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The Determinants of Success in the Implementation of Information Technology in Moroccan Companies: Exploratory Case Study

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Abstract

The study, which is being conducted in the context of the widespread use of information technology in Moroccan companies, focuses on examining the success factors of IT implementation. This is a crucial step in maximizing the value of information technology investments. The goal is to address concerns regarding the delay in digital transformation and the role of information technology in establishing a sustainable and irreplaceable competitive advantage. The research methodology utilizes a qualitative approach, specifically a single case study with semi-structured interviews for data collection. The theoretical framework incorporates the resource-based view (RBV) and contingency theories. The key findings of the study emphasize the challenges encountered during information technology implementation, especially concerning the complementarity of organizational and human resources with information technology resources. Based on these challenges, the factors contributing to successful information technology implementation are categorized into three groups: pre-implementation phase, alignment of information technology strategy, and collaboration and coordination among all stakeholders involved in the implementation process.

Keywords: Implementation process; information technology; complementarity of resources; IT strategy; cooperation and coordination

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1. Introduction

The digitalization movement has had a significant impact on Moroccan companies, leading to the need for accelerated digital transformations. Achieving these transformations requires the mobilization of multiple resources and personnel to successfully digitize all business and strategic processes. Consequently, professionals and researchers have been seeking to identify the variables that contribute to successful digital transformations in the Moroccan business environment.

Of all the stages involved in the digital transformation of companies, IT implementation stands out as a crucial step for success, as highlighted in existing literature (Sartal & Vázquez, 2017). According to Randolph et al. (1990), IT implementation refers to the organizational effort of introducing appropriate information technologies to a user community. This exploratory case study aims to address the questions and concerns of professionals and management science and information systems researchers by identifying the key factors involved in the digital transformation process in Moroccan companies. The objectives of this study are to identify the challenges faced during the IT implementation process in Morocco and to explore the determinants of successful IT implementation in the Moroccan context.

By addressing these research questions, this study aims to contribute to the existing literature by focusing on the specificities of the Moroccan context, which has been underrepresented in previous research. Additionally, this study aims to shed light on the challenges hindering the digital transformation of Moroccan companies and their ability to meet the requirements imposed by the digitalization movement in the economic and social environment. To achieve these objectives, a qualitative research approach using the single case study method (Yin, 2018) will be adopted, with data collected through semi-structured interviews and analyzed using NVIVO software.

This article begins with a conceptual analysis to define the main components of our research question and to identify the key characteristics of IT implementation. Subsequently, we will present the theories and explanatory models that shed light on the origins of the selected theoretical variables. The resource-based view (RBV) (Barney, 2000) and the theory of contingency (Reinking, 2012) will be utilized to identify the complementary organizational and human resources required for the IT implementation process and to examine the impact of contingency factors (e.g., structure, strategy, size) on IT implementation. Finally, we will present and discuss the results achieved in this study.

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2. Conceptual Analysis: Literature Review

The debate about IT has been focused, in the literature of management sciences and information systems, on numerous dimensions including that of their implementation is, often, considered as a major determinant of their performance (Kamar et al., 2022). For that, we will present, in the following, a conceptual analysis in order to identify their different associated visions, their typologies, the steps of the process of their implementations and their different uses.

The Various Perspectives of IT

The literature extensively analyzes five different perspectives on IT. These include the tool perspective, the procurement perspective, the holistic perspective, the technological perspective, and the nominal perspective. The tool perspective, which originated from Kling's work in 2007, views IT as a collection of communication tools with specific characteristics (George et al., 1990). The procurement perspective, on the other hand, conceptualizes IT based on how users perceive it, its level of implementation within the organization, and the monetary value attributed to it as an investment in companies (Ajjan et al., 2016; Kohli & Grover, 2008).

The overall vision perceives IT as a comprehensive package that includes all necessary components for socio-economic use, such as training, qualified personnel, and support services (Kling, 2007). However, IT vision followers limit their focus to the technical capabilities of IT, such as information handling, storage, recovery, and transmission (Melville et al., 2004). On the other hand, the nominal vision of IT completely disregards the role of technologies, treating it as a mere empty concept mentioned in phenomena like IT governance mechanisms and information system strategy or planning (Wanda et al., 2001). These five conceptions related to IT are presented by Orlikowski and Lacono (2001) in the following manner:

Tool vision: IT is seen as a tool that aims to generate value, whether it be through improved productivity, cost reduction, competitive advantage, or better relations with suppliers. The intention behind IT use is often unclear.

Procuration vision: IT is implemented through various agents, similar to actions labeled in dollars. There are numerous potential agents, but only a few are actually adopted. The adoption of multiple agents allows for triangulation and enhances accumulated knowledge.

Overall vision: This involves evaluating the value generation of IT in rich contexts within the field of IT science, often through case studies or field studies focused on organizational structure and co-innovation.

Nominal vision: IT is not effectively conceptualized, appearing in name only without significant impact. The focus on abstraction leads to precise modelling at the expense of generality.

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The computational vision, which pertains to searching for value specifically for IT companies, was not considered by Orlikowski and Lacono (2001).

Typology of IT

IT encompasses a wide range of software platforms and databases that provide various information and communication products. Its main objective is to ensure coordination between information systems and internal and external users (Bhatt & Grover, 2005; Stoel & Muhanna, 2009). In new organizations, IT plays a significant role and is often considered equivalent to the concept of an information system (IS). One popular classification of IT, as presented by Rallet et al. (1997) is based on organizational properties rather than technical criteria. This typology includes the following categories:

- **Telecommunications tools**: These tools are used for direct interindividual communication. They facilitate communication in a natural language such as phone calls, fax, and email.
- **IT tools**: These tools serve localized functions, such as collecting, processing, and storing information. The operations performed with these tools remain within the boundaries of the observed organizational component, such as a workstation, service, or firm.
- **Telematic tools**: These tools connect IT systems either with each other (e.g., exchanging IT documents) or with terminals (e.g., accessing databases). Telematic tools are distinct from IT tools as they directly contribute to the coordination mechanisms between organizational components. They help automate procedures and differ from telecommunications tools, as the latter do not involve formalization of communication content or coordination procedures.

The implementation process of IT

The implementation process of IT, as described by the famous model of Kwon and Zmud (1987), is based on the Lewin change model (1952) (to manage the changes due to readjustments and reorganizations of companies often confronted by resistance from employees, the German-American psychologist Kurt Lewin developed a model in 1952 for describing the change in three steps: Unfreeze-Change-Refreeze). The process consists of five stages:

Initiation: This stage starts with the emergence of organizational needs for technological innovation. The implementation of IT begins with a diagnosis of the potential gains and latent losses that may come with the introduction of the technology. The proposed IT solutions should correspond with the tasks for which they are being introduced.

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Adoption: The adoption stage involves a negotiation process for the integration of IT solutions into the organization. It requires an investment decision in the IT artefact.

Adaptation: Once IT applications are adopted and installed, the organization should aim for harmonization between the new technology and existing organizational procedures. This can be achieved through proper training and information dissemination to potential users.

Acceptance: The acceptance stage is crucial in the implementation process, as it reflects the success of IT introduction through widespread use in the organizational working environment.

Routinization: In this final stage, the implementation of IT solutions becomes a normal part of users' perception and they become familiar with the introduced applications.

Nature of Use of IT

Information technologies are designed to meet the various needs of real and potential users, particularly with the advent of the Internet. In addition to the internal and external, as well as operational and strategic uses of IT, Aral and Weill (2007) have identified four specific types of IT use:

Infrastructure use: In this case, IT serves as the foundation for shared IT services, providing a flexible base for future commercial initiatives.

Transactional use: IT enables process automation and contributes to cost reduction.

Information use: IT provides information for management, accounting, reporting, decision-making, planning, control, analysis, and data collection.

Strategic use: IT facilitates entry into a new market by offering new services or activating new products.

3. Theoretical Framework

Through an examination of the literature in management sciences, various theories and explanatory models have been identified as the theoretical framework for different issues related to IT implementation. Among these theories, two fundamental ones are the resources-based view (RBV) (Barney, 2000) and the theory of contingency (Reinking, 2012).

Complementarity of Resources and IT Implementation

The resource-based view (RBV) is widely used in management sciences, as explored by Barney (2000), Conner (1991), and Schulze (1992). This theory suggests that companies compete based on unique, valuable, rare, difficult to imitate, and non-substitutable resources. IT is considered one of the resources that companies seek to acquire and develop in order to improve

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performance in a digitally-driven environment (Mao et al., 2016; Sedera et al., 2016). Various classifications of IT resources exist, such as Bharadwaj's (2000) classification of IT infrastructure, human IT resources, and intangible assets activated by IT, as well as Ross et al.'s (1998) classification of human assets, technological assets, and relational assets that contribute to value creation (Wade & Hulland, 2004). Other categories of IT resources identified in the literature include:

Resources for managing external relationships, such as stakeholder management, contract monitoring, and coordination of buyers and suppliers.

IT resources for market reactivity, including agility, fast delivery, and organizational flexibility.

IT resources for internal relationships (IS/company partnership), such as aligned IT planning, IT/business synergy, and integration of IT into the overall strategy.

IT resources for IS planning and change management, encompassing problem-solving orientation, IT change management, and architecture planning.

IS infrastructure, including physical and flexible infrastructure and technological assets.

Technical competencies in IS, such as knowledge and technical assets in IT science.

IS development based on technical innovation and experimentation with new technologies.

Profitable operations, including support for operations, IT operations, and operations focused on improving product quality.

The concept of IT resources encompasses IT capacities as well. Willcocks et al., (2006) distinguish nine categories, which are business and IT vision (integration between IT and other facets of the company), the design of IT architectures (competencies in IT development), the provision of IT services (implementation, relationships with suppliers and customers), and a set of key features including IT leadership and informed procurement. Bharadwaj et al., (2013) have identified six dimensions of companies' IT capacity: IT/Enterprise partnership, external IT links, reflection on business IT strategies, IT business integration, IT management, and IT infrastructure (Wade & Hulland, 2004).

The idea of complementarity surrounding IT resources has been recognized as a mediating variable in various studies and by proponents of the resources-based view. Alavi and Leidner (2001) ; Zhu (2004) believe that complementarity surrounding IT resources is crucial as it implies a more intricate role of IT within the company. These resources play an interdependent role with other resources of the company in order to develop and sustain a competitive advantage (Bhatt & Grover, 2005). The conclusion

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is that IT can only create competitive value if they are utilized to leverage existing business and human resources (Wasko et al., 2011).

Based on the above, we consider the IT solutions acquired or developed by companies as an explanatory variable for the implementation of IT. This variable encompasses the IT infrastructure described by Wade and Hulland (2004). It includes the nature of IT, the brand of the adopted solution, and the mode of adoption. Additionally, we include human resources as complementary human-informatics resources, which are part of the IT resource for IS planning and change management, as proposed by Wade and Hulland (2004). This competence encompasses both the business and IT skills of managers and employees who use IT.

The Impact of Contextual Factors: Contingency Theory

Contingency theory is a theory that seeks to understand the relationships within and between organizational subsystems, as well as between the organization as a whole and its environments, and how organizations function under different conditions. The most commonly recognized contingency factors, as described in the literature, include strategy, structure, size, environment, and technology (Donaldson, 2006). The use of contingency theory in the field of information and management systems has seen significant development in recent decades. The theory posits that contingency factors can influence the performance of information systems. Weill and Olson (1989) suggest a connection between the performance of the information system and that of the organization.

In the management of information systems, the contingency variables typically identified in the literature include strategy, structure, size, environment, technology, task, and individual characteristics. In this study, three contingency factors – structure, size, and strategy – will be considered as they impact the IT implementation process as a dependent variable. Structure has been discussed as a contingency variable in the works of Davis (1986) ; Ein-Dor (1978); Weill and Olson,(1989). Additionally, (Weill & Olson, 1989) analyzed the alignment between organizational structure and the structure of the "IT services" function (ISM: Information Systems Management). Size has been consistently identified in empirical studies as a moderating contingency variable. Klatzky (1970) argues that size is the cause of the decentralized structures that accompany automation. The strategy is also considered a contingency variable by Vitale et al., (1986), who examined the incorporation of information assets and opportunities into the company's strategic planning process.

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4. Methodology And Sample

In this qualitative study, we utilized a research methodology based on the single case study approach (Yin, 2018). Also known as a critical case study, this method allows for the examination of one or more analysis unit. Researchers often choose this approach when the case represents a critical test of existing theory, when it involves a rare or unique event, or when it aligns with specific research goals (Verner & Abdullah, 2012).

Among the various data collection techniques offered by the case study method, we opted for semi-structured interviews. To facilitate this, we developed an interview guide based on the findings from the theoretical framework developed earlier. The questions in the interview guide can be summarized into three categories:

Question 1: What are the factors that influence the pre-implementation of IT in Moroccan companies?

Question 2: What challenges are encountered throughout the IT implementation process?

Question 3: What factors contribute to the success of IT implementation in Moroccan companies?

These three categories of questions included closed questions aimed at examining the variables identified in the theoretical framework developed above, and open questions through which we sought to explore the variables characterizing the Moroccan context. The interviews, which lasted between 1h30 and 2h, were conducted face-to-face and, where necessary, by telephone.

The selected company is internationally renowned and a leader in the field of mining. Based on the criteria recommended by the case study methodology (Yin, 2018), in particular the criteria of ease of access and availability of managers, as well as saturation with regard to the number of people to be interviewed (Patton, 2005), we selected a sample of 15 managers different functions. The table below illustrates the main characteristics of the sample.

Table 1. Characteristics of the interviewees

Persons interviewed	**Degree**	**Age**
IT Manager	Engineer	29 years
Head of IS department	Engineer	46 years
Management Controller	Master (ISCAE)	42 years
Preparation Manager	Engineer	29 years
Load and transport manager	Specialized technician	40 years
Social Affairs Managers	Master (ISCAE)	28 years
IT Manager	Engineer	29 years
Technical control manager	Manager	47 years
Mechanical Installations Manager	Engineer	34 years
Electrical Maintenance Manager	Specialized technician	52 years
Maintenance Manager	Engineer	29 years
Maintenance manager	Engineer	46 years

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Purchasing Manager	Master	43 years
Sales Manager	Master	55 years
IT Manager	Engineer	57 years

Source: Author's presentation

The interviews with the above-mentioned managers covered all the questions in the interview guide, with the exception of certain technical questions which were addressed solely to the manager of the Information Systems Department (ISD). In other words, these are questions of a technical nature that fall within the sole remit of the ISD managers.

The company being studied has a modern IT infrastructure that incorporates a range of integrated and specialized IT solutions. Additionally, the company's administrative team includes managers from prestigious Moroccan and international educational institutions. The table below provides an overview of the types of solutions available to the company and the corresponding features associated with each type.

Table 2. Main IT solutions used in the company

Related features	**Solution type or category**
Industrial management (industrial IS)	These include simple managers, OPM (production management), GMAO (IT-aided maintenance management), geological databases, modelling and data analysis tools, etc. …
Competencies development	Training databases and annual assessment and appraisal platform).
Administrative management	MYOCP, Gestor (day-to-day management of absences, authorization...)
Project management	E-Supply
Maintenance	GMAO sur ORACLE R12
IT maintenance	Bureau de service
Production monitoring	OPM Extraction
Administration and secretariat	MS Office

Source: Author's presentation

The data collected will then be analysed and processed using NVIVO, the most popular data processing software for qualitative studies. In addition to verbatim, the NVIVO software offers us multiple tools and functionalities for data presentation, including the correlation matrix and the node cluster. The verbatim will be used to present the answers to the questions addressed to the only managers in the information systems department (ISD), while the correlation matrix and the cluster of nodes are used to present the results of the questions addressed to all the managers. The cluster of nodes will be presented together with Person's linear correlation coefficient in order to specify the degree of correlation between the variables likely to emerge during the empirical investigation.

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5. Results

The results obtained confirmed that there is a complementary relationship between IT resources and human resources during the implementation process, as well as the impact of contextual factors. In other words, there are multiple organizational and managerial challenges that need to be explored. This section will first identify the pre-implementation factors of IT based on interviews with individuals, specifically the managers of the information systems department. Following that, the difficulties observed during the IT implementation will be presented, both from the perspective of the information systems department and other managers. Lastly, the variables that contribute to a successful IT implementation in Moroccan companies will be identified.

Pre-implementation of IT in Moroccan Companies

The success of a company's digital transformation largely depends on the pre-implementation phase. This is a phase where all the necessary studies are conducted before adopting IT solutions, including studying IT needs, assessing the available material and human capacities and competencies, evaluating the internal control system, and studying the IT market to select the appropriate solutions and developers to contact.

IT Needs Study

Determining the needs requires the involvement of all staff members, particularly the managers. Managers are asked to communicate their needs to the department responsible for addressing them, providing details about their department or service's size, stakeholders involved, nature of operations, and anticipated changes. In the company being studied, the determination of needs is described by IT managers answering the following question:

Question: "How do you determine the IT needs and what factors determine these needs?"

Answer: "Our department determines the IT needs based on requests from business managers and evaluating the offerings in the IT market to update our IT capabilities. Several factors influence this assessment, including the budget provided by general management, the size of our business, and the expertise of the developer in question."

As a result, it is evident that this phase holds great significance for all stakeholders involved in the IT implementation process. It serves as the foundation for the subsequent stages and marks the beginning of the deployment of IT strategies in alignment with the overall company strategy.

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Evaluation of the Internal Control System

Another important but often overlooked phase in IT implementation is the evaluation of the internal control system. Based on interviews conducted, it is apparent that the internal control system requires evaluation in order to align with the prevailing quality and management standards (Dewett & Jones, 2001). This evaluation enables necessary adjustments to be made, ensuring a well-founded implementation of IT (Wahyoedi et al. 2023). It is worth noting that in our study, we observed the tendency to marginalize this evaluation phase of the internal control system. Managers' statements revealed the challenges encountered during this stage, such as difficulties related to the company's size and the rigid structure. The company's size poses difficulties in modifying the internal control mechanism, and the rigid structure means any modification will affect the established strategies. Consequently, we posed the following question to the DIS managers regarding this phase:

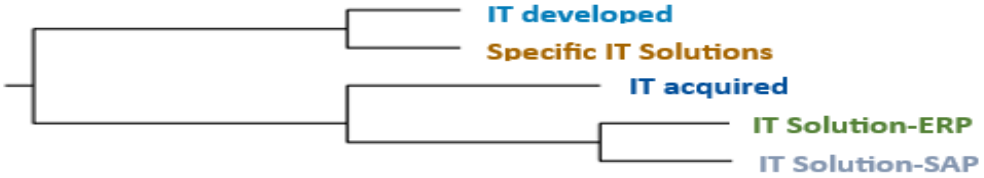
Question: "Do you conduct an evaluation of procedures and processes before implementing IT? If so, how do you carry out this operation?"

Answer: "Conducting an evaluation of procedures and processes is a crucial step before implementing any IT system. This evaluation is essential to establish new information flows using IT. However, this operation requires significant resources, both human and material. As a result, the evaluation stage is only incorporated when there is a complete replacement of the initially adopted information system. In other words, we evaluate internal control devices when implementing a new solution that includes the majority of business processes. On the other hand, when implementing a solution that is limited to a certain number of services or departments, this stage is marginalized."

Choice of IT to Adopt

The choice of IT to be adopted depends on several variables, including the type, brand, quality of the developer, and cost. These variables guide the decision-making process for implementing IT solutions whether they are acquired from the IT market or developed internally. The examination of variables that influence the chosen company's IT solution choices has revealed the following correlations:

Cluster no. 1–Correlation of IT choice with type and brand



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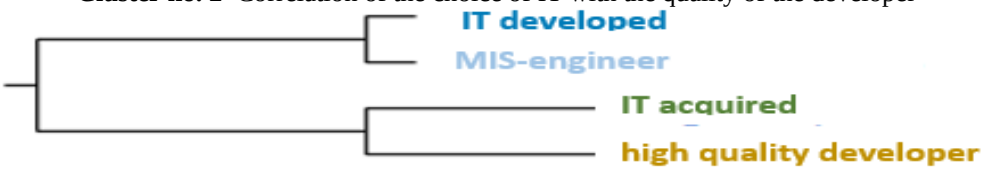
Based on the analysis, we have observed a strong correlation (0.631234) between the type and brand of IT solutions that the company acquires. This is primarily due to the company's IT strategy, which focuses on obtaining integrated ERP solutions. The preferred brand in the IT market, according to interviews with managers, is SAP (Monk & Wagner, 2013). On the other hand, the company only invests in developing specific solutions because of its large size and the extensive time required for developing integrated ERP solutions.

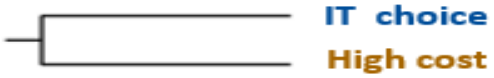
Cluster no. 2–Correlation of the choice of IT with the quality of the developer



Source: Author's presentation

The quality of the developer is a crucial factor that IT managers take into consideration. This is evident in the correlation between IT acquisition and the search for high-quality developers (0.658329). This relationship is reinforced by the connection between the brand of IT solutions and the quality of the developer.

Cluster no. 3–Correlation of the choice of IT with the cost



Source: Author's presentation

The cost variable remains highly correlated with the choice of IT, as widely discussed in the literature. In the selected company, there is an average correlation (0.390451) between IT choice and cost. This can be attributed to strategic guidelines that prioritize the cost/quality ratio when making IT decisions.

Monitoring IT Use

After implementing the chosen IT solutions, the process does not end there. It extends to the use of the adopted IT solutions. The objective of this phase is to evaluate the effectiveness of the IT solutions by ensuring their efficiency. In this context, the service will take certain actions during this phase to address the following question:

Question: "After implementing IT solutions, what actions do you take to monitor and control the functionality and efficiency of these solutions?"

Answer: "The monitoring phase is one of the most critical phases in the IT implementation process. During this phase, we engage all service staff

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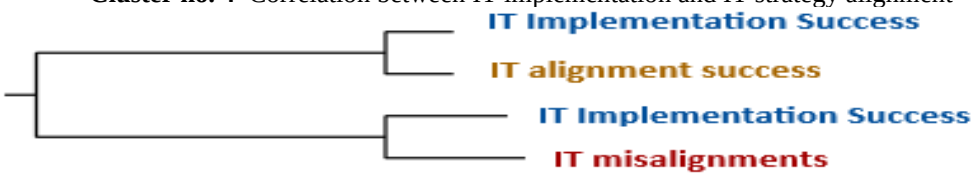
to intervene and collaborate with all relevant services and units. This includes organizing training sessions on the use of new IT solutions, as well as addressing any user problems that arise."

From the above, it is evident that the steps mentioned align closely with those presented by Kwon and Zmud (1987) in their IT implementation model. The pre-implementation phase corresponds to the initiation phase, and the adoption and adaptation phase of Kwon and Zmud (1987) align with the identification of needs and the selection of IT solutions. Finally, the acceptance and routinization phase of the Kwon and Zmud model (1987) corresponds to the monitoring of IT use.

The Challenges of IT Implementation

The implementation process of IT in Moroccan companies faces various difficulties that often impact the objectives of the IT strategy and the digital transformation of these businesses. The obtained results allowed us to explore the challenges that arise in terms of the IT strategies adopted by the company, as well as the cooperation of users. According to statements made by managers, the alignment of IT strategies is often achieved by excluding operational managers and relying solely on top-down decisions. This situation leads to a lack of alignment between business needs and the solutions imposed by top management. The following diagram presents a strong correlation (0.718113) between IT implementation and the defects in IT strategy alignment:

Cluster no. 4–Correlation between IT implementation and IT strategy alignment



Source: Author's presentation

These results highlight the importance of aligning IT strategies for the success of the IT implementation process. The main defects reported by the interviewed managers are presented in the following correlation matrix:

Table no. 3–IT strategy alignment defects

Defects	**Number of interviewes**	**%**
Lack of alignment with business needs	10	67%
Imposition of certain IT solutions (top-down)	13	87%
Lack of monitoring of changes in requirements over time	11	73%

Source: Author's presentation

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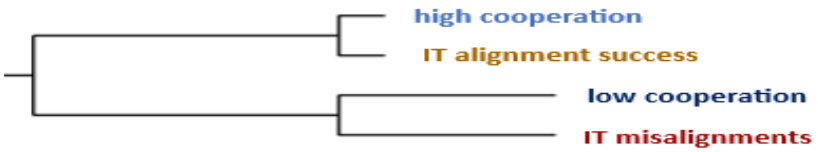
In regards to the challenges of IT implementation, we have observed a lack of cooperation from IT users, particularly those involved in aligning IT strategies. This lack of cooperation hinders the implementation process and diminishes the value of IT investments. This situation often results in the presence of implemented but unused solutions, as well as partially utilized solutions.

Our analysis of the relationship between IT user cooperation and IT implementation has yielded the following findings:

Cluster no. 5–Correlation between IT strategy alignment and user cooperation



Source: Author's presentation

This finding emphasizes the importance of cooperation among all participants in the IT implementation process. Cooperation can take various forms and greatly contributes to the success of the implementation process. This includes providing information services related to IT solution implementation, understanding their needs, the IT capabilities of their teams, and their feedback on IS service choices.

Determinants of IT Implementation in Moroccan Companies

Based on the above findings and the statements of our sample managers, we can conclude that IT implementation is dependent on three variables: pre-implementation, IT strategy alignment, and user involvement (cooperation). In this context, we have identified the determinants of successful implementation based on the aforementioned results and manager declarations. Please refer to Table 4 for the determinants of IT implementation success:

Table no. 4–IT implementation success factors

Elements of the implementation process	**Determinants**
Pre-implementation	IT quality; Assessment of the internal control system.
IT strategy alignment	Adequacy with business needs; Tracking evolution of the needs during the implementation process; Translating IT strategies through awareness-raising and training.
Intervener cooperation	Acceptance of use; Participation in the implementation process; IT competencies.

Source: Author's presentation

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Based on the results obtained, we can identify the main determinants of successful IT implementation. These include pre-implementation components, alignment of the IT strategy, and variables explaining stakeholder cooperation in the implementation process. These determinants are present throughout the implementation process and complement each other, ensuring the success of IT solution implementation. Therefore, we can consider the complementarity between these determinants as a mediating variable between the resources available to Moroccan companies (independent variables) and IT implementation (dependent variable).

6. Discussion

The results we obtained revealed the numerous challenges that impact the implementation of IT in Moroccan companies, posing obstacles to their successful digital transformation. This situation raises concerns about the ability of Moroccan companies to derive value from their investments in IT and their capacity to adapt to digitalization requirements. According to proponents of resource theory, IT can provide a lasting and irreplaceable competitive advantage when used in conjunction with other complementary organizational and human resources (Barney, 2000).

The presence of resource complementarity is a crucial factor during the IT implementation process, serving as a determinant of success. Without it, companies face significant challenges. Complementarity is sought throughout all stages of the IT implementation process. Based on the aforementioned results and interviews with managers, we will now present the characteristics of complementarity between IT and other organizational and human resources mobilized during the implementation of IT, as follows:

During the pre-implementation phase of IT, we observed that companies primarily mobilize human resources. These include service staff, as well as staff from other departments and functions. The complementarity between these two categories of stakeholders is evident in the study of needs and the evaluation of the internal control system. In this case, complementarity is achieved through cooperation and the exchange of information between the two categories involved.

During the phase of selecting IT solutions, we found that companies mobilize financial resources, in addition to the human resources from the IT department, when acquiring IT solutions. This is done through aligning IT choices with contextual factors such as business size, structure, and strategy (Reinking, 2012). The success of this choice depends on the complementarity between these two categories of resources, following a rational decision-making process that considers the price/quality ratio. In terms of developing IT solutions within the IS service, complementarity is achieved through cooperation between IS service personnel and future users, as well as through

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the harmonization of organizational resources with the objectives of the solutions being developed.

Finally, the critical phase in the implementation of IT solutions is the beginning of their actual use, which often presents various complaints and anomalies. This phase strongly calls for complementarity, particularly through cooperation and coordination between users and the IS service. Communication and information exchange are essential to align the IT strategy with the operational objectives of the company.

From the above, it is evident that complementarity, both between IT resources and between IT human resources and other human resources, serves as a mediating variable in the success of IT implementation in Moroccan companies. This applies to both acquired IT solutions and internally developed ones.

Conclusion

The digital transformation of Moroccan companies is no longer a choice; it is an obligation imposed by the digitalization movements in their economic and social environment. In order to support this transition, Moroccan companies are seeking IT solutions that can integrate with their structures to meet digitalization requirements. The literature in information systems management has been providing theoretical guidance for professionals to succeed in the digital transformation of their entities. However, there is a limited number of works in this area, which motivated our study to explore the determinants of successful implementation of IT investments for Moroccan companies.

To carry out this study, we conducted empirical research (in a Moroccan company with a highly developed IT structure in the region) based on the single case study method. The sample consisted of 15 managers from different functions within the company. The main results enabled us to identify, on the one hand, a mediating variable between the variables explaining the success of IT implementation, namely the complementarity between all the resources mobilized by the company throughout the implementation process, and on the other hand, three categories of determinants of successful IT implementation in Moroccan companies.

The first category covers the success factors for the pre-implementation phase of these technologies. This is a decisive phase in the implementation process requiring the determination of needs and the choice of IT solutions to be adopted based on coordination between the managers of the Information Systems Department (ISD) and the managers of other functions, as well as an assessment of the internal control system in order to adapt it to the requirements of digitalization. The second category covers the factors needed to ensure that the IT strategy is properly aligned with the

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company's strategy, by matching IT choices with business needs and monitoring changes in these needs throughout the implementation process. The third category, which includes the explanatory variables of the cooperation of all the stakeholders in the IT implementation process, is an essential condition for guaranteeing the success of the IT implementation process through the involvement and upgrading of the IT competences of all the stakeholders in this.

Despite the limitations of this study, such as difficulties in sample access and availability of interviewees, these results provide clarity to professionals and managers regarding the factors necessary for successful digital transformation, particularly during the implementation phase. This study also contributes to the literature on information systems management and management science by studying the specificities of the Moroccan context. Furthermore, it opens up opportunities for future research, including studying other categories of companies like small and medium enterprises (SMEs) or conducting multiple case studies instead of a singular one.

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