

# Digital Public Services for Refugees: An Evaluation of Blockchain Applications in Jordan

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## ARTICLE INFO

## ABSTRACT

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**Introduction:** The ongoing refugee crisis has created the importance of innovative solutions in providing services to the displaced people. Exploring the potentiality of blockchain technologies, the government and humanitarian organisations provide digital public services to refugees. This system provides a secure and decentralised transaction process of information that makes this blockchain system more attractive to refugees.

**Objectives:** The purpose of the study is to generate an interpretive concept about the usage of Blockchain in Digital Public service generation within Jordan.

**Methods:** The study has followed a primary quantitative method of data analysis along with the secondary qualitative style of the same simultaneously to interconnect the two sets of data. Intending to develop an idea about the opinions of digital public service workers who reside in Jordan, the researcher has selected 71 such participants. A set of 16 close-ended questions, consisting of 3 demographic questions and 13 Likert scale-based questions are asked in the survey to these participants through the means of Google Form. Depending on their responses, an IBM SPSS-based primary analysis is done. Along with the primary quantitative study, the researcher focused on developing a secondary qualitative study that provides a chance to elaborately describe the existing theoretical frameworks related to Blockchain developed in the already existing journals.

**Results:** The public acceptance rate of technology impacts the level of readiness for Jordan-oriented digital public services. The refugees residing in Jordan are typically impacted due to these inclusions of technology on the basis of AI and digital inclusions in each procedure.

**Conclusions:** The ongoing wars and geopolitical turmoils are the main reasons behind the surge of refugee problems in the regions of the Middle East. Blockchain technology is opening up new opportunities for these refugees in their inclusion within different problematic digitally organised public services. This study would provide future researchers a chance to elaborately interpret the opinions of the Jordan refugees about the significance of Blockchain-based digital public services in their lives.

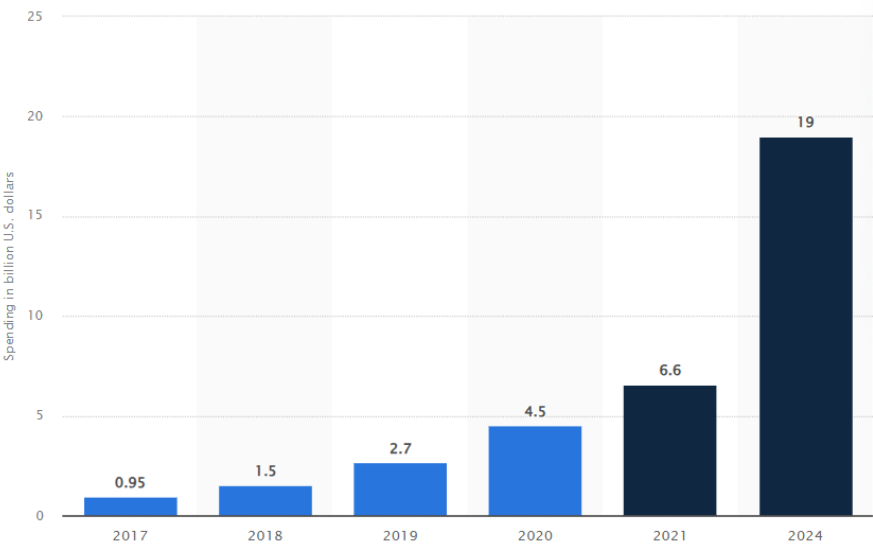
**Keywords:** Block-chain, Refugees, Humanitarian Organisations, Digitalisation, E-government System

## INTRODUCTION

With the continual growth of technological devices, most people rely on digital platforms to earn income including refugees. These opportunities offer flexibility and new potentialities related to the generation of income. The ongoing refugee crisis has created the importance of innovative solutions in providing services to the displaced people. Exploring the potentiality of blockchain technologies, the government and humanitarian organisations provide digital public services to refugees. This system provides a secure and decentralised transaction process of information that makes this blockchain system more attractive to refugees. The blockchain-based systems for creating identity verification and healthcare services assist the refugees of Jordan. Examining the benefits and challenges of blockchain applications, this study focuses on the effectiveness of this process within public services. This study aims to explain the role of blockchain technologies within the digital public services for refugees.

**Background and Problem Statement**

The continuous process of the “refugee crisis” creates conflicts in Syria, Yemen and other parts of the world. Refugees experience significant challenges in accessing basic services including their healthcare, education, and financial assistance. Digitalisation within the public services has emerged an important role in providing essential services. Mass inflows from Jordan overwhelm the capabilities of local authorities to manage the extra demands of public services in transport, health and education. The negative impact of the sudden arrival of people on the microeconomic indicators such as the rate of unemployment and inflation (Şahin Mencütekand Nashwan, 2021). Since 2011, the refugees have been more than 13 M and 11 M Syrians have been displaced from their original place to neighbouring countries and among them half are women and girls of “reproductive age” (Amiriet al. 2020). The blockchain technologies have gained the attention of people in providing humanitarian services to the refugees.



**Figure 1: Rate of spending on blockchain solutions**

(Source: Statista, 2024)

Global spending on blockchain solutions is at a high level due to their transparency and safe transactions. Studies show that 6.6 B USD was the global spending on blockchain solutions and in 2024 almost 19 B USD was the projected spending on global blockchain technology (Statista, 2024). The refugee crisis has become a global challenge and due to the homelessness of people they have to face various issues and blockchain technology provides them the digitalised public services.

**Significance of the study**

This study helps to inform the development of digital public services for refugees to enhance the accessibility of public services including financial assistance. Evaluation of this system increases the efficiency and accountability of the financial system by providing humanitarian aid to refugees. The advancement of blockchain technologies with the theoretical approaches of the system improves the future perspective of the process. Emerging technological implications of blockchain technologies, the refugees get the facilities of various fundamental aspects.

## OBJECTIVES, QUESTIONS & HYPOTHESIS

### Research Questions

1. What are the influences of blockchain technology on Jordan's digital public services for refugee access?
2. What is the effect of public acceptance towards technological innovations into public services to succeed?
3. What is the importance of AI and digital innovation in influencing improvement in digital public services?

### Research Objectives

1. To understand the influences of blockchain technology on the digital public services for refugee access in Jordan
2. To evaluate the impacts of technological acceptance among public on the success of digital public services for refugees through blockchain application
3. To identify the effect of AI and digital innovation in influencing improvement in digital public services

### Hypothesis

**H1:** blockchain application can innovate the existing digital public services for refugees in Jordan

Various "techno-solutions" are implementing within the digitalisation of the public services in Jordan. Blockchain systems have improved the facilities related to the services of the marginalised people of this country (cheesman, 2024).

**H2:** public acceptance of technology impacts the readiness for digital public services to succeed

The technology based innovative measurements within the public services and the acceptance of the people in accessing those services for their usage motivate the success rate of the services (alvarenga *et al.* 2020).

**H3:** AI and digital innovations into the blockchain can be considered to influence the enhancement of digital public services for refugees in Jordan

## LITREATURE REVIEW

### Review of Previous Literature

Jordan is one of the nations that have integrated digital technology into government and public services. Studies suggest that Jordan is one of the countries to have made the effect of tackling the Syrian refugee crisis through implementing refugees' digital identity data being linked to banks through blocks in technology application (alsakhnini and almoaiad, 2024). It was implemented for supporting blocks in technology powered payment transfer as well as increasing the efficiency and transparency of tracking refugee identities receiving cash transfer under world food program. Another study implies blockchain as a technology that replaces centralised recording of information developed on code based consensus algorithms verifying information in ledger and not relieving on third parties for information verification (shah *et al.* 2024). Blockchain is considered as an institutional technology with government as source of governance for assisting in an enabled distribution of recording regarding information such as people property contracts and money through transparency and security.

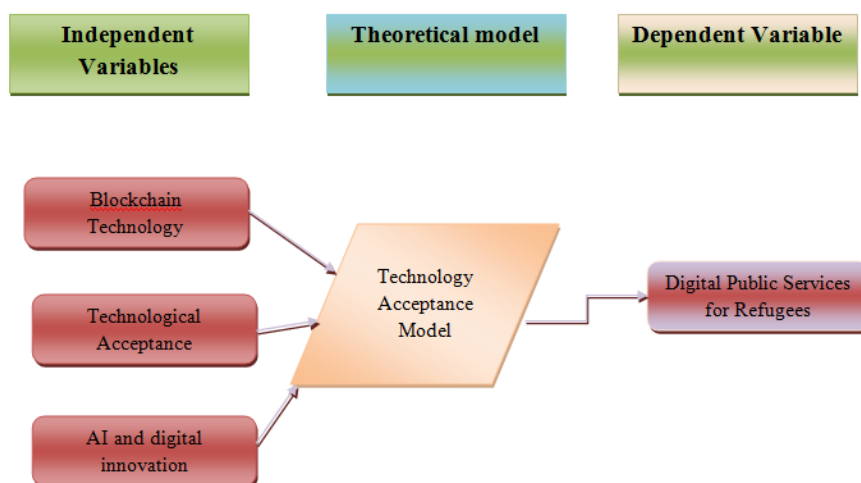
Such innovations have triggered the influential acceptance of digital technology such as blockchain into the application of digital public services as a way to manage the digital identities of refugees more efficiently and broadly. Blockchain technology is considered as a promising technology integration within the digital nature of registration systems to have leading inspiration regarding individuals having a higher control over their digital identities (schoemaker *et al.* 2021). Digital technological implementations are greatly affected by holding a potential for strengthening user access to registration systems. E-government services and government e-services have been gaining success in Jordan. However certain digital innovations such as blockchain technology, artificial intelligence, and cloud computing are regarded with lower attention to application (alzadayat and alarabiat, 2022). Acceptance of technology is considered to potentially integrate successful applications of digital technology for critical applications such as identity management.

Blockchain technology-based services help in recognising the identity verification of the refugees. This technological innovation helps in providing security, decentralised, and “tamper-proof” verification of refugees in accepting various facilities within the public services. The “united nations high commissioner for refugees” (unhcr) has initiated a blockchain-based verification for refugees in jordan. The most important factor is the implication of various influential factors including “social influence”, “performance expectancy”, and “better e-government system” in jordan. The “jordanian department of statistics” and unesco, almost all jordanians have the facilities to use electricity, and the literacy rate and rate was 92% to 94% in 2014 (almaiah and nasereddin, 2020). Within the e-government system, the service quality is higher than the other values as most of the services are fulfilled with online services (nofal *et al.* 2021). Blockchain technology has improved the trust of people and provided services to refugees.

Block-chain technology-based system has affected various factors of refugees to identify, provide support, funding, aid, and food to refugees. Integration of blockchain and internet of things, discusses about the data security and the internet of things crate a lot of challenges arise in the block chain, such as large set of device management, usage of computational power, network structure, and bandwidth for communication. Block-chain based services helps in maintaining the supply chain systems in establishing the robust structure of the jordan. Determining the efficiency of the public funds and in delivering the economical systems of the country, the block chain technologies help in managing employment generation among refugees. The “digital wallets” and “self-sovereign identity” are the significant two factors in maintaining digital identification of the refugees and maintaining the details of bank account (shah *et al.* 2024). International assistance within the economical system is the major elements related to the economic challenges of refugees.

Technology acceptance model is a theoretical framework that generates an explanation about the process of acceptance of people regarding new technologies. The behavioral intentions of an individual generate a process of technology usage that determines the perception of the individuals regarding the ease of the particular technology usage (natasia *et al.* 2022). Potential users and their internal thoughts about a particular technology using process is the main determining factor of the technology acceptance model. A process can be easy to use and the usefulness can be familiar for the creator, but unless the users share the same set of beliefs, the model can never be considered as accepted. The explanation of the consumer behavior is the process of product development and services generation that involves a critical adaptively that helps in determining and defining the measurability of the variables. Depending on these features, the process of technology acceptance provides proper opportunity to develop a generation of creative involvement. These create an idea about the acceptance of the new technologies for digital process generation in different aspects of professionalism.

### Conceptual framework



**Figure 2: conceptual framework** (source: self-developed)

### Research gap

Limited understanding related to blockchain technology despite the growing interest in this service for humanitarian purposes, this research maintains the gap of this refugee service. Most researchers of blockchain technologies adopt the refugee contexts but the other factors related to blockchain technologies are related to the other personalities of

Jordan and other countries. More ethical and social implications need to be careful for the protection of information, privacy and biases related to the population of this society.

AI with the digital tools within the public services instigate the transparency, accountability and confidence level of government sector by influencing decision making qualities of them (Tariq, 2024). Monitoring the safety issues and development of the unrecorded people of this country helps the development of this digitalised public services.

## METHODS

### Data Collection

The study involves a mixed-method approach to the data collection and analysis process for research. The mixed method research methodology is the design with specific “philosophical assumption” and “methods of inquiry” (Dawadi *et al.* 2021). Using both “post-positivism” and “interpretivism”, the researcher has developed the quantitative and qualitative information related to the study. Besides this, mixed methods help the researcher to provide the answers of research questions based on in-depth analysis of the topic. Offering a logical ground, this methodology provides flexibility to the researcher in determining the analytical approaches of this study. The secondary qualitative data are collected from various open-based articles and journals associated with this study.

### Data analysis process

Mixed method data collection process develops the analysis process in providing the analytical and thematic information based on the collected data. Transforming the information related to the study, the researcher has analysed the quantitative data through IBM SPSS by conducting a survey. Analysing the quantitative information through the study, the researcher has adopted the descriptive statistics, Pearson correlation, reliability and validity test, Regression test and the one-sample T-test for analysing the hypothesis for conducting the study. Apart from that, secondary qualitative data analysis with the formation of themes related to the topic is created based on the objective of the study (Al-Ababneh, 2020). The researcher has described the analysis through creating various charts and tables within this study.

### Participants

More than 71 workers of the digital public sector of Jordan are selected for this study as they have the experience of digital systems of the public services. Through the analysis of the numerical information of the conducted survey, the researcher has developed the analytical information of this study. All the participants, selected for this survey have knowledge related to the digital facilities within the public services of Jordan. A purposive sampling method is used within this study in choosing participants of this study. Mostly researchers chose the purposive sampling method as they want to trace the pre-identified set of elite people based on the specific criteria (Bakkalbasioglu, 2020). Examining the information collected through the quantitative analysis, the researchers have developed the idea of the improvement of public services for refugees within Jordan.

### Instruments

Using the Google Form for IBM SPSS with the set of questionnaire, the researcher has developed the study. The researcher has developed the 13 questions with 3 demographic questions based on the objective of this research. Based on the Likert Scale with the range of 0 to 4 scale to denote strongly disagrees to strongly agree, the researcher has developed the study. Using the information from secondary sources of published articles and objectives the researcher has created the thematic data analysis for evaluating this study.

### Reliability and validity

Reliability is the indicator of the “stability measurements” used repeatedly within the study in maintaining the behaviour and quality of the research. Reliability and validity are the two important instruments for the study. Validity depends upon the implemented measurement tools and their implication within this research. The primary quantitative information is reliable with the topic of this study and validity of the qualitative data is well-maintained. All information that is collected from the published articles and thus the validity of the information is established. Maintaining the internal consistency of the research, the reliability and validity of information are established within this study.

## RESULTS & DISCUSSION

### Primary Quantitative Data Analysis

#### Demographic Statistics

Gender	Age	Working experience
Female (47.89%)	20-30 (9.86%)	0-5 (9.86%)
Male (52.11%)	30-40 (43.66%)	5-10 (42.25%)
	40-50 (38.03%)	10-15 (38.03%)
	Over 50 (8.45%)	15-20 (12.68%)

**Table 1: Demographic statistics**

The above table depicts the age demographics of the sample population of 71 participants. As seen in the following, around 52.11% of the participant population is male and 47.89% of them are female. Despite the majority of the respondent being male responded demographic in terms of gender employed you have rather equal distribution among men and women in digital public sector sample population.

The age demographics as per the above table imply the participants being workers within the ages of 30 to 50 years. Around 43.66% of the total was almost 30 to 40 years old and 38.03% of them were 40 to 50 years old. The above findings are also supported by the fact regarding the age and gender demographics regarding employment including higher likelihood of women employees and the age group of the employees to be likely to range within the prime age group of 25 to 49 years (World Bank, 2019). The above demographic finding implies similar results. The findings indicate that are majority of the participant respondents had been working in the digital public services for around 5 to 10 years minimum. 42.25% of the responding population had been them along with 35.21% of the population having worked for 10 to 15 years.

#### Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.959	13

As per the above table for reliability statistics the internal consistency of the data hence gathered has been evaluated in association to statistical development of the research results. The Cronbach's Alpha value in this case is 0.959 for the 13 survey related questions that had been asked to the participants. This employees the internal consistency and thereby the reliability of the data collected for each item to be quite strong.

#### Table 2: Descriptive Statistics

	Mean	Std. Deviation
Digital public services in Jordan can include use of blockchain technology for refugee access	4.20	.904
Blockchain technology is considered as a promising innovation for refugee access under digital public services	4.49	.860
The benefits of data transparency can be provided by Blockchain technology	4.39	.836
Access to refugee data such as digital identity can be done by Blockchain technology	4.56	.823
Blockchain technology would revolutionise digitalized public services for refugee access and services in Jordan	4.51	.826
The public acceptance for governmental service digitalisation is important for public services to reach properly	4.51	.892
Digital literacy among refugees in Jordan contributes towards effective success of digital public services	4.45	.891
Acceptance and trust on digital techniques of handling identification data of refugees is essential for success of digitalised public services	4.48	.954
Privacy protection needs to be prioritized for gaining public support for digitalised public services for refugees in Jordan	4.45	.891
AI is an enhancing part of blockchain application in digital public services	4.46	1.026
AI and ML are some of the digital innovations that can be used for enhancing identity management of refugees	4.55	.771
Demand and acceptance for digital innovation was the one way for the public services to have gone digital in Jordan	4.52	.808
Digital innovations such as AI and ML is capable of improving security of managing and storing refugee identity data	4.52	.808
Valid N (listwise)		

The above table illustrates the descriptive statistics through the clustered condition of the mean and standard variable for each statement that indicate the central tendency of the data collected for research. The mean values for all the statements range between 4.20 and 4.56. The standard deviation values range from 0.771 and 1.026. This indicates the closed clustered condition for the variables of the research.

**Table 3: Pearson Correlation Analysis between DV and IV1**

Digital services in Jordan can include use of blockchain technology for refugee access	Blockchain technology is considered as a promising innovation for refugee access under digital public services	The benefits of data transparency can be provided by Blockchain technology	Access to refugee data such as digital identity can be done by Blockchain technology	Blockchain technology would revolutionise digitalized public services for refugee access and services in Jordan
	.645**	.576**	.443**	.419**
Blockchain technology is considered as a promising innovation for refugee access under digital public services	.645**	1	.699**	.712**
The benefits of data transparency can be provided by Blockchain technology	.576**	.699**	1	.855**
Access to refugee data such as digital identity can be done by Blockchain technology	.443**	.712**	.855**	1
Blockchain technology would revolutionise digitalized public services for refugee access and services in Jordan	.419**	.407**	.616**	.561**

As per the above table the Pearson correlation value ranges between 0.407 and 0.855. In the case of the DV regarding digital public services and IV regarding blockchain Technology had a close and strong positive correlation values. This indicates the influence of blockchain technology on digital public services as both variables have a close relationship.



**Table 4: Pearson Correlation Analysis between DV and IV2**

	Digital public services in Jordan can include use of blockchain technology for refugee access	The public acceptance for governmental service digitalisation is important for public services to reach properly	Digital literacy among refugees in Jordan contributes towards effective success of digital public services	Acceptance and trust on digital techniques of handling identification data of refugees is essential for success of digitalised public services	Privacy protection needs to be prioritized for gaining public support for digitalised public services for refugees in Jordan
Digital public services in Jordan can include use of blockchain technology for refugee access	1	.370**	.402**	.369**	.420**
The public acceptance for governmental service digitalisation is important for public services to reach properly	.370**	1	.894**	.801**	.876**
Digital literacy among refugees in Jordan contributes towards effective success of digital public services	.402**	.894**	1	.801**	.946**
Acceptance and trust on digital techniques of handling identification data of refugees is essential for success of digitalised public services	.369**	.801**	.801**	1	.734**
Privacy protection needs to be prioritized for gaining public support for digitalised public services for refugees in Jordan	.420**	.876**	.946**	.734**	1

The table indicates the Pearson correlation value to range within 0.370 and 0.946. These correlation values indicate a strong relationship between the dependent variable of digital public services and the independent variable of public technology acceptance.



**Table 5: Pearson Correlation Analysis between DV and IV<sub>3</sub>**

Digital services in Jordan can include use of blockchain technology for refugee access	public in AI can enhance use of digital services	AI is an enhancing part of blockchain application in digital public services	AI and ML are some of the digital innovations that can be used for enhancing identity management of refugees	Demand acceptance for digital innovation was the one way for the public services to have gone digital in Jordan	Digital innovations such as AI and ML is capable of improving security of managing and storing refugee identity data
	.516**	.516**	.560**	.522**	.444**
AI is an enhancing part of blockchain application in digital public services	1		.648**	.617**	.600**
AI and ML are some of the digital innovations that can be used for enhancing identity management of refugees	.648**	1		.727**	.933**
Demand acceptance for digital innovation was the one way for the public services to have gone digital in Jordan	.617**	.727**	1		.738**
Digital innovations such as AI and ML is capable of improving security of managing and storing refugee identity data	.600**	.933**	.738**	1	

The Pearson correlation value for the variables of dependent and independent variables range within 0.444 and 0.933. This implies the statistical relationship between the two variables to be significant and effective in terms of declaring the by variety relationship between Digital innovations and their as well as digital public sector.

**Table 6: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.747 <sup>a</sup>	.559	.467	.660

a. Predictors: (Constant), Blockchain Technology, Public Technology Acceptance, AI and Digital Innovation

The above table is the medal summary for the regression conducted for the research study conducted through survey research. The R and R square values are identified to be 0.747 and 0.559 respectively. This implies the statistical

significance of the independent variables being capable of providing an explanation for the variance of the dependent variable.

**Table 7: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.982	12	2.665	6.120	.000 <sup>b</sup>
	Residual	25.257	58	.435		
	Total	57.239	70			

a. Dependent Variable: Digital Public Services

b. Predictors: (Constant), Blockchain Technology, Public Technology Acceptance, AI and Digital Innovation

The above table illustrates the ANOVA of the regression analysis conducted for the data analysis of statistical significance of the study. The statistical significance for the Technology Study stands at 0.000. This indicates the linear relationship between the dependent variable of digital public services and the independent variables including blockchain, public technology acceptance, and, AI and digital innovations.

**Table 8: One-Sample T-Test**

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Digital public services in Jordan can include use of blockchain technology for refugee access	39.11	70	0	4.197	3.98	4.41
Blockchain technology is considered as a promising innovation for refugee access under digital public services	44.032	70	0	4.493	4.29	4.7
The benefits of data transparency can be provided by Blockchain technology	44.276	70	0	4.394	4.2	4.59
Access to refugee data such as digital identity can be done by Blockchain technology	46.696	70	0	4.563	4.37	4.76
Blockchain technology would revolutionise digitalized public services for refugee access and services in Jordan	45.983	70	0	4.507	4.31	4.7
The public acceptance for governmental service digitalisation is important for public services to reach properly	42.556	70	0	4.507	4.3	4.72
Digital literacy among refugees in Jordan contributes towards effective success of digital public services	42.088	70	0	4.451	4.24	4.66
Acceptance and trust on digital techniques of handling identification data of refugees is essential for success of digitalised public services	39.556	70	0	4.479	4.25	4.7

Privacy protection needs to be prioritized for gaining public support for digitalised public services for refugees in Jordan	42.088	70	0	4.451	4.24	4.66
AI is an enhancing part of blockchain application in digital public services	36.674	70	0	4.465	4.22	4.71
AI and ML are some of the digital innovations that can be used for enhancing identity management of refugees	49.739	70	0	4.549	4.37	4.73
Demand and acceptance for digital innovation was the one way for the public services to have gone digital in Jordan	47.139	70	0	4.521	4.33	4.71
Digital innovations such as AI and ML is capable of improving security of managing and storing refugee identity data	47.139	70	0	4.521	4.33	4.71

The above table presents the statements that have been involved in the survey research for the evaluation of the data and gathering of the findings in association to the research hypothesis. As per the above table it can be seen that all the statements associated with the variable of blockchain Technology in association to the dependent variable of digital public services had gathered a statistical significance of 0.000. This indicated that the hypothesis H1 regarding blockchain application innovating existing digital public services for refugees in Jordan was statistically significant. Indicates of the variable public technology acceptance and the variable for AI and digital innovation also had a statistical significance value of 0.000 for each case of their statements related to the variables in association with the dependent variable. Thereby the H2 and H3 hypothesis regarding public acceptance for technology impacting readiness for Digital public services to succeed and AI and digital innovations into blockchain being considered to influence digital public services for refugees in Jordan being enhanced as statistically significant as well as valid hypotheses.

## Secondary Qualitative Data Analysis: Thematic Analysis

### *Theme 1: Blockchain technology application in digital public services in Jordan*

Jordan is one of the countries that have been observing the integration of government projects and following the trend of e services as a major pillar of Administrative Reform within the public sector that supports transforming towards non-traditional services and transactions (Alabdallat, 2020). Jordan as a country has been ICT for information and service delivery to two citizens, the organisation for distribution of information and services. Although, it must be noted that full selection of e services is not as yet considered to have achieved readiness from the data collection sources the UN's World Food Program had for instant integrated blocks and Technology for supporting cash base transferred payments and access to food other forms of entitlement in a secure manner using blockchain technology (Reghunadhan, 2020).

Blockchain Technology is considered as an enabling feature within digital public services to succeed under the support of international organisations such as the UN. Blockchain Technology can access a form of online ID that has been observed to be the case for the World Food Program in Jordan as an example (Ahad and Emon, 2023). Blockchain Technology has been considered as an innovative inclusion for digital public services to influence innovation of Identity management for refugee identity data in Jordan.

### *Theme 2: Public acceptance for technology as an enabler for success of digital public services for refugees*

Public acceptance for technology innovations are considered as an essential component towards the enabled success of digital public services for refugees. Blockchain technology is observed through certain examples such as the United Nations World Food Program deployment of a blockchain based system named "Building Blocks" in refugee camps in Jordan (Dive, 2023). The WFP programme in Jordan used blockchain for cash for food aid disbursement management and tracking through the aim for efficiency and transparency and security enhancement. Following this

blockchain list technologies were used for delivery of food assistance to Syrian refugees in Jordan under the World Food Program (Kolehmainen *et al.* 2020).

The success of using private permission as a means for supply chain tracking and digital identity management for refugees was done with the understanding and acceptance of the technology possibilities for increasing and innovative identity management and transaction validation of refugees. Necessity for Digital literacy among refill is essential for their successful utilization of ICT and social inclusion (Salesi, 2023). Studies have indicated Jordan being one of the countries having Technology users aged within 15 to 35 further on emphasizing implication for Educational policy requiring to promote digital literacy education. Studies have also provided insight on the influence of digital connections and Technology integration in the daily lives of refugee communities such as Iraqi refugees in Jordan. Moreover, studies have suggested that ICT is used by activists working with Refugee women in Jordan for improving the lives of Syrian refugee women. Empowerment of refugees as well as integrating digital literacy among them promotes the instance of public acceptance of technology and integrating success for digital public services.

### ***Theme 3: Impact of Digital innovations of blockchain integrations into digital public services***

Digital integration such as blockchain technology have been considered as useful for management of refugee identity. Blockchain projects are capable of supporting and providing agency to beneficial use of blockchain such as for Pilots and projects undertaken for supporting Refugee workers through empowering beneficiaries such as women by applying “blockchain-based ‘digital wallets’, accessed through individual biometric checks” (Cheeseman, 2024). It must also be considered that blockchain is being used for coordinating organisations through the functionalist net worth using real time transparency over transaction data. Blockchain based “Cash-Based Interventions” delivered an identification and payment system for around 10000 Syrian refugees in Jordan (Pöhnet *al.* 2021). Despite the ban on digital currencies for protection of public from loss due to fraud hacking and has been integrated blockchain technology with particular sofas on digital identity management in refugee camps (Grossman, 2022). Digital integrations are considered as necessary enablers for digital public services to expand its features and activity in a system towards blockchain technology based refugee identity management.

Digital public services could be considered as an innovative inclusion of the e-government infrastructure of Jordan as being one of the innovative Middle Eastern Nations to have introduced e-government into its infrastructure. Jordan introduced the e-government program initiative in the year 2000 (Al-Onizatet *al.* 2013). The public sector has transformed the evolution of technology integrations into digital public services available to people in Jordan are regarded to be evolving and improving ever since to meet the demands and requirements of efficiency. Technology such as AI is considered as a primary driving limit into digital technology with the

advancement of AI having created a large spectrum of opportunities and challenges (Al-Onizatet *al.* 2024). Studies have observed that integration of Refugee identities through applying biometrics have been increasingly prominent as a means of digitalising Identity data and Management for refugees in Jordan. Although AI is considered as gaining scope of interest in biometric space, blockchain technology is considered as an offer towards introduction to transparency in such operations through “transactions throughout the supply chain” being entered into immutable records (Holloway *et al.* 2022).

Jordan is among the countries that have been affected by the Syrian crisis. It holds the second highest share of refugees per capita globally with around 670,637 people with their country of origin being Syria in Jordan while around 758,330 refugees live in Jordan as of 2021 (UNHCR, 2021). Presently it is to be noted that Jordan, under partnerships with international organisations such as UNHCR, has been one of the first operations globally for introducing Iris scanning biometrics as a systematic program within Refugee registration in 2013 itself using biometrics for registration as well as identity management in terms of validating and authenticating refugee identities registered to assist in daily service access such as financial transactions. Jordan has also included several types of programs for Refugee development such as the Youth, Technology, and Jobs Project is a program that has also considered integration of digital ID and data integration as well as the program being specifically targeted at women and Syrian refugees as potential beneficiaries of the digital platform delivered services (World Bank, 2024). The following study expanded on the subject of blockchain application in digital public services for refugees in Jordan such as identity management and service provisions.

### LIMITATION

The block-chain technology has improved the accessibility of digital technologies due to the enhancement of the facilities of refugees. Security is the most important aspect within the public sector and the encryption of the required information is the challenging fact about this block chain technology based services. The sample size within this study is limited and the information collected from the survey is biased as those participants are related to the digital services of Jordan. The researcher could use more participants for this study to gather more detailed information related to the study. Besides this the thematic analysis could be developed with the interpretation of various models within this study. Lack of proper information related to the digitalisation of public services within Jordan is the other important factor, creating hindrance for the improvement of the study.

### FUTURE SCOPE

Analysing the results of this study, the researcher could explore the refugee issues in many countries other than Jordan. The in-depth analysis related to the study will help the researcher to create the analytical approaches with other countries. Improving the thematic and model-based study related to the topic will develop the detailed discussion within the study. The researcher could implement various other approaches including the world refugee issues, inadequate knowledge related to the block-chain technology, and issues and challenges with this technology are the important factors will be considered in future works.

### CONCLUSION

In conclusion, blockchain technology integration into the system of digital public services is considered integral part of innovation of existing identity management systems for refugees and enhancing refugee identity management and registration depending on public acceptance, digital innovation and block chain. The sudden upraising of population of Jordan creates the issues within the accessibility of public services within this country. Digitalisation develops the process of the implementation of various services to the refugees including the healthcare facilities and the economic facilities for them. Identity creation with managing the data of them are the important factors associated with the block-chain technology implementation within the Jordanians. Providing the employment generation to the young people and implementing new ideas within the public services of Jordan, the block-chain technology has improved the lifestyle of the refugees.

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