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Enhancing Disaster Response in Zimbabwe: The Challenges that Hinder the Adoption of Information and Communication Technology by Humanitarian Organisations: The Case of Chimanimani, Zimbabwe

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ABSTRACT

More than 250 lives were lost and infrastructure destroyed in 2019 in Chimanimani, Zimbabwe, during Cyclone Idai. With effective disaster response systems, many lives could have been saved. This study aimed to assess the challenges that hinder the adoption of Information and Communication Technology (ICT) by humanitarian organisations to mitigate effects of such disasters. If properly applied, Information and Communication Technology can be useful in disaster response. The population of this study comprised 160 individuals purposively selected from the humanitarian organisations which operated in Chimanimani which was affected by Cyclone Idai in 2019. The Yamane formula was used to calculate the sample size of 114 respondents in the study. Structured questionnaires were used as research instruments in the study. The study concluded that lack of management will, lack of regular training and capacity building on ICT usage, lack of real-time monitoring and tracking of activities and inadequate data analytics capabilities, lack of financial resources to invest in ICT infrastructure hindered the adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe. The study recommended the development of ICT strategies that commits humanitarian organisations to the adoption of ICT to improve disaster response. This can be demonstrated by committing adequate financial resources aimed at the procurement of ICT infrastructure and training of staff. The employees in the humanitarian organisations in Chimanimani, Zimbabwe should be trained on ICT to develop systems that aid disaster response and allow real time monitoring and tracking of activities.

Key Words: **Supply Chain, Resilience, Disaster response, Humanitarian, Information Communication Technology (ICT)**

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INTRODUCTION

The experiences from Cyclone Idai, which wreaked havoc in Chimanimani, Zimbabwe in 2019 demonstrated huge gaps in the adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe. According to the International Rescue Committee (2021), more than 270 lives were lost, and 250,000 people were affected by the cyclone, with thousands of them left homeless and in urgent need of assistance. Beydon et al. (2022) observe that the key challenges that were noted include the lack of comprehensive risk assessment and preparedness strategies, underutilisation of ICT tools, fragmented coordination among stakeholders, logistical constraints, and vulnerabilities of marginalised populations. The adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe could have improved the disaster response. It is against this background that this study sought to identify the barriers that hinder the adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe, in order to improve disaster response.

According to Asghar and Alahakoon (2020), the integration of ICT solutions in organisations is essential for enhancing operational efficiency, improving decision-making processes, and driving innovation. However, Ben-Tal et al. (2021) state that despite the numerous benefits of ICT integration, an organisation often encounter various barriers and challenges that hinder the successful adoption and implementation of technology solutions in their operations. Bharadwaj et al. (2020) mentions that understanding and addressing these barriers is crucial for organisations to unlock the full potential of ICT and leverage its capabilities to drive digital transformation and achieve strategic objectives.

Asghar and Alahakoon, (2020) state that one of the primary barriers to ICT integration is the high costs associated with acquiring, implementing, and maintaining technology solutions. Organisations may face budget constraints that limit their ability to invest in advanced ICT infrastructure, software licenses, and training programs. Chikwanha and Mughogho (2020) emphasise that organisations with legacy systems and outdated technology infrastructure may encounter compatibility issues when integrating new ICT solutions. Chidziva and Mbohwa (2019) observe that the legacy systems may lack interoperability with modern technologies, making it challenging to integrate new software, applications, or hardware components into existing IT

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environments. Chidziva and Mbohwa, (2019) argue that the compatibility issues can lead to data silos, inefficiencies, and disruptions in operations, hindering the seamless integration of ICT solutions. Christopher and Peck (2019) conclude that resistance to change among employees, management, and stakeholders can be a significant barrier to ICT integration. Beydon et al. (2022) note that organisational culture, lack of buy-in from key stakeholders, and resistance to adopting new technologies can impede the successful implementation of ICT initiatives.

Bhattacharya et al. (2020) state that a shortage of skilled IT professionals, data analysts, and technology experts can hinder organisations' ability to effectively integrate and leverage ICT solutions. Bhattacharya et al. (2020) further observe that insufficient internal expertise, limited training opportunities, and difficulty in recruiting qualified personnel with specialised ICT skills can pose challenges in implementing and managing complex technology systems. Bhattacharya et al. (2020) also demonstrate that developing a talent pipeline, investing in employee training, and partnering with external consultants or service providers can help address this barrier. Bharosa et al. (2020) aver that data security and privacy considerations present significant barriers to ICT integration, particularly in industries handling sensitive information or personal data. Concerns about data breaches, cyber threats, regulatory compliance, and data protection regulations can deter organisations from adopting cloud-based solutions, Internet of Things devices, or data analytics tools. Bharosa et al. (2020) further argue that ensuring robust cyber security measures, implementing encryption protocols, and complying with data privacy regulations are essential for addressing these concerns and fostering trust in ICT integration initiatives.

Bharadwaj et al. (2020) point out that the complexity of integrating diverse ICT systems, platforms, and applications across different functional areas can pose challenges in achieving scalability, interoperability, and seamless integration. Bharadwaj et al. (2020) further highlight that the humanitarian organisations may struggle with integrating disparate systems, managing data flows, and ensuring compatibility between legacy and modern technologies. Beydon et al. (2022) argue that overcoming integration complexity, standardising processes, and adopting scalable ICT solutions are key strategies for addressing this barrier and driving successful integration initiatives.

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Joshi et al. (2022) emphasise the integration of ICT tools in organisations as it is essential for driving digital transformation, enhancing operational efficiency, and fostering innovation. However, DiMaggio and Powel (2019) explain that the humanitarian organisations often encounter technological challenges that hinder the seamless integration of ICT solutions into their operations. The authors further argue that these challenges stem from various factors, including complexity, compatibility issues, cyber security risks, and scalability concerns. Gwatidzo et al. (2019) highlight that organisations with legacy systems and outdated technology infrastructure often face compatibility issues when integrating new ICT tools. Behl and Dutta (2019) state that compatibility issues can hinder data integration, process automation, and seamless communication between systems, limiting organisations' ability to leverage the full potential of ICT tools and technologies. Incompatibility between legacy and modern systems can result in disruptions, errors, and delays in operations, affecting overall productivity and performance. Ben-Tal et al. (2021) posit that data security and privacy considerations pose significant challenges for organisations integrating ICT tools, particularly in industries handling sensitive information or personal data.

Bharadwaj et al. (2020) mention that ensuring robust cyber security measures, implementing encryption protocols, and complying with data privacy regulations are essential for addressing data security and privacy concerns. Beydon et al. (2022) observe that failure to address these challenges can result in data breaches, regulatory penalties, reputational damage, and loss of customer trust, undermining the success of ICT integration initiatives. Asghar and Alahakoon (2020), state that the complexity of integrating diverse ICT systems, platforms, and applications poses challenges in achieving scalability, interoperability, and seamless integration. According to Chanza et al. (2020), humanitarian organisations may struggle with managing data flows, ensuring compatibility between different technologies, and scaling up ICT solutions to meet evolving business needs. Integration complexity can lead to operational bottlenecks, data inconsistencies, and inefficiencies in process workflows, hindering organisations' agility, responsiveness, and ability to adapt to changing business requirements.

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Bharadwaj et al. (2020) state that organisations may face limitations in their technology infrastructure, such as inadequate network bandwidth, storage capacity, or computing resources, which can constrain the effectiveness of ICT integration efforts. Bharadwaj et al. (2020) further argue that insufficient IT infrastructure may impede the performance, reliability, and scalability of ICT tools, affecting overall system performance and user experience. Behl and Dutta (2019) also reveal that technology infrastructure limitations can lead to system downtimes, performance bottlenecks, and constraints on data processing capabilities, impacting organisations' ability to leverage advanced technologies and deliver seamless digital experiences. Asghar and Alahakoon (2020) mention that the rapid pace of technological advancements and innovation presents a challenge for organisations seeking to integrate ICT tools. According to Asghar and Alahakoon (2020), keeping up with emerging technologies, evolving industry trends, and changing customer demands requires organisations to continuously adapt, upgrade, and innovate their ICT systems and capabilities. Asghar and Alahakoon (2020) further argue that failure to keep pace with technological advancements can lead to obsolescence, competitive disadvantages, and missed opportunities for organisations to leverage the latest technological innovations for business growth.

Mortenson et al. (2020) state that the adoption of ICT solutions in humanitarian supply chains plays a crucial role in improving response capabilities, enhancing coordination, and increasing efficiency in delivering aid to communities affected by disasters, crises, or emergencies. However, Asghar and Alahakoon (2020) outline that the successful integration of ICT tools in humanitarian operations is influenced by various socio-economic factors that shape organisations' decision-making processes, resource allocation, and capacity to leverage technology solutions effectively. Mutsvaire et al. (2020) conclude that limited funding, resources, and budgetary constraints pose challenges for humanitarian organisations in adopting and implementing ICT solutions in their supply chains. Chowdhury and Quaddus (2021) argue that the humanitarian organisations may face competing priorities, funding gaps, and resource shortages that restrict their ability to invest in technology infrastructure, software licenses, and training programs for ICT adoption. According to Asghar and Alahakoon (2020), funding and resource constraints can hinder the

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scalability, sustainability, and effectiveness of ICT initiatives in humanitarian supply chains, limiting organisations' capacity to leverage technology for improving coordination, data management, and operational efficiency.

Beydon et al. (2022) point out that limited digital literacy among staff, volunteers, and partners in humanitarian organisations can impede the successful adoption and utilisation of ICT tools in supply chain operations. Beydon et al. (2022) further state that the lack of technical skills, knowledge gaps, and training needs may hinder organisations' ability to effectively leverage technology solutions for data collection, analysis, and communication. The authors also mention that investing in capacity-building, training programs, and technology skill development is crucial for enhancing digital literacy and building technical capabilities among personnel involved in humanitarian supply chains. Beydon et al. (2022) further argue that improving awareness, providing hands-on training, and fostering a culture of continuous learning can empower staff to effectively use ICT tools and technologies in their daily operations.

Bharosa et al. (2020) state that cultural norms, organisational hierarchies, and resistance to change can affect the adoption and acceptance of ICT solutions in humanitarian supply chains. The writers also mention that humanitarian organisational cultures that are resistant to innovation, hierarchical decision-making structures, and traditional communication channels may impede the integration of technology tools and disrupt collaboration among stakeholders. Chanza et al. (2020) state that overcoming cultural barriers, promoting a culture of innovation, and fostering open communication channels are essential for creating an enabling environment for ICT adoption in humanitarian organisations. Rungani and Ndhlovu (2018) conclude that limited connectivity, inadequate infrastructure, and unreliable technology infrastructure in remote or disaster-affected areas can hamper the adoption and implementation of ICT solutions in humanitarian supply chains. Mhlanga and Viljoen (2018) argue that the lack of access to electricity, internet connectivity, and communication networks may hinder the deployment and usage of technology tools in emergency response operations. Alao, Moyo et al. (2020) argue that addressing connectivity and infrastructure challenges through innovative solutions, mobile technologies, satellite communications, and

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partnerships with telecom providers is essential for overcoming barriers to ICT adoption in humanitarian supply chains.

Bhattacharya et al. (2020) highlight that regulatory framework, data privacy regulations, and compliance requirements can influence organisations' decisions regarding the adoption and use of ICT solutions in humanitarian supply chains. Bharosa et al. (2020) argue that concerns about data protection, confidentiality, and ethical considerations may impact the deployment of technology tools for data collection, sharing, and analysis in humanitarian operations. Ben-Tal et al. (2021) support the notion that ensuring compliance with data protection regulations, adhering to ethical standards, and implementing robust data governance practices are essential for addressing regulatory and data privacy concerns in ICT adoption. Ben-Tal et al. (2021) further mention that establishing data security protocols, obtaining consent for data collection, and promoting transparency in data handling can build trust with stakeholders and facilitate the ethical use of ICT tools in humanitarian supply chains.

THEORETICAL FRAMEWORK

Technology Acceptance Model

According to Joshi et al. (2022) the Technology Acceptance Model (TAM) is a widely-recognised theoretical framework that explains how users accept and adopt new technologies based on their perceived usefulness and the ease of use. In the context of this research, Behl et al. (2019) mention that TAM provides valuable insights into the factors that influence the successful implementation and acceptance of ICT tools within organisations. Behl et al. (2019) further argue that by understanding users' attitudes and behaviours towards technology adoption, humanitarian organisations can design strategies to promote effective ICT utilisation and improve supply chain resilience.

According to Altay et al. (2020), TAM holds that users are more likely to accept technology if they perceive it as useful in enhancing their work performance and achieving organisational goals. Altay et al. (2020) further observe that in the humanitarian operations, ICT tools such as inventory management systems, real-time tracking platforms, and communication tools can be viewed as valuable assets that improve operational efficiency and coordination. Ben-Tal et al. (2021) argue that the ease of use of

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technology plays a significant role in its adoption and acceptance by users. Beydon et al. (2022) observe that the TAM theory suggests that technologies that are user-friendly and intuitive are more likely to be embraced by individuals within an organisation. In the context of humanitarian supply chains, Asghar et al. (2020) user-friendly interfaces, clear training programmes, and technical support can enhance the ease of integrating ICT solutions into existing workflows. Asghar et al. (2020) further argue that external factors such as the organisational support, training opportunities, and the perceived risks also influence technology acceptance. Morgan et al. (2023) argue that humanitarian organisations that provide adequate training, support, and resources for ICT implementation can foster a positive attitude towards technology adoption among users.

The African Institute for Development Policy (2019) notes that the Technology Acceptance Framework offers insights into key considerations and strategies for promoting the successful adoption of ICT tools. The African Institute for Development Policy (2019) further argue that humanitarian organisations can apply TAM principles and be able to invest in comprehensive training programs and user support mechanisms, organisations can enhance users' confidence and proficiency in utilising ICT tools effectively. Asghar et al. (2020) explain that training sessions on new technologies and continuous technical support can improve users' perceived ease of use and encourage adoption, highlight the benefits and value of ICT tools in improving the supply chain visibility, communication, and decision-making can enhance users' perceived usefulness of technology.

According to Ahmad et al. (2021), demonstrating how ICT solutions contribute to operational efficiency and resilience can foster a positive attitude towards technology adoption and create a supportive organisational culture that values innovation, collaboration, and continuous improvement can facilitate technology acceptance. Altay et al. (2020) argue that encouraging open communication, feedback loops, and a willingness to experiment with new technologies can promote a culture of ICT integration and resilience within the organisation. Bhattacharya et al. (2020) contend that humanitarian organisations can tailor their ICT integration strategies to align with users' perceptions and behaviours towards technology adoption. Asghar et al. (2020) suggest that understanding the factors that influence technology acceptance can

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guide humanitarian organisations in designing user-centric approaches, fostering a collaborative environment, and enhancing the effective utilisation of ICT tools to strengthen supply chain resilience in humanitarian operations. Chikodzi et al. (2019) emphasise that the Technology Acceptance Model (TAM) focuses on users' acceptance and adoption of new technologies based on the perceived usefulness and ease of use.

METHODS AND MATERIALS

The study adopted a quantitative research strategy. The population for this study comprised 160 stakeholders from the humanitarian organisations which operated in Manicaland, Zimbabwe where Cyclone Idai took place in 2019. These organisations included Caritas, Action Aid, World Vision, Plan International, CARE International, Department of Civil Protection, International Organisation for Migration and World Food Programme Hhumanitarian Relief Operations. Purposive sampling was used to select 114 study participants from these organisations. According to Kelly (2010), purposive sampling is used to select respondents that are most likely to yield appropriate and useful information. Palinkas et al. (2015) also note that purposive sampling is a way of identifying and selecting cases that will use limited research resources effectively. The study used structured questionnaires as research instruments. According to Kothari (2017), research instruments are tools with which the researcher collects research data in an effort to respond to research questions and in the process, actualise set research objectives. According to Bricki & Green, (2019) questionnaires provide a structured format for collecting specific information, allow for standardised data collection across multiple organisations, and facilitate the quantification of responses for analysis. Data were analysed using SPSS software and descriptive statistics were used to summarise and simplify raw data to make them understandable and interpretable. The mean was used as a measure of the average response from the respondents and the standard deviation was used as a measure of how spread the responses were and how much they deviated from the mean response. Before collecting data, the researcher clarified the purpose of the study to the participants and allowed them to participate voluntarily. The respondents were given an opportunity to decide for themselves, based on the disclosure, whether or not to participate in the study. The researcher made

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adequate provisions to protect the privacy of participants and to maintain the confidentiality of data.

RESULTS

Table 1: Response Rate

Questionnaires	**Total**
Administered questionnaires	114
Returned questionnaires	109
Response Rate (%)	**96%**

Table 1 above shows that out of 114 questionnaires distributed, 109 were returned, yielding a response rate of 96%. The impressive response rate suggests a strong level of engagement and willingness among participants to provide feedback. The high response rate not only enhances the reliability and validity of the data collected but also indicates the effectiveness of the survey administration methods and the clarity of communication with the respondents, contributing to the overall success of the data collection process. The findings align with Bricki and Green's (2017) assertion that a response rate exceeding 60% from questionnaire administration is considered sufficient to achieve data saturation and generalise findings to the population. With a response rate of 96% in this study, surpassing the recommended threshold, data saturation was successfully reached, indicating a robust level of engagement and enabling the extrapolation of research outcomes to the broader population, consistent with established research methodology principles.

Table 2: Challenges that hinder the adoption of ICT by humanitarian organisations

The results from the Table 2 above shows a mean score of 4.16, indicating that the respondents show a consensus that there was lack of management will to adopt ICT that aids disaster response. This means that the respondents are in agreement that there was lack of management will in the humanitarian organisations to adopt and make use of ICT in their operations. This lack of management hinders the adoption of ICT as management lack appreciation and commitment to incorporate ICT in their operations. The study revealed a mean score of 4.15, suggesting that the respondent's agreement

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Challenge	N	Mean	Std. Deviation
Lack of management will	109	4.16	.904
Interoperability with existing systems	109	4.15	1.246
Lack of regular training and capacity building on ICT usage.	109	3.97	.918
Lack of real-time monitoring and tracking of activities	109	4.21	1.072
Inadequate data analytics capabilities	109	4.04	.932
Lack of financial resources to invest in ICT infrastructure.	109	4.28	.893
Valid N (listwise)	109		

on the interoperability of the disaster response ICT equipment and the existing ICT systems. This means that respondents are in agreement that the existing operational systems in the humanitarian organisations allow the smooth integration with ICT systems to improve disaster response. The study further revealed a mean score of 3.97, indicating a moderate agreement on the lack of ICT training and capacity building by the humanitarian organisations in order to improve disaster response. The mean score of 3.97 indicates a moderate agreement on the impact of training in hindering the adoption of ICT by humanitarian organisations. The low standard deviation suggests a relatively consistent understanding of the positive impact of training on the adoption of ICT by the humanitarian organisations. The study also shows a mean score of 4.21, highlighting

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that the respondents agreed that lack of real time monitoring and tracking of activities hinders the adoption of ICT for disaster response. ICT integration facilitates real-time monitoring and tracking of humanitarian activities, ensuring timely and effective response to disaster events with a Mean of 4.21 and a Standard Deviation of 1.072. The mean score of 4.21 highlights the benefits of ICT integration in real-time monitoring for disaster response. The higher standard deviation indicates some variability in perceptions regarding the role of ICT integration in real-time monitoring for disaster response. The findings further revealed that inadequate data analysis capabilities hinder the adoption of ICT for disaster response with a score of 4.04. The mean score of 4.04 indicates recognition of the value of ICT solutions in data analytics for decision-making. The moderate standard deviation suggests a general agreement on the value of ICT solutions in data analytics for decision-making during disasters. The results also show a high mean score of 4.28, signifying the respondents' agreement that lack of financial resources hinder the adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe. This means that the study respondents agree that the adoption of ICT requires a huge investment in financial resources hence this hinders its adoption. The respondents are in agreement that most humanitarian organisations operate with limited donor funds, with prioritisation of programme activities, which makes the installation of ICT systems difficult.

DISCUSSION

The study revealed that lack of management will, regular training and capacity building on ICT usage, lack of real-time monitoring and tracking of activities, lack of financial resources to invest in ICT infrastructure and inadequate data analytics capabilities hindered humanitarian organisations in the adoption of ICT to build resilience during disaster response. Below is the detailed discussion of the results.

Lack of Management Will

The study revealed that there was lack of management will to adopt ICT in the operations of the humanitarian organisations. Without management will, it is very difficult to adopt and realise the transformative impacts of ICT. Rungani and Ndhlovu (2018) highlight the transformative impact of ICT in humanitarian logistics, its ability to streamline operations, improve information sharing, and enhance responsiveness in crisis

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situations. The envisioned benefits of the ICT align with the imperative of leveraging technology to overcome challenges and optimise the performance of humanitarian supply chains during disaster response. These benefits can only be achieved if there is management will to adopt ICT in humanitarian operations. Management should incorporate the strategic role if ICT in their strategic plans and commit to its successful adoption in order to improve disaster response. According to a study by Chikwanha and Mughogho (2020), information gaps and communication breakdowns significantly impact the coordination of supply chains in disaster situations. Without ICT support, the lack of real-time data sharing and collaboration among partners hinders response efforts. Without management will to adopt ICT, information gaps will hinder disaster response by the humanitarian organisations.

Interoperability with Existing Systems

The study established that the existing systems currently being used by the humanitarian organisations are compatible with ICT systems. This removes all complications that are related with the adoption of ICT by the humanitarian organisations. Mortenson et al. (2020) point out that ICT interoperability with existing systems allows different technologies to communicate, exchange, and use data seamlessly by using common standards, protocols, and interfaces. This integration is achieved by ensuring that data can be exchanged and interpreted correctly, which helps in integrating new technologies without disrupting older systems, improving data management, and reducing costs associated with maintenance and adaptation. The study results are consistent with Bhattacharya et al. (2020) who highlight how ICT integration enhances the supply chain adaptability and responsiveness, enabling the effective responses to dynamic disaster scenarios. Studies that were done by Bhattacharya et al. (2020) and Chanza et al. (2020) revealed that effective ICT integration can enhance the supply chain resilience through providing real-time visibility and the communication capabilities to mitigate disruptions during disaster events concurring to the results of this research.

Regular Training and Capacity Building

It emerged that lack of regular training and capacity building hinders the adoption of ICT by the humanitarian organisations in Chimanimani Zimbabwe. Training helps to equip employees with the

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competences required to make use of ICT in their day to day operations. Bharadwaj et al. (2020) emphasise the role of training in enhancing ICT competencies and preparedness, contributing to the overall improved performance and resilience during disaster response efforts. The lack of training in ICT techniques that aid disaster response hindered the adoption of these technologies, as staff in the humanitarian organisations in Chimanimani did not have the required training. This finding also concurs with the finding by Bharosa et al. (2020) who emphasise the role of training and capacity building in enhancing ICT competencies during disaster response. The lack of ICT training results in employees being reluctant to use new technology, struggling to integrate it into lessons, and having low confidence in their abilities. The lack of confidence can be due to insufficient professional development, a lack of specific training on ICT usage, and inadequate time to learn and practice new tools, leading to haphazard and ineffective use of ICT. Gwatidzo et al. (2019) note that lack of ICT training hinders adoption because it creates a skills gap, leaving users unable to move past basic awareness to integrate new technologies effectively into their daily work or studies. This lack of knowledge and skills leads to negative attitudes, low confidence, and inability to utilise the technology's full potential, ultimately preventing meaningful adoption and the realisation of benefits.

Lack of Real Time Monitoring and Tracking

The study revealed that a lack of real time monitoring and tracking of data hinders the adoption of ICT by the humanitarian organisations. Thi study result also mirrors Gwatidzo et al. (2019) who have demonstrated how ICT-enabled real-time monitoring enhances supply chain visibility and the tracking, enabling proactive responses to disaster events for efficient risk mitigation. The humanitarian organisations in Chimanimani did not have the real time monitoring and tracking capabilities that aid disaster response. These findings were also shared by Bharadwaj et al. (2020) who established how ICT tools provided advanced analytics capabilities, empowering the supply chain managers to make informed decisions and enhance risk management strategies during disaster events. The humanitarian organisations in Chimanimani did not have the data monitoring and tracking capabilities required for effective implementation of ICT enabled disaster response.

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Behl and Dutta (2019) also emphasise the importance of ICT tools in enhancing visibility and traceability in supply chains. By leveraging technologies like Radio Frequency Identification and Global Positioning System, humanitarian organisations can improve inventory management, reduce stock outs, and enhance the efficiency of distribution processes during disaster response

Inadequate Data Analysis Capabilities

The study found that inadequate data analysis capabilities hinder the adoption of ICT by humanitarian organisations. Inadequate data analysis capabilities can be a result of poor data quality, lack of skilled personnel, and insufficient infrastructure. This can lead to inaccurate insights, poor decision-making, wasted resources, and missed opportunities. Asghar and Alahakoon (2020) empasise that organisations need to invest in data quality improvement, hire or train ICT analysts, establish clear ICT objectives, and implement strong data governance. This will improve data quality and enhance staff competence which aid in disaster response. Without adequate training, employees cannot fully utilise and exploit the positive benefits of ICT in disaster response. According to Ben-Tal et al. (2021, training is important because it improves job performance and efficiency, leading to higher productivity and better business results. Training boosts employee morale, increase satisfaction, and retention by providing opportunities for growth and development. Chowdhury and Quaddus (2021) point out that training helps minimise work place accidents and keeps employees updated with the latest skills and technologies.

Lack of Financial Eesources

Lack of financial resources also hindered the adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe. The lack of financial resources is a primary barrier to adopting ICT, leading to a range of significant challenges for individuals, organisations and developing economies (Moyo et al., 2020). Without a sufficient budget for in-house ICT staff or outsourced support services, organisations often face problems with implementation, troubleshooting, and system management, causing disruptions and frustration. Adopting ICT requires a skilled workforce, but training programmes for employees and management are costly. Inadequate budgets result in a lack of necessary digital literacy and technical expertise, leading to underutilisation or misuse of available technology (Morgan et

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al., 2023). According to Mutsvaire et al. (2020), insufficient funding directly prevents the purchase of necessary hardware such as computers, servers, networking gear, software licenses, and other ICT equipment. Chanza et al. (2020) note that the initial capital investment required to adopt ICT is prohibitively high. Beyond initial setup, there are significant ongoing expenses for maintenance, repairs, and frequent upgrades to keep pace with rapid technological obsolescence. Lack of financial resources makes it difficult to afford these continuous costs and this hinders the adoption of ICT by humanitarian organisations in Chimanimani, Zimbabwe.

CONCLUSIONS

Lack of ICT tools in humanitarian organisations increases the likelihood of information gaps and communication breakdowns during disasters. The study concludes that lack of management will, lack of regular training and capacity building on ICT usage, lack of real-time monitoring and tracking of activities and inadequate data analytics capabilities, lack of financial resources to invest in ICT infrastructure hindered the adoption of ICT by humanitarian organisations in Chimanimani District, Zimbabwe.

RECOMMENDATIONS

The study recommends the development of ICT strategies that commit humanitarian organisations to the adoption of ICT to improve disaster response. This can be achieved by committing adequate financial resources aimed at the procurement of ICT infrastructure and training of staff. The employees in humanitarian organisations in Chimanimani and elsewhere should be trained on ICT to develop systems that aid disaster response and allow real time monitoring and tracking of activities.

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