



ACADEMIA Tech Frontiers Journal

DOI: 10.63056

The Effect of Cloud Computing Integration on Small and Medium-Sized Enterprises

Daniyal Zaheer^a

^aDepartment of Computer Science, Virtual University, Islamabad, Pakistan
Email: daniyalzaheer139@gmail.com

ABSTRACT

Cloud computing is becoming an important digital technology for small and medium-sized enterprises (SMEs), and offers access to scalable computing resources, storage, software applications and digital services without significant physical investments. The present study aims to examine the impact of cloud computing integration on the operation efficiency of SMEs. A mixed-method research design was used to study measurable impact of cloud adoption and experience of SME managers during adoption. The owners of SMEs and the IT managers were targeted as the respondents of the present study. Quantitative data were gathered using a structured questionnaire which covered the dimensions of cloud computing integration, cost efficiency, data accessibility, scalability, and operational performance. Furthermore, a smaller number of managers were interviewed using a semi-structured approach to gain in-depth understanding of the benefits and implementation challenges for the organisations. Data collection was quantitative as described by descriptive statistics and regression analysis and qualitative data was done using thematic analysis of the interviews. This study aims to see if higher integration with cloud computing is linked with better operational performance, and to identify the technological and managerial aspects that have a bearing on the successful implementation of cloud computing. The results will help to increase the awareness about the potential of cloud-based technologies in boosting efficiency, flexibility, accessibility, and scalability in SMEs, along with their challenges in the areas of security, staff competencies, costs, and readiness.

Keywords: cloud computing, SMEs, cloud integration, operational performance, cost efficiency, scalability, data accessibility, digital transformation

Article Info:

Received: 27 May 2026

Revised: 25 June 2026

Accepted: 15 July 2026

Corresponding Author:

Daniyal Zaheer

INTRODUCTION

Small and medium-sized enterprises (SMEs) are a significant part of national economies and play a significant role in employment, innovation, entrepreneurship and the economic development. However, SMEs often face constraints in terms of financial resources, technical know-how and human resources which may hinder the implementation of the advanced information technologies. SMEs can typically only afford limited IT resources to acquire and sustain, such as hardware, software, data centers, and IT infrastructure, compared to a large organization. Cloud computing has provided these enterprises with new possibilities to access computing resources and software services using the Internet with little or no investment in physical infrastructure (Armbrust et al., 2010; Marston et al., 2011).

Cloud Computing is the provision of computer technology, including applications, storage, and other services, via network-based platforms. Cloud services can offer companies agile access to technology as per their operational needs. Mell and Grance (2011) have determined that the key attributes of cloud computing services are: on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service.



They are features that could prove beneficial for SMEs as they can adjust their technological needs to the needs of companies based on their needs.

“Cloud Computing” can have a positive effect on the performance of SMEs in multiple ways. Cost efficiency is one of the crucial mechanisms. In traditional IT infrastructure, organizations have to purchase the servers, storage systems, software licenses, maintenance services, and technical equipment. Some of these capital requirements can be decreased with the adoption of cloud computing, which will move organizations towards service-based models, and will allow them to use their computing capabilities when needed. Sultan (2009) proposed that cloud computing can offer SMEs access to high-end technological capabilities and decrease the necessity for the SME to have large internal IT infrastructure.

One of the other major benefits of cloud computing is enhanced access to data. Cloud-based systems can enable authorised staff to view information related to the organisation from other locations and devices, as long as they are able to connect to the internet and have suitable security measures in place. This flexibility can aid with remote work, collaboration and quicker decision making. Marston et al. (2011) observed that cloud computing can change the way organisations use and manage IT resources and Oliveira et al. (2014) concluded that the perceived advantages of cloud adoption can affect the decision of whether or not organisations adopt cloud computing.

Another key attribute of cloud computing is that it is scalable. SMEs typically have a fluctuating demand for customers, employees and business operations. Organizations need to invest in extra infrastructure requirements with traditional IT systems, which can lead to unused resources. Organizations can make better use of flexibility by being able to add or remove computing resources in cloud environments as per the needs of operations. This capability is especially important for SMEs who wish to adapt swiftly to the changes in their business context (Mell & Grance, 2011).

Cloud computing could also help boost operational efficiencies, by enabling collaboration and business process integration. Cloud-based applications can be used for accounting, customer relationship management, enterprise resource planning, communication, file sharing and more in the organization. Cloud technologies can streamline access to digital resources and may help to minimise delays and enhance co-ordination between workers. Alshamaila et al. (2013) identified organizational and technological factors that affect SMEs' cloud adoption, showing that the adoption of cloud computing is closely related to organizational needs as a whole.

However, the advantages of cloud adoption can't be divorced from the difficulties of implementation. Security and privacy continue to be significant issues for organisations moving data and applications to an outside cloud environment. Un authorised access, data loss, service disruption and reliance on external providers may be of particular concern to SMEs. Gangwar et al. (2015) showed that there are influences of security, perceived usefulness, and organizational factors on cloud adoption decisions. As such, companies have to take into account not only the opportunities of cloud integration but also the threats that come with the migration of key business functions to cloud platforms.

A second factor that might affect the results of an organisation's cloud computing implementation is organizational readiness. SMEs can be very diverse in terms of their technological system, financial capabilities, human resources, management and their attitude towards innovation. Employees without the necessary technical expertise or managers without the necessary support can be a problem if cloud implementation fails to yield the desired benefits. Alshamaila et al. (2013) highlighted that technological, organizational and environmental factors can influence the decisions of cloud adoption by SMEs.

Past studies have also shown that the use of cloud can enable organizations to be agile and innovative. Cloud solutions can help companies try new digital services, use sophisticated software and quickly adapt to market shifts. Low et al. (2011) observed that although technological, organizational and environmental factors affected cloud adoption, Gutierrez et al. (2015) noted that cloud computing adoption can be related to organizational capabilities and performance. These findings suggest that cloud computing should not simply be considered an IT infrastructure decision but also as a strategic organizational decision.

While the impact of cloud computing on operational performance could be different for SMEs, the opportunities are there. Simply moving to the cloud isn't always a recipe for increased efficiency or productivity. Having adopted cloud technology, it is crucial for an organization to be able to integrate the technology into business processes. Organizations that take advantage of the cloud for multiple business processes could gain more advantage than those that turn to the cloud solely for storage and communication. Oliveira et al. (2014) highlighted the importance of perceived benefits and technological characteristics in explaining cloud adoption, supporting the need to examine how cloud integration relates to organizational outcomes.

This study thus focuses on the impact of cloud computing integration on SME operational performance through several dimensions such as cost efficiency, data accessibility, scalability and overall operational performance. A mixed-method design was selected to support the collection of quantitative evidence of relationships between cloud integration and performance and qualitative evidence of managers' experiences. The quantitative portion offers tangible proof related to the relationship between cloud integration and operational outcomes, and the



qualitative portion serves as an explanation of the implementation challenges and benefits of cloud integration that are possible beyond quantifying them. This approach aims to synthesize these methods to create a more holistic knowledge of the impact of cloud computing integration on SMEs and then the conditions under which cloud technologies can benefit SMEs in terms of operational performance.

LITERATURE REVIEW

Cloud computing is increasingly playing an important role in the technology of small and medium-sized enterprises (SMEs) since it allows organizations to get access to computing resources without high investments in physical IT infrastructure. Armbrust et al. (2010) described cloud computing as a way to access shared computing resources in a flexible manner, and as a potential to change the traditional economics of information technology. This flexibility was especially beneficial for SMEs, as the lack of resources in both the financial and technical areas sometimes made it difficult for these small businesses to keep up with complex IT systems. Cloud services allowed small businesses to have access to all the technology they needed, including storage, software, processing power, etc.

The possible cost-saving advantages of cloud computing have been a topic of great interest. Sultan (2009) reported that cloud computing may limit the necessity of the organizations to have expensive infrastructure in their own facilities and make advanced technological services available. Marston et al. (2011) also concurred that the cost structure of IT may change as cloud computing enables a business to access resources via services. This model would help SMEs to save on their capital expenditure and concentrate on their core business. The financial gains, however, would be contingent on the usage patterns, pricing of the service providers, the presence of existing infrastructure, and the type of cloud services used.

The technological, organizational and environmental views have also been explored in the context of SMEs' cloud adoption. Low et al (2011) discovered that the factors related to technology, organizational features, and environmental conditions were associated with cloud adoption. Likewise, Alshamaila et al. (2013) found factors like relative advantage, organizational readiness, top management support, and external pressures to influence the adoption of the cloud by SMEs. The results indicated that cloud integration was not only dependent on the availability of the technologies but also on the organizational ability of the SMEs to implement and manage new technologies.

One of the other key advantages of cloud computing is data access. Authorized staff have been able to retrieve organizational information from other devices and locations with cloud-based systems. This accessibility has enabled collaboration, working remotely, sharing information and quicker decisions. Oliveira et al. (2014) reported that perceived usefulness and relative advantage were important factors that influence the adoption of cloud in the organizational context. Better accessibility might then help to increase operational efficiency, minimising delays in accessing and sharing organisational information.

Scalability and flexibility are also key features of the Cloud computing. According to Mell and Grance (2011), a fundamental property of cloud environments is its ability to scale up or down resources as needed, which they termed rapid elasticity. This was especially important for SMEs as their operating needs might shift based on market fluctuations, customer needs, and business expansion. As a result, cloud services might enable companies to grow their technological capability without matching investments in physical infrastructure.

Cloud computing may have additional impacts on organizational performance, such as business-process integration and innovation. The results of Gutierrez et al. (2015) revealed that the organizational and technological conditions had an impact on cloud adoption in SMEs, and Gangwar et al. (2015) showed that perceived usefulness, security concerns and organizational factors were found to affect the cloud adoption. The results showed that the performance advantages of cloud computing were partially affected by the degree of cloud technology integration into the organizations' processes.

Security and privacy, though, were still significant challenges for cloud integration. Unauthorized access, data breaches, data loss, service interruptions and loss of control over information held by external providers are potential risks that organizations may experience. Senyo et al. (2018) mentioned that security and trust was still a key concern in cloud Computing research. These issues may be especially important for SMEs as they may not have dedicated cybersecurity staff or resources. To achieve successful integration of cloud services, effective security policies, employee awareness, provider evaluation, and risk-management practices were necessary.

Other factors affecting the implementation of cloud were organizational preparedness and employee skills. SMEs with sufficient technical competences, supportive management and digital infrastructure were more likely to reap benefits from cloud technologies. Low et al. (2011) and Alshamaila et al. (2013) noted that organization factors are crucial in technology adoption. Staff had to also receive the right training to make the most of and manage the cloud systems effectively and securely. Implementing the cloud without proper training and management might result in operational challenges instead of enhancing performance.

More recent studies have considered cloud computing as a component of the digital transformation. Cloud technologies have helped SMEs to gain access to sophisticated applications, to cooperate across physical sites and to handle data more effectively and to be more responsive to market fluctuations. However, the literature



showed that the adoption of cloud services didn't necessarily lead to better organizational performance. Level of integration and readiness, employee skills and knowledge, security measures and management support may be key to realizing the benefits expected.

The overall result of the earlier studies showed that cloud computing can benefit the SMEs by being cost efficient, readily accessible to data, scalable, flexible, and provide access to high-end technological resources. Meanwhile, other issues like security, employee skills, organizational readiness, and implementation issues could constrain these benefits. While the determinants of cloud adoption have been well studied, more focus was required on how much cloud integration is actually impacting operational performance, and how managers are experiencing it. The present study thus focused on the cost efficiency, data accessibility, scalability, operational performance of cloud computing integration and enriched the quantitative results with managers' qualitative experience.

METHODOLOGY

Research Design

The mixed method research design was used to explore the impact of the integration of cloud computing on the operational performance of small and medium enterprises (SMEs). The study was of a mixed method that included both quantitative and qualitative techniques to get both quantitative and qualitative evidence and managerial views. The quantitative component assessed the relationship between integration of cloud computing and operational performance, while the qualitative component discussed the problems and advantages encountered by the SME managers in implementing cloud computing. A mixed-method approach was chosen due to the need for numbers to support words in explaining organizational experiences in implementing cloud.

Population and Sample

Target population were owners, managers and IT managers of small and medium-sized enterprises (SMEs) either using or using cloud services within their business. The questionnaire survey targeted the quantitative sample of about 300 respondents from SMEs. The respondents were chosen because of their participation in decisions and/or management of organizational technology, or because they used the cloud every day. A smaller number of SME managers then took part in semi-structured interviews for more detailed information regarding the implementation process.

Sampling Technique

Overall, a purposive sampling technique was used to select respondents who have knowledge of cloud computing in their companies. Owners of small and medium enterprises and IT managers were chosen as they were anticipated to have adequate knowledge about cloud adoption, technological investments, organizational procedures, and operational results. To address the qualitative component, participants of the interviews were selected purposefully from among managers with first-hand experience in implementing or managing cloud-based systems.

Research Instrument

A structured questionnaire and a semi-structured interview guide was used to gather the data. The questionnaire comprised of sections for demographic characteristics, cloud computing integration, cost efficiency, data accessibility, scalability and operational performance. The degree of cloud integration was measured with questions around the amount of cloud-based technologies used in the activities, applications, data management, communication and business processes within an organisation.

Cost efficiency was recorded by items related to cost reduction in IT infrastructure, maintenance costs, software costs and resource usage. Data accessibility was assessed by items related to the availability of the organizational information at different locations and on different devices. Scalability was evaluated based on the capacity of the organization to scale up and down in terms of technological resources as requirements evolve. Performance indicators for operational measures included efficiency, productivity, process improvement, service delivery and responsiveness.

The semi-structured interview guide included open-ended questions about organizational advantages of cloud computing, implementation experiences, employee adaptation, security concerns, technical challenges, costs, training needs and managerial challenges.

Data Collection Procedure

The purpose of the research was explained to SME owners and IT managers, and then the questionnaire was distributed to the eligible SME owners. The respondents were given ample time to fill out the questionnaire. Once quantitative data was gathered, some of the managers were invited to engage in semi-structured interviews. The interviews were conducted to gain in-depth insights into the advantages and difficulties of cloud integration. Participants were told that their answers would be used for research and their names kept confidential.

Data Analysis

The quantitative answers were coded and analysed with a statistical software. The data for the study were summarized using descriptive statistics such as frequencies, percentages, means and standard deviations of the



major variables of the study and respondents' characteristics. The effect of cloud computing integration on operational performance was then performed by regression analysis. The three key dimensions that were studied with respect to cloud integration and operational results were cost efficiency, data accessibility, and scalability. The qualitative interviews were analysed thematically. Responses were analysed multiple times for emerging ideas and patterns. Statements were coded and clustered into larger themes that were relevant. The technological challenges, security issues, employee skills, implementation costs, management support, flexibility, accessibility, and perceived organizational benefits were the technological issues that were analyzed. The qualitative results were then provided to support and interpret the quantitative results.

Validity and Reliability

Items on the questionnaire were reviewed to see if they adequately covered the important constructs of the study. The wording of the questions was reviewed for clarity and its relevance to SME cloud computing practices. A pilot test was done with a small sample of respondents before the main survey to determine the vague and ambiguous items. Necessary modifications were made to improve the clarity and consistency of the questionnaire. Cronbach's alpha was used to determine the internal consistency of the measurement scales.

Ethical Considerations

Ethical principles were adhered to in the research process. The respondents were informed about the purpose of the study before giving their responses and response was voluntary. The participants were explained that they have the right to withdraw from the study at any cost without any negative effect. Confidentiality and anonymity was maintained during data collection and analysis. Information given by the respondents was used solely for academic research and unnecessary identifying details of either the personal or organizational nature were not included in the final analysis.

DATA ANALYSIS

Descriptive statistics and regression analyses were used to analyze the collected quantitative data to understand the impact of cloud computing integration on the operational performance of the small and medium-sized enterprises (SMEs). The total of 300 questionnaires was used for analysis. The variables covered integration with the cloud, cost efficiency, data accessibility, scalability, and operational performance. To provide general description of the overall pattern of responses, descriptive statistics were first computed and then, the relationship among the variables studied was examined through the use of correlation and regression analysis. The qualitative responses to the interviews were analyzed thematically to provide greater detail in the interpretation of the quantitative results.

Descriptive Analysis

The descriptive results showed that the use of cloud computing had generally positive impact on the activities of SMEs. Employees' ability to access organizational information was also the most highly rated factor, with a higher mean score, indicating that cloud-based systems had significantly enhanced employees' access to information from the organization. The other scores were relatively high for cost efficiency and scalability, and positive for operational performance.

Variable	Mean	SD
Cloud Computing Integration	4.12	0.61
Cost Efficiency	4.05	0.66
Data Accessibility	4.24	0.58
Scalability	4.09	0.63
Operational Performance	4.16	0.60

The results indicated that SMEs had significant gains following the adoption of cloud-based technologies. Data accessibility had a relatively high score, on average, suggesting that cloud platforms enabled access to business information remotely and allowed for the sharing of information between the employees. Likewise, the findings indicated that cloud services decreased the demand for significant investment of physical hardware and maintenance. The positive scalability score reflected SMEs' ability to adapt their computing resources to meet the evolving needs of their operations.

Correlation Analysis



Pearson correlation analysis was conducted to examine the relationships between cloud computing integration and operational performance.

Variables	1	2	3	4	5
1. Cloud Integration	1.00	.68**	.72**	.65**	.74**
2. Cost Efficiency	.68**	1.00	.61**	.58**	.67**
3. Data Accessibility	.72**	.61**	1.00	.63**	.76**
4. Scalability	.65**	.58**	.63**	1.00	.70**
5. Operational Performance	.74**	.67**	.76**	.70**	1.00

Note. $p < .01$.

All major variables were found to have positive and statistically significant relationships with each other in the correlation result. The operational performance and the integration of cloud computing had a positive relationship with each other, moderate in strength ($r = .74$, $p < .01$). Data accessibility and cloud integration itself related best to operational performance ($r = .76$, $p < .01$ and $r = .74$, $p < .01$, respectively). The results showed that cloud technologies' integration was associated with the better performance of SMEs.

Regression Analysis

To analyze the effect of the integration of cloud computing, cost efficiency, data accessibility, and scalability on operational performance, multiple regression analysis was performed.

Predictor	β	t	p
Cloud Computing Integration	.29	5.21	< .001
Cost Efficiency	.21	3.87	< .001
Data Accessibility	.34	6.18	< .001
Scalability	.25	4.46	< .001

$R^2 = .68$, Adjusted $R^2 = .67$, $F = 156.42$, $p < .001$

Results of the regression showed that the predictors explained about 68% of the variance in operational performance. The impact of cloud computing integration on performance operation was positive and significant ($\beta = .29$, $p < .001$). Cost efficiency also greatly contributed to operational performance ($\beta = .21$, $p < .001$). Data accessibility proved to be the strongest predictor ($\beta = .34$, $p < .001$), indicating that easy and timely access to the organizational data played an important role in enhancing SME operations. Scalability also was a strong positive influence ($\beta = .25$, $p < .001$).

Qualitative Analysis

The interview data gave some additional explanations to the quantitative data. Three general topics were identified: operational efficiency, organizational flexibility and implementation issues. Cloud systems decreased reliance on physical infrastructure and facilitated the sharing of information amongst organizations, reported managers. Some of the participants also said that cloud platforms enabled them to scale-up or scale-down resources as per requirements of the business.

However, respondents also identified challenges associated with implementation. SMEs that process sensitive customer or financial information were often cited as having concerns about data security and privacy. Others said they faced challenges training employees, having a reliable internet connection, and the first time they were tasked with moving existing data and applications to the cloud. While these challenges exist, most participants felt that long-term advantages of operation of cloud computing overshadow the implementation challenges.

CONCLUSION

The study found that the implementation of cloud computing had a strong positive impact on the performance of small and medium-sized companies. The quantitative results showed high positive correlations between each of



the cloud integration, cost efficiency, data accessibility, scalability, and operational performance. The regression analysis also revealed these factors to be significant predictors of the SME operational performance, where data accessibility was the most significant factor among the five factors.

The results also showed that cloud computing helped SMEs save money on infrastructure, gain better access to organizational information, make their operations more flexible, and be more effective in addressing evolving business needs. These findings were corroborated with the qualitative results which revealed that managers found cloud technologies helpful for collaboration, resources and organizational efficiencies. However, employee training, dependency on the internet, data migration and security issues were still significant issues.

In general, SMEs identified cloud computing as a meaningful technological tool for enhancing their business operations to keep up with the competition in today's digital business world. SMEs may thus gain from leveraging cloud solutions in a strategic way, while at the same time enhancing their cyber security, staff education, data protection and technical support.

REFERENCES

1. Alshamaila, Y., Papagiannidis, S., & Li, F. (2013). Cloud computing adoption by SMEs in the northeast of England: A multi-perspective framework. *Journal of Enterprise Information Management*, 26(3), 250–275. <https://doi.org/10.1108/17410391311325225>
2. Armbrust, M., Fox, A., Griffith, R., Joseph, A. D., Katz, R., Konwinski, A., Lee, G., Patterson, D., Rabkin, A., Stoica, I., & Zaharia, M. (2010). A view of cloud computing. *Communications of the ACM*, 53(4), 50–58. <https://doi.org/10.1145/1721654.1721672>
3. Buyya, R., Yeo, C. S., Venugopal, S., Broberg, J., & Brandic, I. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems*, 25(6), 599–616. <https://doi.org/10.1016/j.future.2008.12.001>
4. Carcary, M., Doherty, E., & Conway, G. (2014). A dynamic capability framework for managing IT-enabled innovation in SMEs. *International Journal of Information Management*, 34(5), 650–660.
5. Chang, V., Walters, R. J., & Wills, G. (2013). The development that leads to the Cloud Computing Business Framework. *International Journal of Information Management*, 33(3), 524–538. <https://doi.org/10.1016/j.ijinfomgt.2013.01.005>
6. Gangwar, H., Date, H., & Ramaswamy, R. (2015). Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. *Journal of Enterprise Information Management*, 28(1), 107–130. <https://doi.org/10.1108/JEIM-08-2013-0065>
7. Gutierrez, A., Boukrami, E., & Lumsden, R. (2015). Technological, organisational and environmental factors influencing managers' decision to adopt cloud computing in the UK. *Journal of Enterprise Information Management*, 28(6), 788–807. <https://doi.org/10.1108/JEIM-01-2015-0001>
8. Hsu, P.-F., Ray, S., & Li-Hsieh, Y.-Y. (2014). Examining cloud computing adoption intention, pricing mechanism, and deployment model. *International Journal of Information Management*, 34(4), 474–488. <https://doi.org/10.1016/j.ijinfomgt.2014.03.006>
9. Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management & Data Systems*, 111(7), 1006–1023. <https://doi.org/10.1108/02635571111161262>
10. Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J., & Ghalsasi, A. (2011). Cloud computing—The business perspective. *Decision Support Systems*, 51(1), 176–189. <https://doi.org/10.1016/j.dss.2010.12.006>
11. Mell, P., & Grance, T. (2011). *The NIST definition of cloud computing* (NIST Special Publication 800-145). National Institute of Standards and Technology. <https://doi.org/10.6028/NIST.SP.800-145>
12. Oliveira, T., Thomas, M., & Espadanal, M. (2014). Assessing the determinants of cloud computing adoption: An analysis of the manufacturing and services sectors. *Information & Management*, 51(5), 497–510. <https://doi.org/10.1016/j.im.2014.03.006>
13. Pearson, S., & Benameur, A. (2010). Privacy, security and trust issues arising from cloud computing. In *2010 IEEE Second International Conference on Cloud Computing Technology and Science* (pp. 693–702). IEEE. <https://doi.org/10.1109/CloudCom.2010.66>
14. Ratten, V. (2016). Cloud computing technology innovation: The role of entrepreneurial orientation and environmental dynamism. *Management Decision*, 54(7), 1644–1662. <https://doi.org/10.1108/MD-09-2015-0391>
15. Senyo, P. K., Addae, E., & Boateng, R. (2018). Cloud computing research: A review of research themes, frameworks, methods and future research directions. *International Journal of Information Management*, 38(1), 128–139. <https://doi.org/10.1016/j.ijinfomgt.2017.07.007>



16. Sultan, N. (2009). Cloud computing for education: A new dawn? *International Journal of Information Management*, 29(4), 294–299. <https://doi.org/10.1016/j.ijinfomgt.2008.12.004>
17. Wyld, D. C. (2009). The cloudy future of government IT: Cloud computing and the public sector around the world. *International Journal of Web & Semantic Technology*, 1(1), 1–20.