-RESEARCH ARTICLE-

FACTORS INFLUENCING THE IMPLEMENTATION OF T-GOVERNMENT IN SAUDI ARABIA: A QUALITATIVE APPROACH

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─**Abstract**─

Governments worldwide have invested substantially in information and communication technology (ICT) to enhance the efficiency and effectiveness of services delivered to citizens. Due to the lack of interoperability amongst numerous state entities, this expenditure did not have the expected effect. Consequently, several governments have recently begun to abandon the concept of e-Government in favor of a significantly more transformative strategy known as transformational government. Transformational government, often known as t-Government, involves the entire relationship between government agencies and public service users. The implementation of t-Government necessitates a high level of interoperability amongst government agencies. This study employs a qualitative research methodology to refine and validate the research model for t-Government (TG) execution in the Saudi Arabian context, focusing on technological compatibility (TC), governance readiness (GR), the e-Government Program (Yesser) (EG), organizational compatibility (OC), and citizen centricity (CC).

The results indicate that technological compatibility (TC), organizational compatibility (OC), governance readiness (GR), e-Government Program (Yesser) (EG), and citizen centricity (CC) have a positive impact on the compatibility required for t-Government (TG) deployment in this context. Moreover, it reveals that the e-Government initiative (Yesser) (EG) has a direct and positive impact on technology compatibility (TC). It also demonstrates that citizen centricity (CC) has a direct and positive effect on the e-Government initiative (Yesser) (EG). Surprisingly, the Yesser e-Government Program (EG) had no impact on organizational compatibility (OG) or governance readiness (GR).

1. INTRODUCTION

States worldwide are enhancing existing programs to boost accessibility and improve operational quality (Weerakkody et al., 2019). According to the most recent United Nations e-Government Surveys, many nations have implemented e-Government apps to promote higher public sector efficiency and improve government procedures (Nations, 2012, 2014). Furthermore, the document underlines the importance of emphasizing linking government institutions to boost efficiencies, claiming that this has been the goal of a revolutionary government (t-Government). The concept of transformative government (t-Government) should be understood globally. Numerous governments had already begun to shift away from the idea of e-Government in favor of a transformational approach to the interaction between government agencies and the people who use the services they offer, to facilitate more centralized, connected, and citizen-centric e-Government facilities. The emphasis remains on putting the requirements of individuals and businesses at the center of online procedures (Alshetewi et al., 2015; Obaid et al., 2022). Currently, the t-Government is in its early stages of development.

Additionally, the period is the most difficult to comprehend. It needs the cooperation and coordination of information systems, public e-Services, departments, and organizations, as well as the application of prescribed regulatory restrictions and norms (Chilembo et al., 2020). Interoperability describes this characteristic.

Interoperability (IOP) is acknowledged as an essential requirement for e-Government maturity, and advancement has been made utilizing the IOP paradigm (Akbar et al., 2022; Oumkaltoum, 2019). Meanwhile, governments are not interoperable at all. Their data systems have difficulty reaching IOP (Akbar et al., 2022; Yuan et al., 2020). The absence of IOP has been a significant barrier to the expansion of e-Government (Arief et al., 2021; Margariti et al., 2020; Nations, 2014). According to Pardo et al., IOP is not an end, but a means to an end. Enhancing government operations and delivering citizen services is crucial to the success of e-Government efforts. To achieve t-Government, it is essential to implement a revolutionary technique within government organizations, like the e-Government IOP (Elnaghi et al., 2019). Watmore argues, "t-Government is a

goal in itself, not a means to an end" (Elnaghi et al., 2019). Multiple models and frameworks, if not all, have failed to account for the complex web of interconnected technological, organizational, political, and social difficulties and restrictions. Consequently, e-Government integration and interoperability projects will likely fail (Akbar et al., 2022).

As a result of the legislative advancements, Saudi Arabia will likely be among the top five nations in e-Government by 2030. (Alshuwaikhat et al., 2017). The International Telecommunications Federation's (IFT) implementation record on the usage of data innovation has assigned Saudi Arabia a score of 70%. (Abdulaziz Alfadhel et al., 2019). These metrics demonstrate that the government's strategy to be among the world's top five nations by 2030 is sound (Alshuwaikhat et al., 2017). South Korean and Dutch Singapore, Australia, and France occupy the top three positions (Obi et al., 2015). The actions made by the government would allow citizens to save time and effort when obtaining printed materials from various government departments, ensuring a high level of simplicity and aiding in the fight against corruption. Government offices must ensure they can adapt to the new organizational structure established by e-Government and Internet usage. The E-Government has also assisted in reducing the number of government employees (Almukhlifi et al., 2017). This is a massive benefit for the government and the general people, as it is now feasible to redirect funds previously spent for salaries towards development programs (Almukhlifi et al., 2017). The government can readily monitor the collection of taxes, fines, and fees. The possibility of misappropriating public cash is likewise diminished. Saudi residents have significantly profited from the e-Government system's adoption since its inauguration in 2003. (Alsmadi et al., 2016; Yamin et al., 2016).

2. RESEARCH METHODOLOGY

This study analyzed a prototype discovered in the literature on information sharing, integration, interoperability, Government to Government (G2G), and t-Government models. The analysis utilized the institutional theory to highlight the primary factors influencing IOP amongst government organizations. This was done to facilitate the implementation of the t-Government model in Saudi Arabia as a nation. Semi-structured interviews were conducted with twelve government management employees from various government agencies. " This study presents the results of the qualitative technique used to refine and validate the proposed model—the theme analysis aimed to determine why some construct-to-construct interactions are beneficial while others are not

2.1 Thematic Analysis Findings

In this part, the comments provided by interviewers regarding the model structures are evaluated.

The use of thematic analysis allowed for identifying crucial elements for the interoperability required while deploying t-Government and exploring and studying their effects and relationships. These findings could assist the Saudi Arabian governmentin determining how to improve existing processes before implementing t-Government in the Kingdom.

The received data were recognized and categorized into core and sub-themes based on observed correlations between the model's parameters. This paradigm focuses on technology compatibility (TC), organizational compatibility (OC), governance readiness (GR), citizen centricity (CC), and the Yesser e-Government program (see Figure 1). The subsequent subsections examine each issue in greater detail.
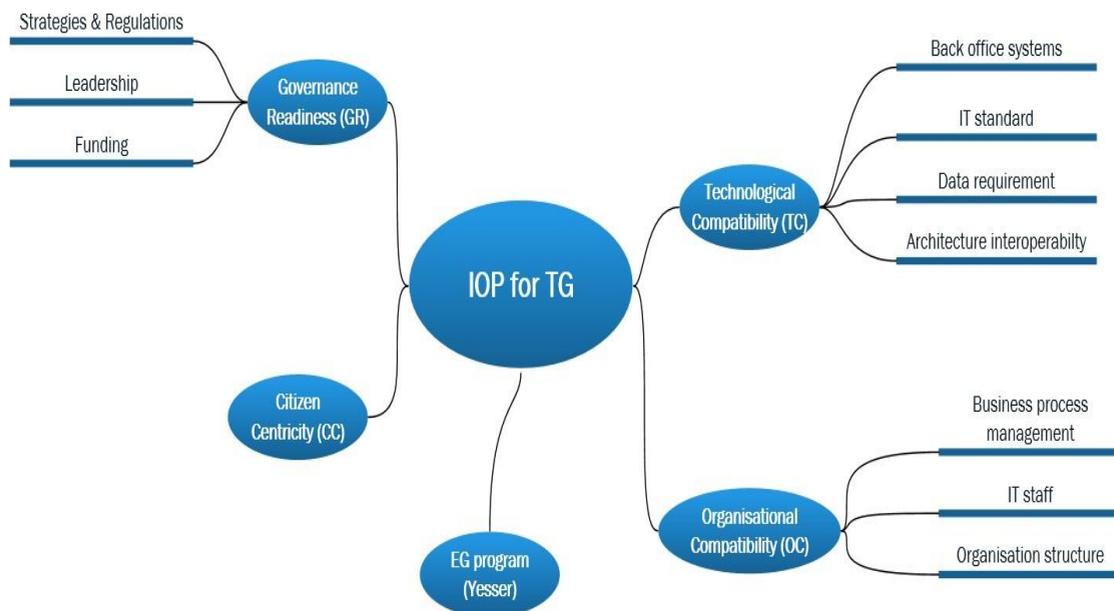

Figure 1. Critical Factors for Interoperability for t-Government

2.2 Technological Compatibility Theme

The Technological Compatibility (TC) subject consists of four subthemes: IT standards, architecture interoperability, data needs, and back-office systems. Each is addressed in detail below.

2.3 IT Standards

This investigation uncovered a subtheme about the adoption of IT standards. All respondents agreed that IT standards provided a benchmark for the interoperability

required for t-Government adoption. IT standards facilitate and improve government agency collaboration. The focus should be placed on the technical components of government organizations and how a connection is established following unified technical standards. Consistent standards are necessary, and they must be adopted by all organizations involved in the integration. No unification will occur without standardization. Every business has software and hardware, and there are no established IT standards. Integration of t-government can only be accomplished by establishing common technical standards and executing best practices.

Open standards serve as the basis for interoperability. Therefore, there is a need to provide an open platform that any business may utilize for system development. This facilitates collaboration between entities. Numerous interviewees concurred with this statement. One Architecture & Standards manager stated, "Open standards enable government organizations to design their system and software according to uniform models, thereby facilitating organizations' seamless merger." Interoperability standards are another critical concern.

According to one IT manager, government entities that want to share expertise should be cautious about standard compatibility. It is not enough to establish standards. They must be continuously assessed and updated. Standardization is essential for the integration and execution of e-government, but it will be ineffectual if it is not regularly evaluated and updated. Consequently, adherence to and modification of the standards are crucial.

2.4 Architecture Interoperability

The interoperability of architecture is a second significant subtheme uncovered by this thesis. The five primary types are application connectivity, interfaces, uniform architecture, interoperable architecture, and programming environments. According to all respondents, architect interoperability is an essential component of t-Government, and architectural discrepancies would result in project failure due to e-Government interoperability concerns. One e-Transactions manager, for instance, stated that "consistent IT design is essential to fostering interoperability among government agencies." Numerous businesses leverage various platforms. This is a significant reason why such undertakings fail. By facilitating their integration to provide e-services, a unified platform makes it simpler for government departments to collaborate. In addition, some IT managers have complained that the systems they are working with were designed using architectures that do not permit integration.

Consequently, a new architecture was required to facilitate the integration of several systems. "Our systems were established decades ago, and I do not believe they support integration," remarked one IT development manager. In contrast, one IT manager stated that the framework was not a serious worry. "[t]echnical architecture is a critical issue,

but organizations should not place undue emphasis on it; instead, they should leverage data center virtualization to enable cloud computing."

2.5 Data Requirements

This thesis also discusses data requirements as a secondary issue. It is structured around four essential data themes: (a) ownership, (b) legislation, (d) monitoring, and (d) standardizations. In this thesis, it was established that interoperability requirements for t-Government deployment are primarily based on needs. A failure to communicate data hinders the integration of government institutions. Integration is not possible without data sharing. Every interviewee confirmed this for this thesis. According to one IT manager, "[s]haring data between government organizations is crucial to the e-Government integration initiative." Businesses must be incentivized to share their data. In Saudi Arabia, however, the concept of exchanging or trading such information does not exist. Due to this need, numerous organizations resist integration. Such obstacles can hinder the integration between government agencies. One e-Government team member stated interoperability and t-Government deployment rely on integration across government organizations. The most significant barrier to integration is the lack of clarity in data ownership." This must be achieved through enforcing and regulating sensitive information through data-sharing legislation and rules. All participants agreed that data must be handled and categorized for effective integration. One IT director, for instance, said, "[d]ata management is an essential aspect in the integration of government organizations and assists decision-makers in making the appropriate judgments." Another IT administrator remarked on the importance of data ownership laws:

Data ownership is one of the most critical issues for integrating government agencies. Each institution has its database, over which it wishes exclusive control. Consequently, legislation is essential to ease information sharing across government departments.

In contrast, some organizations do not trade data. These businesses fear that power will be lost if data is shared. Several interviewees confirmed this. The following excerpts emphasize the explanations of two IT managers. "[S]ome institutions refuse to communicate data out of fear of losing control; among the differences between government agencies is the possibility of losing power and being replaced by IT services. Numerous corporations require exclusive control over their data." These myths must be debunked. Groups must be encouraged to trade data. According to interviewees, data monitoring is another major worry regarding the sharing of data. According to one (CIO), "data monitoring is a huge barrier for integration initiatives," and "organizations need to explain the regulations related data management." It will be hard to share data with other organizations unless other organizations are sure that their data is secure and protected.

2.6 Back-Office Systems

According to this thesis, back-office solutions are crucial to the interoperability required to implement t-Government. This factor derives from the following core concepts: Consider back-end system integration, legacy back-end systems, back-end system business processes, and back-end system governance. Various back-office applications, databases, and user interfaces exist. Integration of back-office systems across multiple organizations is essential. All interviewers shared this assertion. The following quotations represent the opinions of IT managers: "Technology is the most important issue, and the rest can be resolved easily." The back-office system is essential for integrating enterprises to provide electronic services to beneficiaries; "integrative back-office systems are essential for providing electronic services." Back-office systems are a vital component of interoperability between government organizations. Still, the government security network and the government services bus provide solutions to enable government organizations to integrate, according to a member of the e-Government team.

In government organizations, numerous apps and computerized technologies are utilized. This situation may hinder the ability of government agencies to collaborate. According to a business development manager, "other organizations use IBM products, some use Oracle products, and some use products from other businesses." This will make assimilation challenging. Another manager underlined the importance of back-end business processes for integration and recommended firms develop standardized back-end procedures for their key platforms. "To achieve interoperability, the integration of the organization's back-end systems is essential," he explained. Consequently, there should be a standardized method for similar systems such as payroll, finance, and ERP [enterprise resource planning], and the appropriate groups should create it. The Ministry of Finance should create the financial system, while the Ministry of Civil Service should construct the enterprise resource planning system, etc."

In addition, multiple studies indicate that legacy back-office systems affect EGI; numerous Saudi Arabian government organizations use old systems for their core activities. Consequently, government agency integration will be complex. "From my perspective, many government organizations have antiquated legacy systems, which will make it difficult to integrate these organizations," said an IT development manager. Other firms' systems, on the other hand, are fresh and new. Thus integration is not an issue for them. Governance of the back-end system is of utmost importance. According to all interviewers, it is an essential element of EGI projects. For instance, one IT manager stated, "I believe many organizations do not have policies for their back-office system, which is necessary for government organization integration." (See Figure 2)
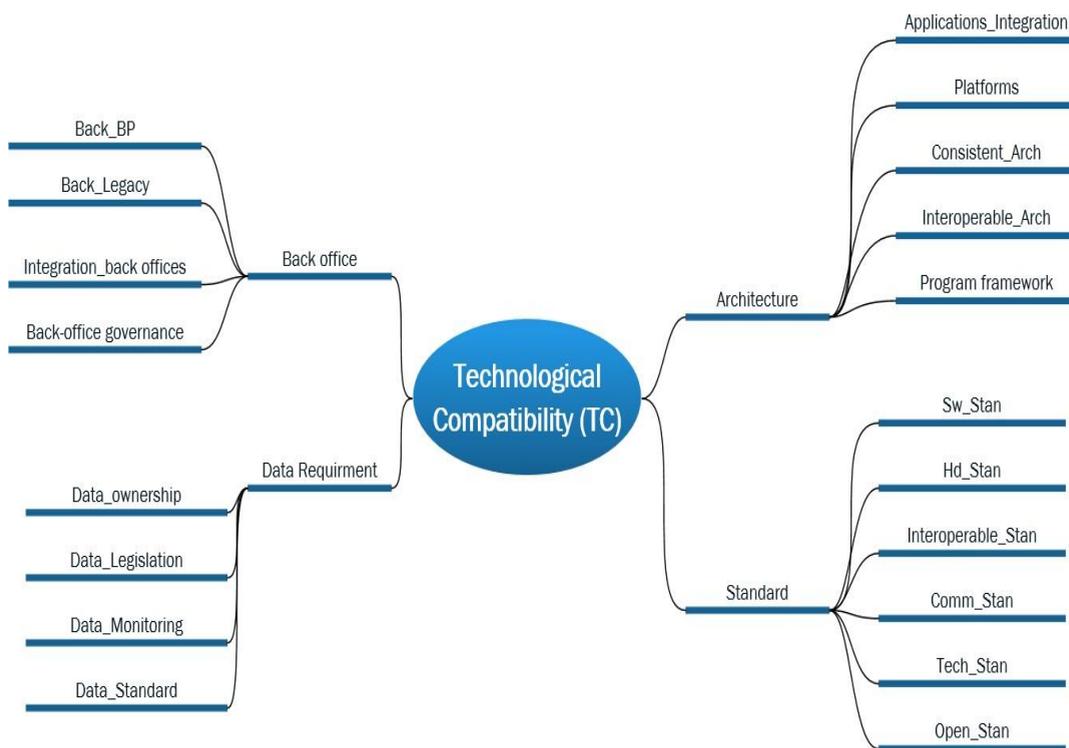
Figure 2. Thematic Network of Technological Compatibility

2.7 Organizational Compatibility Theme

Under the Organizational Compatibility (OC) subject, three subthemes are highlighted: IT personnel, organizational structure, and Business Process Management (BPM). The subsequent sections expand on these themes.

2.7.1 IT Staff

IT people are another subtheme emphasized in this study. It is founded on four primary factors: (a) training, (b) the availability of trained employees, (c) in-house technical personnel, and (d) employee opposition. All interviewees emphasized the significance of technically savvy and capable professionals for establishing e-Government. It is a top priority for EGI initiatives. To manage integration, businesses need qualified staff. Organizations can rapidly adapt to change and engage with other organizations with adequately trained staff. According to one IT director, IT workers are considered critical for integrating numerous government agencies into a transformational government. All respondents agreed that t-Government is a new phenomenon and that the Saudi public sector lacks IT professionals with the skills and knowledge to implement the shift. Therefore, government entities should commit more resources to employee education. The following quotes reflect the viewpoints of IT managers: "[t]ransformational government is a new phenomenon; therefore, government organizations should educate

their personnel on how to manage these types of projects; e-Government integration initiatives are new in the realm of technology, so we must continue to educate our people." According to IT professionals, the transformational government is the final and most difficult phase of e-Government adoption. It demands competent IT staff.

In addition, organizations must have qualified technical personnel on staff to assist them in identifying their technological requirements for integrating and interchange data with other government agencies. According to a second responder, firms with in-house IT specialists can more easily form successful partnerships with other organizations and comprehend their criteria for establishing such links compared to those without in-house IT professionals. According to one IT manager, a shortage of skilled staff and IT training is a significant obstacle to exchanging information with other government entities. We struggle to compete with other organizations because we lack sufficient qualified personnel. "We have a large number of employees, but there is a dearth of skilled IT professionals," remarked another IT director, noting that firms without educated IT personnel always seek assistance from the private sector. Therefore, we always seek help from the private sector, such as consulting firms. According to a member of the e-Government team, "the lack of human resources is the difference between government organizations achieving t-government and not obtaining it."

2.7.2   Organizational structure

The organizational structure is comprised of four fundamental subthemes: (a) an interoperable structure, (b) an updated structure, (c) a suitable structure, and (d) a structure bureaucracy. This thesis analyzes the role of organizational structure in the interoperability of t-Government deployment. It plays a significant function in fostering unity between governments. All interviewers shared this assertion. The citations below highlight some of the respondents' explanations: "Organizational structure is a critical factor. It contributes to the efficient management of e-Government project procedures."

Therefore, businesses that wish to interact with other companies and adopt t-Government must establish an adequate integration framework. This will make it easier for firm employees to carry out their duties. Numerous interviewees concurred with this statement. A business development manager states, "[an] appropriate structure is a major roadblock for e-Government integration initiatives." It helps government entities achieve interoperability with one another. In Saudi Arabia, hierarchical government organizations make it difficult for qualified IT employees to participate in decision-making. According to one IT manager, "Transformational governance requires integration across government agencies. First, we must guarantee that organizational structures are appropriate for integration, and IT workers should be integrated into the decision-making process. Therefore, the Council of Ministers has urged that government agencies establish their internal e-Government committees."

Such committees continue to primarily oversee the execution of e-Government activities inside their respective organizations. Every organization mandates that the committee report to the highest authority. According to the standards, each committee should consist of five to seven members, including the organization's e-Government experts. These committees will help government organizations overcome the limitations of the bureaucratic decision-making process by adding qualified individuals (Yesser, 2015). As one IT manager put it, "one of the greatest challenges I faced was reorganizing the company to provide electronic services to numerous interconnected businesses." For this reason, every organization should create a committee of specialists in subjects connected to e-Government operations to advise the institution's highest-ranking officials.

2.7.3 Business Process Management

This thesis also examines business process management (BPM) as an essential subtheme. The six primary challenges are business process documentation, business system integration, business process standards, training, coordination, and business process competency. According to all responders, BPM is one of the essential requirements for the interoperability required for t-Government adoption. BPM improves the delivery of services to citizens by easing government agency integration. Without business process management, it will be hard to interface with another department or company to share information and automate services supplied to the public, according to a business development manager. It is impossible to emphasize the significance of standardized and equivalent procedures. "Before we do anything, we must manage our processes and unify the same processes across all government organizations; this will make it easier for us to integrate when implementing e-services;" The complexity of corporate processes presents a significant obstacle to government organization integration. Integration among government agencies involves a process of industry-wide re-engineering." In addition, government agencies must communicate to synchronize interdependent commercial processes. Another IT manager stated, "Companies should learn from other organizations that have implemented BPM, as this would allow them to avoid their mistakes and rapidly integrate the interconnected business processes." Additionally, there should be agreement on the final decision.

BPM is a problematic endeavor. It requires talented individuals with the necessary qualifications. Some companies have little difficulty controlling their operations, while others lack skilled employees. The following paragraphs highlight the explanations of two IT managers: "[m]angement of business process transformation is a crucial and challenging endeavor for which we lack the required expertise. I believe that many businesses are unable to manage their business processes. Therefore, we recruited a company that specializes in managing corporate operations.

Documentation of organizational procedures is an additional essential issue. This facilitates organizations' ability to automate their services. In addition, it enables the integration of government bodies, the identification of pertinent business processes, and

the automation of service delivery. In contrast, many organizations lack well-established business protocols, and others have only recently begun documenting their activities. "Because we realized how important business processes are to automated service delivery, we began documenting all of our business processes," says a chief information officer for a government ministry.
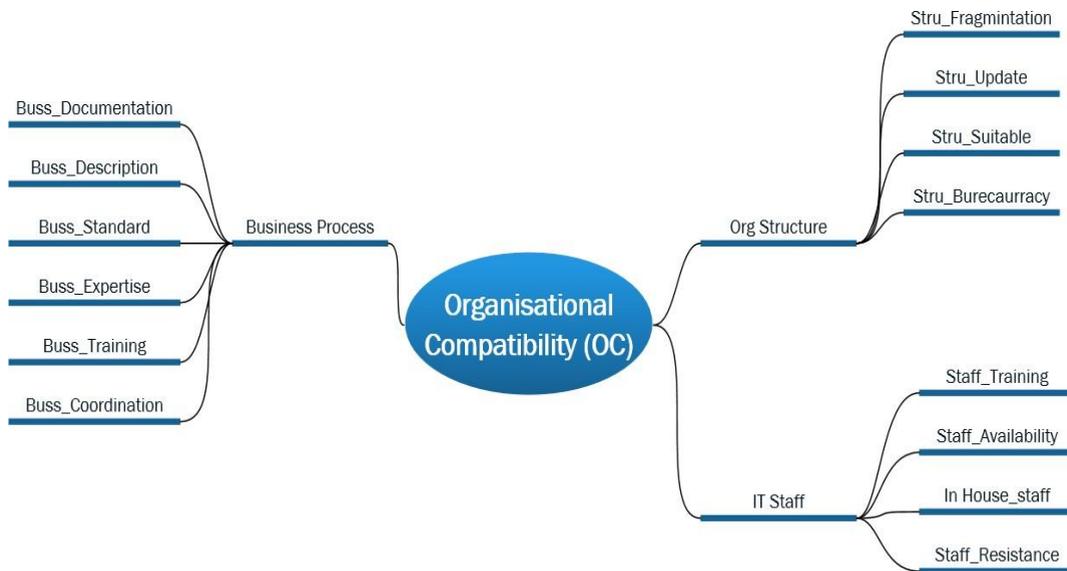

Figure 3. Thematic Network of Organizational Compatibility

2.8 Governance Readiness Theme

The governance readiness (GR) issue has four subthemes: strategy and regulations, leadership, finances, and stakeholders. The subsequent sections elaborate on each of these topics.

2.8.1 Strategies and Regulations

This thesis also examines methods and rules as a crucial subtheme. This subtheme consists of nine sections: (a) e-Government strategies, (b) commitment, (c) plans, (d) goals, (e) vision, (f) clear regulations, (g) regulatory changes, (h) best practice, and I a national strategy. This thesis demonstrates that strategy and regulation impact the interoperability of t-Government deployment. All interviewees concur with this statement. According to one expert participating in this thesis, "strategies and laws are regarded as significant concerns for the successful implementation of interoperability across businesses." Consequently, there should be some concern about the interoperability plans and regulations for t-Government.

Government institutions must have a strategy plan and a clear vision for t-Government implementation to be effective. "According to the financial manager of one of the ministries, "[e]ach organization should have a strategy plan and a clear vision to adopt t-Government successfully." "Government organizations should clearly outline their strategy and implementation plan for t-Government integration efforts," said one IT manager. Considering that the road map and plan for integration initiatives are vital considerations, vision and strategy are indispensable. In this regard, the Council of Ministries issued laws. In the specifics, one significant thing was included. According to the law, "each government organization shall develop a clear strategy for the transformation and implementation of e-Government interoperability" (Yesser, 2015). In this regard, a member of the e-Government team stated: "Government organizations should listen to and follow all legislation issued by the Council of Ministries, as well as develop a detailed strategic plan for e-Government interoperability implementation to help them achieve interoperability efficiently and effectively." Nevertheless, some respondents say many state organizations lack an e-Government strategy. "While some organizations have such a plan, it exists only in documents and not in practice, which is why many e-Government projects fail," one IT manager explained. The e-Government strategy plan should be communicated to all organization personnel, not just management. As one expert remarked in this thesis, "many businesses have a clear e-Government strategic plan, but it is only clear to the management," This is one of the critical causes of e-Government project failure. Workers should also develop this strategy plan, and all employees in this organization should be included. The e-Government strategy plan should be communicated to all employees, not just management. According to one expert cited in this thesis, "many organizations have a clear e-Government strategic plan, but only the company's management understands it. This is one of the primary causes of e-Government project failure." All this organization's personnel should participate in preparing this strategic strategy (Noorossana et al., 2021).

In government agencies, numerous strategies and laws have been adopted. This idea asserts that they are frequently unsuccessful, though. Plans for implementing e-Government must be transformed into practical and transparent road maps that all government entities may follow. The commitment to this goal has been recognized as the most crucial part of t-Government interoperability. Multiple interviewees brought this up. One IT manager, for instance, stated, "Some organizations lack an e-Government plan, and some of these organizations' strategies are inapplicable in the real world." Every internal aspect of an e-Government plan should be addressed, as well as the relationship between government entities. To achieve success, one must be dedicated and persistent. Companies must collaborate to realize a single vision. We have an e-Government plan and clear legislation, but there is no coordination between government agencies to implement e-Government. Thus any attempt to establish t-Government will most likely fail. There should be no divergence between strategy and its implementation

in the real world. All e-Government regulations must be continually updated. Several interviewees concurred with this statement. According to an e-Transactions specialist at one of the ministries, "many organizations have a good e-Government strategic plan, but this plan is not implemented in real life." "I believe that planning and execution are not aligned." A member of the e-Government team stated, "We have published several rules, but in practice, many of them have yet to be implemented." Regular revisions should be made to e-Government regulations. All respondents emphasized the significance of this. "Because t-Government is a new phenomenon," noted another IT administrator, "laws must be revised frequently to ensure they meet the needs."

2.8.2 Leadership

Leadership is another critical subtheme emphasized in this study. It is founded on five core leadership concepts: (a) executive leadership, (b) support, (c) style, (d) strength, and (e) cooperation. This thesis emphasizes the significance of leadership in t-Government applications. All interviewers shared this assertion. For instance, a manager of information technology found that "transformational governance requires substantial leadership support." Leadership is the most critical factor in ensuring that everything operates efficiently. According to other IT administrators, the t-Government adoption's success depends on top-tier leadership. Vital to the success or failure of any EGI program is the backing of the organization's top management. "King Salman supports the transition to e-Government, so he issued a royal order mandating that government entities in this country adopt e-Government initiatives," according to the financial manager of one business. Several organizations began to implement e-Government as a result of the royal declaration. Governmental organizations are distinct. Some businesses get strong support from upper management, while others do not.

This help is concentrated on e-Government implementation activities. According to an IT manager, government organizations are diverse: "some lack support from upper management, while others are satisfactory." In government organizations, top management support is vital, and it isn't easy to advance one step without it. It has a substantial effect on the transformation procedure. One member of the e-Government team remarked, "The lack of support from the highest levels of government creates a barrier to achieving transformational government." Another member of the e-Government team stated, "I believe the primary reason for the difference in the degree of t-Government is the support and interest of the senior leadership in the various government agencies." Some senior executives are unwilling to take any risks by participating in integration initiatives. They are opposed to such a move. According to an expert cited in this thesis, "some executives wish to avoid any risks associated with the transition, so they move slowly." Leadership must connect with other state leaders to obtain consent and support for implementing this system. To develop the correct management that will permit interoperability, one must possess exceptional leadership abilities and knowledge. The following excerpts emphasize the explanations of two IT

administrators: "To achieve integration across government institutions, senior management must be receptive. Some top managers lack the essential experience and qualifications to connect effectively with end-users and other government entities, creating problems for government-to-government integration programs."

An e-Government effort's success depends on a strong leader's presence. Organizations necessitate able leaders who can manage the complexity of integration efforts. In contrast, many government agencies lack the leadership to oversee such a project effectively. With skilled leadership, t-Government transitions can be made effectively and efficiently. All interviewers shared this assertion. According to one respondent, "strong leadership is one of the most crucial factors that encourage and compel the integration project to succeed." Without an influential leader, success would be exceedingly difficult to achieve. Strong leadership may expedite the merger of several government entities by securing long-term funding commitments and fostering efficient departmental collaboration. One IT manager stated, "We need strong leadership for commitment and to ensure that integration projects are completed." Strong leadership can expedite achievement by overcoming all obstacles. In addition to senior leadership help, middle managers play a significant role in t-Government efforts. In the following quotations, two interviewees' responses are highlighted. "In our country, King Salman, along with other senior political leaders, supports the adoption of e-Government. However, I believe the difficulty lies with middle management, responsible for implementing the projects in many organizations."

"Government executives are not necessarily knowledgeable in their respective fields. Consequently, assistance from their intermediate management, such as the IT manager, is essential in addition to supporting from their upper management."

2.8.3   Funding

Funding is another subtheme highlighted in this study. There are four primary topics: (a) quantity, (b) measuring mechanism, (c) administration, and (d) control. According to all responders, funding is a crucial component of e-Government activities, and financial support is essential for the interoperability required for t-Government adoption. They agreed that integration and cooperation across government departments might be hampered without adequate funding. However, every responder agreed that finances were immaterial in the country in question, given that the King and the available monies provided by senior management support the initiatives. They stated that the government had given them ample funding to implement e-Government and that funding was not an impediment.

Two responses from IT managers are emphasized in the following quotations. "Funding is a crucial element of every e-Government initiative. However, because King Salman bin Abdulaziz supports the transition to e-Government, we currently have no financial issues, and funding is not an issue for e-Government projects"; "funding is not an issue

or a challenge for the e-Government system in our country" All interviewees reported receiving the necessary finances for e-Government projects at all times. Nonetheless, several individuals stated that lengthy bureaucratic procedures could cause delays in securing essential money. One respondent said, "I do not believe that funding is a significant barrier to e-Government initiatives, despite the lengthy process of obtaining such funds due to bureaucratic issues." Another IT manager had the same view:"Because of King Salman's support, there are no financial concerns, and we have the funds to construct any e-service delivery. However, the application process for financingmust be improved. Due to demanding bureaucratic procedures, receiving funding oftenrequires excessive time."

Obtaining adequate funds was not a concern for any respondents; nonetheless, they were all concerned about managing these funds. The following quotations highlight the problems of two respondents: "While the Ministry of Finance is doing a good job overall, there is a need for greater efficiency in the implementation and monitoring of state revenues, as well as the procedures for applying for funds from organizations"; "Funding is one of the most important issues to support the integration of organizations." In addition, regulating and monitoring expenditures is necessary to complete the transformation project." Members of the e-Government team were also concerned about discrepancies in government agency funding. According to one source, the quantity of funding allocated to government institutions is one of the primary reasons for differences in their progress through the phases of e-Government.

2.8.4   Stakeholders

During the interviews, this component was identified as a novel governance preparation feature absent from the proposed conceptual model. This new factor pertains to the significance of stakeholder involvement, identification, management, and collaboration. According to the findings of the interviews, stakeholders were identified as a crucial aspect of e-Government interoperability and, as a result, t-Government implementation. According to the literature (Ashaye et al., 2019; Desouza et al., 2020; Hölscher et al., 2019; Malodia et al., 2021), this feature is vital in e-Government. Each interviewee underlined the importance of stakeholders. According to one IT manager, stakeholders play a crucial role in all t-Government projects. To ensure the success of such programs, stakeholders must be involved, and their relative levels of influence must be understood. Each project's stakeholders must understand their roles and duties from inception to completion. "Government projects are large projects, so government organizations should involve their stakeholders to ensure project success and to involve them in all phases of these projects to ensure there was no need to refer them to earlier points," added a second manager. This conserves time and effort. At all phases of implementation, stakeholder collaboration is essential to ensure success. The following quotations illustrate the perspectives of two IT managers on the importance of stakeholder collaboration: "[T]he success of any e-Government project is contingent

upon the involvement of all parties. Cooperation between appropriate departments within an organization or between an organization and other organizations, for example, is essential for an efficient e-Government program; nevertheless, Saudi Arabia has difficulty interacting with other organizations. In t-Government integration projects, it is essential to coordinate stakeholders by identifying which stakeholders are key at each step and ranking their distinct levels of expertise and experience. All interviewers shared this assertion. One IT development manager stated, "[i]nvolving and organizing stakeholders in t-Government projects is a significant effort, and we should view this problem as necessary for success."
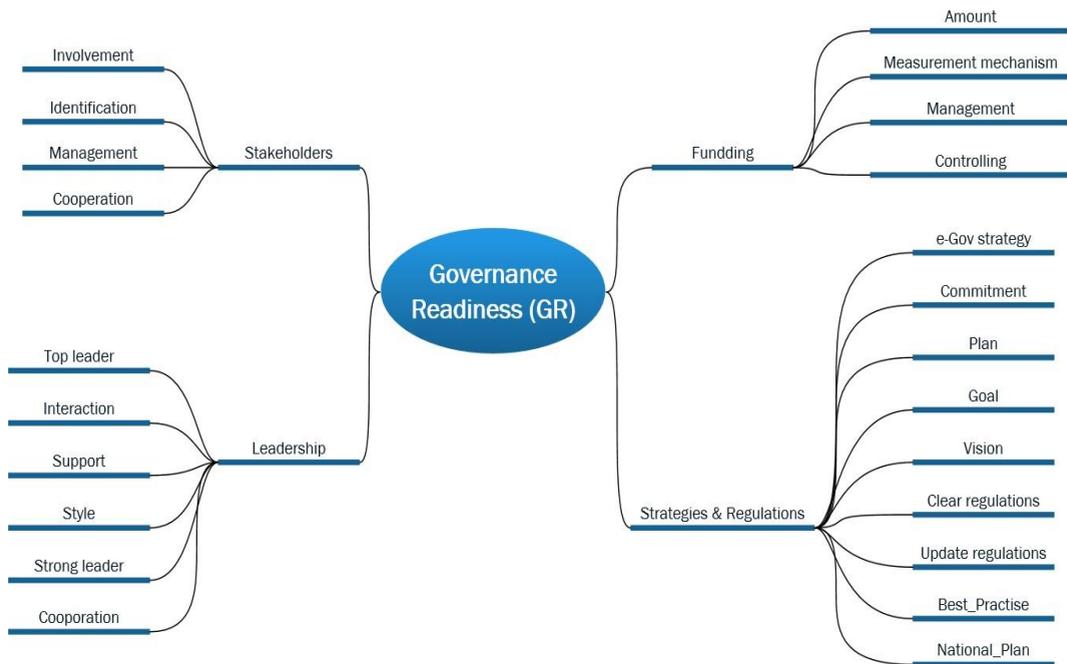

Figure 4. Thematic Network of Governance Readiness

2.9 Citizen Centricity Theme

Citizen centricity (CC) is comprised of four fundamental subthemes: "(a) citizen-centric focus, (b) citizen-centric expectations, (c) citizen-centric fulfilment, and (d) citizen-centric understandings. All respondents believed that a citizen-centric approach to interoperability and t-Government is essential and that official agencies should build e-Government based on the demands of their residents rather than on government requirements alone. The following quotes emphasize the interviewees' perspectives: "I feel government institutions must serve not only the interests of the government but also the needs of citizens; this places a great deal of burden on government agencies. Government agencies in developed nations are charged with servicing their citizens. Therefore, our organizations will have to exert considerable effort to change the focus from state mandates to what the people genuinely require." As a result of the

implementation of t-Government, citizens should be able to get information and conduct transactions quickly. "e-Government is about interacting with citizens," stated one IT manager. Because the primary objective of government-to-government integration is to benefit citizens, e-Government programs may fail if we do not treat this issue seriously. Therefore, the success and end-user satisfaction attained through citizen-centric services must be monitored frequently. Government organizations should consider the recommendations of citizens. "Government organizations must integrate to provide better services to their citizens, but they must also measure the quality of their services to satisfy their constituents," stated one of the chief information officers of the ministries.

A significant proportion of respondents recognized that citizen satisfaction is not measured. "I do not believe that any government organization measures citizen satisfaction; perhaps they do not have the time to do so," said one interviewee; "[t]he level of satisfaction of citizens must be continuously evaluated, and government organizations should respond promptly to citizen suggestions and complaints," said another. According to certain IT managers, several agencies are still unaware of the citizen-centric concept. Several IT administrators stated, "[t]he notion of being citizen-centric has not been obvious until now." Numerous organizations prioritize their job over the needs of their constituents. As a result, the slogans of all government agencies should be revised to represent their commitment to serving their constituents; "some government agencies did not adopt e-Government services to deliver e-Services that meet citizens' demands." An analysis of their remarks reveals that most respondents considered that citizen-centricity significantly impacted interoperability for t-Government adoption.

Figure 5. Thematic Network of Citizen Centricity

2.10 e-Government Program (Yesser) Theme

Six core subjects comprise the e-Government Program: Yesser integration, GSN, GSB, SSO, NEA, and the 'Saudi' website (Yesser). According to all responders, the e-Government program was intended to increase the efficiency of government agencies. It should assist in methodology, data, standards, and expertise, making it more straightforward for various parties to collaborate and implement t-Government." One member of the e-Government team stated, "The e-Government Program (Yesser) was established to facilitate and allow government entities to integrate to provide e-Services to their citizens." According to this thesis, the Yesser program facilitates government

agency integration via its connection to the GSB, GSN, Saudi portal, SSO compatibility, and NEA application. "It should serve as a link between all government agencies, and Yesser is designed to facilitate their integration," stated one IT manager.

The GSN connects government institutions to the e-Government data center while complying with the strictest international technological and security standards. The GSB is an intermediate platform comprised of unified software and hardware components designed to facilitate data communication between government agencies. The following quotes emphasize the interviewees' perspectives: "The GSN was implemented to maintain constant connectivity amongst all Saudi institutions. Furthermore, all participating organizations have gotten free hardware (servers and routers)"; "[m]any of the technical difficulties may be rectified utilizing the present integration infrastructure (GSB), and no integration is permitted without using the GSN/GSB. GSN/GSB is required for any data exchange"; "GSN and GSB are essential to the integrity of a large number of other organization systems."

The NEA, SSO, and Saudi portals are major integration support components. The NEA is a framework that facilitates the delivery of uniform and integrated services. SSO is considered the primary need for executing e-Government transactions. Reviewing the respondents' replies revealed that most of them agreed that the e-Government project (Yesser) had a substantial influence on interoperability for t-Government deployment.

Figure 6. Thematic Network of e-Government Program (Yesser)

3. Other Inter-Relationships

Citizen centricity and the e-Government Program (Yesser), e-Government Program (Yesser) and technology compatibility, e-Government Program (Yesser) and organizational compatibility, and e-Government Program (Yesser) and governance readiness are further links revealed in this article (Yesser). The subsequent sections explain these connections.

3.1 Citizen Centricity and the e-Government Program (Yesser)

Yesser was designed to give inhabitants enhanced, more convenient, and seamlessly integrated e-Government services. This is the most economical means of providing government services. This highlights a citizen-centric strategy's immense impact on an e-Government program. According to a member of the e-Government team, social

media and the internet are increasingly integral to the lives of citizens. To increase the productivity and efficiency of the public sector, achieve success with e-Government, and provide enhanced and more accessible services, people must be viewed as the primary focus.

Several interviewees agreed with this assertion. One IT manager, for instance, noted, "Yesser began to push the citizen-centric approach, and the Saudi Portal is one of the efforts that illustrate this." The Saudi portal provides seamless and unified e-Services from a centralized location. Users can access a single service instead of contacting numerous government departments.

3.2 The e-Government Program (Yesser) and Technological Compatibility

Yesser has led several technological initiatives to promote e-Government in the nation and facilitate cooperation across state institutions. In addition, Yesser was designed to aid businesses in establishing a dependable infrastructure to encourage e-Government deployment and data exchange across government agencies by enhancing back-office performance. Yesser was also developed to assist government institutions in standardizing internal work practices by offering e-Government system specifications. Not every interviewee was pleased with Yesser's achievements.

Some businesses have not yet realized the benefits of these technological developments. Numerous responders were unhappy with the lack of cooperation between Yesser and other government agencies. "I can view and hear about various technological projects via Yesser and their website," claimed one IT director. In contrast, our group and Yesser do not collaborate. Yesser wants us to seek assistance from them. Another IT development manager highlighted that Yesser lacks the authority to compel government entities to carry out his directives: Yesser has supported several beneficial technical initiatives to aid government agencies in integrating, but it cannot compel these institutions to do so. Yesser should be able to pursue and compel government agencies to adopt e-government.

Therefore, it is plausible to assume that Yesser lacks the authority to compel government entities to adopt its technological breakthroughs. One commenter suggested that Yesser be granted additional authority and the capacity to compel government entities to follow his initiatives: "It is apparent that there is no coordination amongst government agencies. If granted further authority, I believe Yesser could apply this rule."

Reviewing the opinions of interviewees reveals that some of them feel Yesser can aid government entities with integration by providing a variety of technological initiatives.

3.3 The e-Government Program (Yesser) and Organizational Compatibility

Yesser was created to increase the efficiency of government entities and ensure that they provide citizens with simple and acceptable e-Government services. According to a

member of the e-Government team, "Yesser is eager to assist and facilitate the transition to e-Government transaction initiatives, so we take human resources into account by establishing a program that enables government employees to utilize and support the transformation to e-Government."

However, some respondents noted that it failed to address organizational issues, such as organizational structures and business process management. In their approach, Yesser has addressed technical problems such as frameworks and standards but not organizational readiness considerations such as business process management and organizational structure, according to one IT manager. According to a second IT manager, the Yesser strategy aims to increase government output and effectiveness. Yesser, on the other hand, should address more than just technological challenges, as it does not deal with organizational matters. When studying the interviewees' comments, it is evident that most of them were disappointed with Yasser's organizational compatibility-related successes.

3.4 The e-Government Program (Yesser) and Governance Readiness

Yesser was tasked with developing and implementing e-Government in Saudi Arabia. The program, in partnership with government entities, developed two action plans. Completed in the First Action Plan, which covers the years 2006 to 2010. The Second Action Plan is effective from 2012 to 2016. To achieve Saudi Arabia's e-Government objective, the Yesser program has established numerous initiatives and products, such as governance structures and norms. According to respondents, however, many businesses do not benefit from these policies, strategies, and structures. The following quotations highlight some of their reactions: "Yesser's mission is to assist government entities in their transition to e-Government, which is a fantastic idea; however, Yesser failed to meet their expectations." "[w]e have never seen Yesser's projects, governance frameworks, or development programs. Consider the leadership development or staff training program.

We could never determine whether our executives or workers received training from Yesser." One member of e-Government stated, "We have developed two strategic action plans based on the successful implementation of many nations to achieve success, but we cannot force government entities to implement them." According to another IT manager, strategic action plans and rules alone will not lead to integration among government institutions. "Organizations must be compelled to comply with these strategies and regulations. Yesser must present all of their services for corporations to utilize them." Reviewing respondents' remarks reveals that a portion of them concur that Yesser has developed several initiatives, policies, action plans, and governance structures to aid state entities with integration. Several, though, were unhappy with Yasser's outcomes. A few groups gained no benefits from their efforts.

4. The Impact of Factors Influencing interoperability for t-Government Implementation

The researcher utilized Miles et al. (1994)'s scale for additional investigation. Each respondent was asked to rate the impact of each element on the interoperability needed for t-Government adoption on a scale of one to three: (1) strong impact (●), (2) medium impact (◉), and (3) low impact (○). The numbers were then computed, and each element was classified as having a high, medium, or low influence, depending on the number assigned. The results are shown in Tables 1 and 2 below, which give an analysis of the variables based on the replies of interviewees.

Table 1. Summary of Impact Factors Influencing Interoperability for t-Government Implementation

Constructs	Factors	Impact Influences			Results
		●	◉	○	
H1: TC	Back-office systems	9	3	0	●
	IT standards	12	0	0	●
	Data requirement	10	2	0	●
	Architecture interoperability	10	1	1	●
H2: OC	Organisational structure	9	3	0	●
	Business processes	12	0	0	●
	IT staff	12	0	0	●
H3: GR	Strategies & regulations	12	0	0	●
	Leadership	12	0	0	●
	Stakeholders	9	3	0	●
	Funding	1	5	6	○
H4: CC		11	1	0	●
H5: e-Government Program (Yesser)		8	2	2	●

Table 2. Summary of the Significant Impacts between Constructs

Constructs	Impact Influences			Results
	●	◉	○	
H6: CC → e-Government Program (Yesser)	9	2	1	●
H7: e-Government Program (Yesser) → TC	7	2	3	●
H8: e-Government Program (Yesser) → OC	4	0	8	○
H9: e-Government Program (Yesser) → GR	3	2	7	○

5.   Relationships Among the Proposed Model Constructs

The qualitative findings revealed that the size of a firm (together with the amount of G2G services it offers) significantly impacts the interoperability required for the deployment of t-Government. Several respondents said that large corporations were more willing to merge with other government entities due to the support of the Yesser initiative. One business development manager, for instance, stated: "It is easier for large firms to integrate and collaborate with other governments. Yesser exclusively assists large corporations in interacting with GSB and GSN, ignoring small enterprises. Consequently, there is a huge integration gap between small and large companies." This moderator is believed to be necessary for IT adoption in the literature. Numerous studies have found that an organization's size is a crucial determinant of IT adoption and e-Government service provision (Sabani et al., 2019). Norris et al. (2005) discovered that transaction size was positively correlated with adoption for all online transactions.

553 (16%) of all available e-services are G2G." The findings of the interviews indicate that government bodies deliver G2G services in various methods. In particular administrations, more than ten G2G services are offered. Some government entities provide less than ten G2G services, while others show none. Many respondents indicated that organizations that offer more G2G services are more likely to implement the system in question and interface with other agencies. "Organizations such as the Department of the Interior are more likely to deploy t-Government. They receive more assistance than companies that provide a range of G2G services." According to another source, "Yesser prioritized support of government entities based on their importance in delivering G2G services." Yesser will offer additional assistance as the number of G2G services increases.

6.   Revised Conceptual Model

Several modifications have been made to the conceptual model based on the literature review and qualitative data analysis (as described in the preceding sections). To gain a more profound knowledge of the problem, a concise and adaptable conceptual model has been developed to frame and convey the relevant variables and their context. Figure 7 illustrates the revised model. The following issues are addressed by the new design:

According to the conclusions of the interviews, stakeholders are a crucial aspect of intergovernmental cooperation and, as a result, t-Government implementation. To develop interoperability between government institutions and implement t-Government successfully, stakeholders must be included, recognized, managed, and collaborate. In Saudi Arabia, there was little consensus among respondents regarding the impact of money on t-Government implementation. To verify that money does not influence these implementation activities, this research objectively examined and assessed monetary factors. According to this study, the conceptual model derived from the literature evaluation highlights numerous hypotheses that reflect existing research gaps. It is

asserted that TC, OC, GR, CC, and e-Government activities positively affect the interoperability of t-Government implementations. Additionally, it has been contended that CC positively affects the e-Government Program (Yesser) and that the e-Government Program (Yesser) positively affects TC. In addition, it was discovered that Yesser did not affect OC or GR. The conceptual model is reflected in Table 3's eleven assertions.

Table 3. The Revised Propositions

| Hypotheses	Descriptions	Hypothesis-testing result
H1	Technological Compatibility factors positively influence the level of interoperability required for t-Government implementation	Supported
H2	Organisational Compatibility factors positively influence the level of interoperability required for t-Government implementation	Supported
H3	Governance Readiness factors positively influence the level of interoperability required for t-Government implementation	Supported
H4	Citizen Centricity positively influences the level of interoperability required for t-Government implementation	Supported
H5	The e-Government program (Yesser) positively influences the level of interoperability required for t-Government implementation	Supported
H6	Citizen Centricity positively influences the e-Government program (Yesser)	Supported
H7	The e-Government program (Yesser) positively influences Technological Compatibility	Supported
H8	The e-Government program (Yesser) positively influences Organisational Compatibility	Not supported
H9	The e-Government program (Yesser) positively influences Governance Readiness	Not supported
H10	Organization size will moderate the relationships among the proposed model constructs	Supported
H11	The number of G2G services will moderate the relationships among the proposed model constructs	Supported
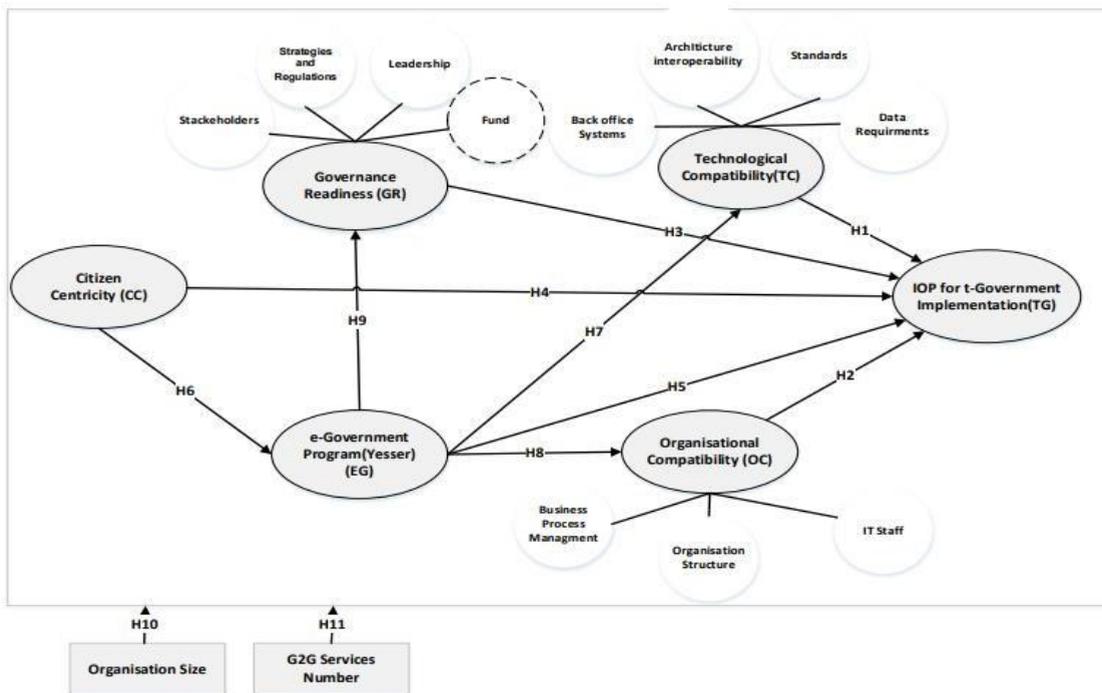
Figure 7. The Revised Conceptual Model

7.   Conclusion

This work explores the components that emerged from the qualitative inquiry. The results of the study were analyzed using qualitative thematic analysis. Technology compatibility, organizational compatibility, governance readiness, a citizen-centric orientation, and the eGovernment program are critical interoperability aspects for the adoption of t-Government, according to the findings (Yesser). In addition, it has been discovered that the software in question significantly impacts technical compatibility but none on the organizational side or even governance readiness. Moreover, it has been demonstrated that citizen-centricity significantly affects the Yesser program. All theories were confirmed except for two (see Figure 7). The qualitative research helped the refinement and improvement of the conceptual model, as well as the formation of hypotheses. The qualitative interviews helped refine the quantitative researchinstrument.

8.   Research Implications

The outcomes of this study provide crucial guidance to decision-makers and public officials in emerging nations and Saudi Arabia in particular. Nonetheless, a variety of variables impede the transition to a transformational administration. It is anticipated that the outcomes of this study will aid decision-makers and government officials in Saudi Arabia in enhancing the program's success. This is because the Saudi government, like

so many others, struggles with such integration. Because this study was conducted exclusively in Saudi Arabia, it may be necessary to conduct additional research to validate the results and evaluate the causes in other geographical contexts. This study should be broadened in future research to examine the implications of organizational and technological issues, among others, on the adoption of t-Government in Saudi Arabia. This is a continuation of the existing research.

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