011, pp. 2354-2357, doi: 10.1109/CSSS.2011.5974117.

[12]   J. Sang, Z. Wu, and Z. Qi, "An empirical study on the competitiveness of Small and Medium-sized Manufacturing Enterprises in China," 2011 IEEE 18th International Conference

on Industrial Engineering and Engineering Management, 2011, pp. 672-676, doi: 10.1109/ICIEEM.2011.6035246.

[13]   Yuan He, "Sustainable development pattern of small and medium enterprises (SMEs) in China," 2011 2nd International Conference on Artificial Intelligence, Management Science and Electronic Commerce (AIMSEC), 2011, pp. 1593-1596, doi: 10.1109/AIMSEC.2011.6010594.

[14]   H. Liang and F. Liu, "The research on the development of small and medium-sized technology enterprises related to government and entrepreneurs," 2011 International Conference on Electronics, Communications, and Control (ICECC), 2011, pp. 3427-3431, doi: 10.1109/ICECC.2011.6068102.

[15]   X. Wang, L. Xie, and W. Liu, "A project management method for small and medium software enterprises," 2011 IEEE 18th International Conference on Industrial Engineering and Engineering Management, 2011, pp. 1825-1828, doi: 10.1109/ICIEEM.2011.6035520.

[16]   S. Xu, "On the Problems and Tactics of Technology Innovation of Small and Medium Enterprises in China," 2011 International Conference on Management and Service Science, 2011, pp. 1-4, doi: 10.1109/ICMSS.2011.5999245.

[17]   S. Shu-li, "Research on human resource plan model of medium and small private enterprise based on spanning development strategic — With medium and small private enterprise as an example," 2011 International Conference on Management Science & Engineering 18th Annual Conference Proceedings, 2011, pp. 778-784, doi: 10.1109/ICMSE.2011.6070049.

[18]   J. Keung and F. Kwok, "Cloud Deployment Model Selection Assessment for SMEs: Renting or Buying a Cloud," 2012 IEEE Fifth International Conference on Utility and Cloud Computing, 2012, pp. 21-28, doi: 10.1109/UCC.2012.29.

[19]   A. Mladenow, E. Fuchs, P. Dohmen, and C. Strauss, "Value Creation Using Clouds: Analysis of Value Drivers for Start-Ups and Small and Medium-Sized Enterprises in the Textile Industry," 2012 26th International Conference on Advanced Information Networking and Applications Workshops, 2012, pp. 1215-1220, doi: 10.1109/WAINA.2012.210.

[20]   A. Rath, S. Kumar, S. Mohapatra, and R. Thakurta, "Decision points for adopting cloud computing in small, medium enterprises (SMEs)," 2012 International Conference for Internet Technology and Secured Transactions, 2012, pp. 688-691.

[21]   C. G. Ramachandra and T. R. Srinivas, "Acceptance and usage of management information system in small scale and medium to large scale industries," IEEE-International Conference on Advances in Engineering, Science and Management (ICAESM -2012), 2012, pp. 31-35.