

# Informal leaders and their influence within information system organisations in developing countries: A case study in Mexico

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## Abstract

The emergence of informal leaders to supplement the lack of effective formal leadership is common in many workplaces, including information system (IS) organisations. The literature to date has examined informal leadership (including electronic interactions, characteristics and qualities, levels of responsibility and authority, individual and group performance, social interactions and energetic activation) in the organisational change domain. However, the IS literature has yet to define and explain such leadership within IS organisations, particularly in developing countries where often complex and unique sociocultural factors shape such leadership. This paper presents a conceptual framework for identifying and defining informal leaders in IS organisations from a new perspective, considering their characteristics and behaviours, the nature of their leadership, organisational culture and their social context. The framework is tested through a case study of an IS organisation in a developing country (Mexico). The findings confirm the framework's usefulness for identifying the characteristics and behaviours, nature of leadership (opinion, social and technical) and the extent of influence exerted within the organisation. Understanding informal leaders within IS organisations is important because adding their capabilities and levels of influence to formal leaders could boost overall outcomes within IS organisations and beyond.

## Keywords

Informal leaders, IS leadership, leadership, developing countries

## 1. Introduction

Leadership in information system (IS) organisations has played a fundamental role in operational stability, business innovation, enabling business strategies [1] and determining the success of organisations [2]. However, several important challenges can hinder the successful implementation of IS projects, including the project leader's lack of essential leadership skills or sociocultural factors external to the organisation [3]. Thite [4] indicated that although there is no single effective leadership style for all project situations, certain characteristics help leaders enhance their management of projects, such as intellectual stimulation, behavioural charisma, and contingent reward behaviours.

'IS organisations' refers to companies that use information technology and other resources to produce specific products and/or services for internal or external customers [5] and are known for their technical specialisation, commonly based on disruptive technologies to support organisational strategies [6]. A handful of research has emerged over the years in the IS field to understand and explain leadership styles and factors within IS organisations that affect IS governance, successful implementation, and other areas of IS [7]. However, an area that has been little explored is informal leadership in IS organisations. This is particularly important for developing countries where IS maturity levels are still low and leadership is often absent (e.g., chief information officers [CIO]) or very loosely defined and established [8].

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Despite a vast quantity of resources used for developing formal leaders with a wide spectrum of characteristics and skills [9], leadership training does not always equip a person to perform their role effectively. Formal command positions within organisations, such as CIOs, project managers and application development practice leaders, have not generated a sufficient level of influence within their work teams [10]. Consequently, informal leader positions have emerged as key elements in the performance of organisations. For example, charisma is a relevant trait that a leader may or may not possess, and the absence or presence of this trait may be the distinguishing factor that allows an informal leader to emerge [29]. Thus, the present investigation endeavours to identify the characteristics and behaviours that define informal leaders and understand the nature of their leadership in an IS organisation.

This research proposes a conceptual framework based on an analysis of the literature that considers diverse elements such as sociocultural factors, organisational culture, the nature of leadership, and the influence exerted within IS organisations. This conceptual framework provides an epistemological paradigm to address the research problems [11] and combines a series of related concepts to explain or predict a certain event or give a broader understanding of the phenomenon of interest [12].

Theoretically, this study fills the knowledge gap by uncovering the nature of leadership and the extent of influence exerted by informal leaders in IS organisations. The study also has practical implications in identifying, utilising and managing informal leaders within organisations to achieve efficacy, productivity, and greater human resource outcomes. This is likely to have other policy implications, including the formation and development of formal leaders, improvement of working environments and decisions about how to mobilise people.

The paper is structured as follows. Section 2 presents the relevant literature review, considering elements such as the sociocultural context of the study, organisational culture, documented characteristics and behaviours of informal leaders and the nature of leadership, which all contribute to the proposed conceptual framework and research questions. Section 3 describes the method used, and Section 4 describes the findings. Finally, Section 5 provides the discussion and conclusion.

## **2. Literature review**

The scant literature regarding the term ‘informal leaders’ is mostly confined within the organisational change discipline and discusses levels of responsibility and authority, individual and group performance and social and electronic interactions [13–19].

Pielstick [17] devised the idea of the existence of these informal leaders and developed a list of characteristics and behaviours based on five pillars: shared vision, communication, relationships, community and orientation and character. However, because informal leaders operate in a particular context, a review of contextual circumstances is necessary to understand their influence and relevance in a particular organisational context. Accordingly, this literature review explains the sociocultural context for a developing country (Mexico); the organisational culture of an IS organisation; the relevant definitions for leadership concepts, characteristics and behaviours that informal leaders possess; the nature of leadership; and the extent of its influence.

### **2.1. Sociocultural context of the study**

Mexico’s organisational context, culture and people management are deeply ingrained in its history, geographical position and the cultural, economic and political challenges it faces daily. With more than 120 million inhabitants and one of the strongest economies in the region, its culture, politics and daily life are also defined by its relationship with its northern neighbour, the United States of America [20].

According to Rodríguez and Ramírez [20], who studied Mexican organisation culture extensively, the work culture in Mexico has an enormous number of beliefs, myths and introjections that make each organisation a particular and unique subculture. For maintaining Mexican customs in the workplace, it is necessary to distinguish between the employer or manager and the rest of the workers whom these people direct. Rodríguez and Ramírez [20] explained that a good worker in Mexico never leaves the

office before their immediate boss. This behaviour is ambivalent; the worker subjected to the authority and force of the manager internalises the role of authority, and they unconsciously aim to repeat it but simultaneously reject and submit to autocracy. However, when the opportunity arises, this is exercised in the same style, whether it is in the family, as a teacher, in the unions or in the organisation [20].

Mexico is one of the countries that works the most hours a day; however, it is one of the least productive, with the highest levels of work stress worldwide [21]. The International Labour Organization estimated that work-related stress, depression, anxiety and workplace accidents represent losses ranging from 0.5 to 3.5 per cent of a country's gross domestic product; particularly in Mexico, stress among workers produces losses of between USD 5,000 and 40,000 million a year.

In general, Mexican people refuse to assume leadership roles within work teams because they fear being rejected or failing, that they are insufficiently trained or that it represents a greater responsibility [20]. Therefore, informal leaders play a non-accountability role in organisations; because they do not have official authority granted by the company, they do not think they are responsible for the consequences of their actions [20].

Mexico's national culture broadly falls under Hofstede's [22] concept of collectivism, with power distance, uncertainty avoidance seeking, masculinity and femininity characteristics. Balloo [13] explained that power distance in societies significantly affect how leadership is exerted. For example, in countries with low power distance, people prefer egalitarian leadership. Balloo [13] specified that the main difference between public, private and voluntary organisations centres on the degree to which leaders define goals. Conversely, in countries with high power distance, people prefer leaders who are more authoritarian and directive. Each kind of leader is perceived to be more effective according to their context [23].

Further, organisational cultures or subcultures seem to be a key situational factor because they are presented in the environment where the leader demonstrates their level of influence. Organisational culture, in general, constitutes the ways of doing things, attitudes, behaviours and beliefs exhibited in an organisation [13]. However, due to globalisation and increasing interconnectedness, fostering unique organisational cultures has become more complex and diverse. Hence, leaders must often manage different perspectives and employees who do not share the same values [24].

Schein [25] stated that various frameworks of formal leadership styles have been developed and implemented within organisations. However, although some have been successful, many others have been a resounding failure because they have not considered the country's cultural context or the business and the company itself [25].

Previously, soft skills were often considered unimportant because they seemed to have no effects on the results or, at least, were not the focus in a world where technical skills have dominated the areas that are determinant factors in those industries [26]. However, companies like Google have successfully balanced the development of people and effective fulfilment of projects [27]. Thus, they have become highly productive and competitive companies with the best employee satisfaction rates and implementation of improvement strategies, where any employee can create and implement innovative ideas [27].

Likewise, local companies that are deeply rooted in their cultural traditions tend to have complications when they join the globalised world in adapting to global work trends and cultures. For example, there are doubts about whether work-from-home practices generate the same levels of efficiency as the work done at a company's facilities [24]. Nevertheless, work is becoming more collective and technologically dependent as telecommuting and virtual work continues to grow in importance among many industries and organisations [28]. Global communication networks have further promoted new kinds of communities and leadership communication styles inside these organisations.

Additionally, dramatic changes in the current IS organisational context and more horizontal structures with greater flexibility have increased uncertainties regarding leadership [29]. A command-and-control leadership style may not be effective in a company with a collaborative, friendly organisational culture [30]. Thus, the use of virtual teams is growing worldwide and IS organisations are adopting virtual team structures across geographic distances and diverse time zones to accomplish goals [28].

## 2.2. Information systems: formal and informal leadership

Leadership has been well-recognised and heavily studied in IS as an important enabler for the outcome and success of IS implementation [1]. It has been defined as ‘the ability that a person possesses to influence and motivate other individuals within the company to contribute to success and effectiveness’ [31]. Studies have also expressed that leaders must create the conditions for organisational learning; thus, leadership can be understood as a process of interactions between individuals, where one party directs the actions of a group with a common purpose. Therefore, using their power, energy and personal influence, they change the organisational environment and the individuals who interact in the organisation [29].

According to Waheed, Hussin and Jalaldeen [32], IS leadership can be defined as the management behaviour of senior executives in an organisation who are accountable for the information technology infrastructure and applications that enable and drive the business goals of an organisation. Often, they are referred to as CIOs, and they are responsible for managing the common systems and information technology (IT) infrastructure of an organisation [32]. Formal leaders have positions of authority within organisations [33] and can achieve organisational goals [30]; however, in some cases, they demonstrate a ‘need’ for power, using the authority of their role and coercion to accomplish the organisational goals [17].

Conversely, informal leaders often achieve important goals and avoid project failures while acting without any formal recognition or rank within the organisation and influencing people to follow them [34]. They do not have a formal leadership position, authority or hierarchical level granted by the organisation [35] to control the work team; however, they have authentic leadership to exercise power [17]. For example, when unexpected disruptive events occur or issues arise that require immediate attention and a formal leader cannot address the matter, an informal leader can help contain the situation. However, this can also promote redundancy in the command of actions, fostering complexity, ambiguity, a false sense of security and the potential for conflict [36].

Individuals without formal titles or authority serve as advocates for the organisation and heighten their contributions and those of other employees, primarily through influence, relationship-building, knowledge and expertise [29]. They must also become experts at using their influence to shape strategies, establish the basic norms and values of teams, allocate resources, coordinate group efforts and negotiate with outsiders on behalf of the group [37].

Informal networks coexist with formal structures. However, the reduction of face-to-face formal leaders has prompted a new form of informal leadership. Despite a lack of official recognition, this kind of leadership can effectively enhance the productivity of a formal organisation, including an increased influence on people that work remotely [38]. In this scenario, the status of informal leadership allows experienced employees to more effectively facilitate the work of others, especially for those with powerful political skills, networking abilities and interpersonal skills [18].

Charlier et al. [28] analysed the implications, benefits and difficulties of working in virtual teams. They found that in virtual teams with high levels of consensus for identifying leaders, the leaders who emerged as informal leaders received significantly more communication than formal leaders. Further, they concluded that the physical placement (working at the same or different location) of team members and their leaders significantly affects leadership perceptions. Accordingly, informal leaders are likely to emerge in situations where formal leaders are located elsewhere [28].

The existing literature has indicated that a lack of IS leadership is an obstacle to promoting effective IT governance [39, 40]. Further, the roles and responsibilities are often not clearly defined for IS leaders [41], there is a lack of comprehension about IT governance frameworks and concepts [39] and IS leadership have not sufficiently addressed the major risks of the information and communications technology [40].

## 2.3. Characteristics and behaviours of informal leaders

Section 2.3 identifies the possible characteristics and behaviours of informal leaders based on a comprehensive literature review. For this study, ‘characteristics’ includes all the traits and qualities that could define an informal leader, such as their temperament, personality and physical appearance, and

‘behaviours’ includes the behaviours/reactions that informal leaders exercise in relation to their colleagues within the cultural and organisational context in which they operate.

Through his first meta-ethnographic study, Pielstick [17] created a profile of an authentic leader using six major themes, including shared vision, communication, relationships, community, guidance and character, listing the first list of characteristics and behaviours of informal leaders. Moreno [42] confirmed that these characteristics exist in informal leaders in small work teams. These scenarios have the highest communication levels because the leadership tasks are provided from a given consensus and context, demanding a high amount of verbal interactions. Stincelli [19] listed similar characteristics using three themes: individual competence, organisational culture and situational requirements. Neubert and Taggar [43] also listed similar characteristics and suggested that some female traits and contributions are relatively unappreciated, especially in those who alter their behaviour to be more consistent with male stereotypes. The possible characteristics of informal leaders are listed in Table 1. Similarly, Tables 2 illustrates the potential behaviours of informal leaders according to the conceptual framework proposed in this study.

**Table 1**

Informal leadership characteristics

Characteristic	Reference
Caring	[17, 42]
Problem-solving/intelligence	[16, 17]
Commitment	[16, 17, 19]
Communication skills	[19]
Confidence	[17]
Cooperative/supporting/partnering	[14, 43]
Credibility	[17, 19]
Effective	[19]
Empathic/considered/hearing	[17, 19, 42]
Ethical	[17]
Experience in position	[17]
Expert or referent (knowledge)	[16, 17, 19]
Extraversion	[44]
Fair	[17, 42]
Honesty	[14, 17]
Humility	[16, 17]
Integrity	[17]
Interpersonal aptitude	[19]
Likes to have fun/sense of humour	[17, 42]
Locus of control	[19]
Motivation	[42]
Persistence	[16, 17]
Principle-centred	[17, 42]
Promotes gender equity	[17, 42]
Responsibility	[14]
Trustworthiness/credible	[14]
Willingness	[19, 35, 36]

**Table 2**

Informal leadership behaviours

Behaviour	Reference
Empowerment	[19]
Encouragement	[19]
Group cohesion	[16, 19]

Knowledge sharing	[19, 42]
Managing diversity/inclusive	[19]
Motivating others	[44]
Relationship orientation	[19]
Shared vision	[19]
Social identity	[19]
Treats everyone with respect	[17, 19, 42]
Intellectual stimulation	[44]

**2.4. The nature of leadership and influence**

Leadership is a continuous process of influence and is an essential skill that a leader must master to affect the behaviour of others in a particular direction or reach a specific goal [33]. DuBrin [30] defined ‘influence’ as the ability to motivate others by using diverse tactics, such as rational persuasion, inspirational appeal and consultation, or through pressure, coalition or appealing to legitimate authority. According to Balloo [13], although formal leaders do not have direct control over the behaviour of others, it is important to understand the different ways in which influence and power may be projected within organisations; for example, understanding and using the five sources of power, including reward, coercive, legitimate, referent and expert powers. Having power over others modifies their behaviours in the desired manner without having to modify the leader’s behaviours. Although the leader can command certain behaviours, this does not mean their subordinates will comply with the order(s).

In the past, leaders in any type of organisation were expected to have many followers and keep them under control, and the followers were expected to do anything requested by the leaders. However, this is no longer ideal or acceptable in today’s context [45]. Therefore, it is important to identify the relationships between informal structures and leadership to build the capacity of a leader to manage increasingly complex situations in constantly changing environments. For example, according to the social exchange theory, the quality of the social interactions between actors in a network is based on the calculation of mutual exchange by building and maintaining the ties between them [46]. Another approach refers to the influence of the composition of teams formed between men and women, with gender being a representative variable in informal or emerging leadership dynamics in work teams. For example, Neubert and Taggar [43] argued that due to a high level of general mental capacity, informal leadership is more frequent in women than men, while a high level of awareness and emotional stability has been demonstrated in more men than women [43].

The literature demonstrates that informal leaders emerge and influence the forms of IS organisations and their work. However, not all informal leaders have the same influence because of the differences between the personal characteristics of each informal leader and the nature of their leadership techniques. The different types of leaders discussed in the literature include opinion, social or technical leaders [47–50].

**2.4.1. Opinion-type leaders**

Opinion-type leaders influence the opinions, beliefs, motivations, construction of ideas, visions and behaviours of others. They commonly have a greater influence in a certain group due to their status as an expert and a reliable resource [50, 51]. When a collaborator has a question or an ethical or ideological problem, they will go to these leaders. Due to this interaction, the influence of opinion-type leaders is the most complicated to detect and monitor. Further, according to Chan and Misra [47], if a new product or service is in an ‘adopt’ stage, opinion-type leaders may be used as indicators of innovativeness; they can be early adopters of products and services and persuade others to do the same.

Opinion-type informal leaders are great contributors to organisational cultures and significantly affect informal communication processes [52]; if they want to spread an idea, it is highly likely that the idea will be taken and dispersed throughout the organisation. Further, they have important communication skills and the ability to camouflage themselves and not attract attention [47]. Thus, it is important to correctly identify these figures because it allows an organisation to rely on them for change

management strategies, promoting healthy organisational environments, increasing engagement with company values and as sources for motivation and the alignment of critical objectives [14].

According to Pielstick [17], informal leaders are more likely to have a moral and inspiring purpose based on the common good, listen and seek to understand what is happening, actively put their words into actions, empathise with others and demonstrate equity in their relationships, treating everyone with dignity and respect. In summary, an opinion-type informal leader can be defined as a person who does not have a hierarchical rank in an organisation and is not in charge of a team, but whose vision people trust, giving them the power to represent them, and who are commonly leaders of unions or communities.

### **2.4.2. Social-type leaders**

Social-type leaders are usually recognised in organisations for excelling in empathy, communication, organisation, and collaboration skills. Often, they do not have a rank within the organisation's hierarchy. However, their levels of influence motivate people when it is necessary to organise events, celebrate birthdays, generate communications, reduce conflicts or lower tensions [53]. Commonly, their levels of influence are governed by empathy, which is why they are described as cheerful, positive people who integrate well with others. They may also have a high level of charisma, which helps them establish personal or moral credibility, using reasoned and emotive language to persuade others to act [30]. They can have a considerable influence within an organisation, despite not having formal authorisation to lead. This influence is often nurtured by the time they spend generating strong relationships with their peers and, in some cases, affecting organisational results [48]. However, they can also be informal leaders who function as agents of change to facilitate the improvement and growth of an organisation.

Creighton and Singer [54] explained that social-type leaders especially in the IS organisations prefer not to be recognised for social competencies. Thus, sometimes their social leadership is weak, and they prefer to have informal social leaders in their teams who develop this task effectively. Consequently, there are some areas of opportunity to be improved, such as intercultural competence, negotiation skills, decision enforcement in critical situations and conflict management.

A Social-type informal leader can be defined as a person who does not have a hierarchical rank in an organisation and does not manage a team; however, people rely on them due to their charisma, traits, behaviours and attitudes. Although they may lack the knowledge to solve problems, they can influence others to solve them.

### **2.4.3. Technical-type leaders**

Organisations typically recognise technical-type leaders as teachers or trainers but do not have an official role (commonly known as a mentor). Some companies may decide to give a technical leader a hierarchical position, although this is not always the best decision because their soft skills, such as communication, integration, collaboration and team management, are not usually their strengths [49].

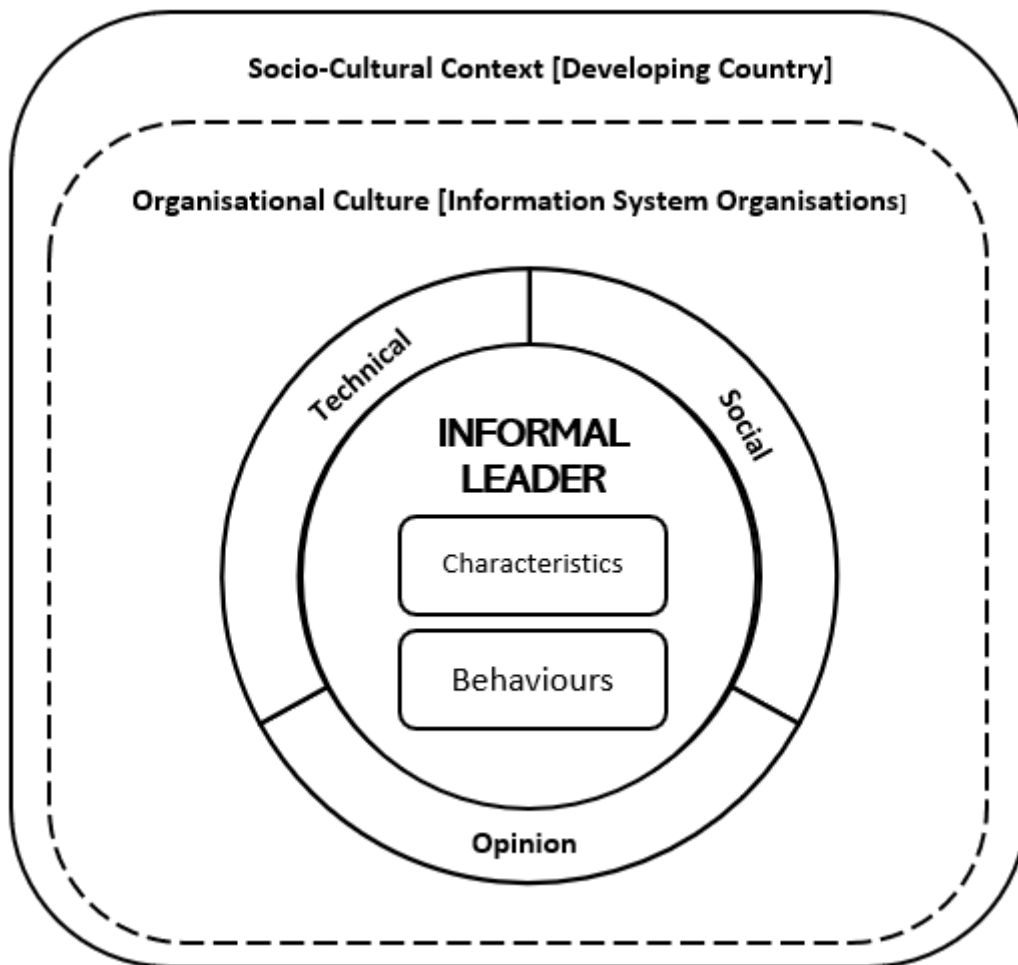
When an organisation has a technical problem beyond a formal leader's capacity, technical-type informal leaders may solve the problem, sometimes silently and without asking for recognition, while exerting their influence and motivating others to follow their lead [36]. These types are normally hired for complying with certain profiles that require specific technical competencies. For example, in the IT field, technical competencies may include data analyses, computer programming, project planning, task management or technical writing [55]. Employees usually receive a formal education, certification courses or diplomas to acquire these technical skills. These competencies are always backed by a practical exercise that demonstrates that the employee has theoretical knowledge and understands how to apply that knowledge [56]. However, some people within companies may also learn and dominate certain technologies required by the company and, without having any formal knowledge, become experts in a particular area [57]. The experience factor may cause some people to learn how to solve certain technical problems better than others.

Therefore, a technical-type informal leader can be defined as a person who does not have a hierarchical rank in the organisation and does not manage a team but uses their experience of certain technical aspects to solve complex technical problems requiring a specialisation grade.

## 2.5. Conceptual framework

The rationale for the conceptual framework proposed in this study (see Figure 1) is based on the theoretical framework of leadership, which incorporates the elements of sociocultural contexts, organisational cultures and influence [19], the characteristics that define leaders [58] and their behaviours in specific situations [59]. However, this framework aims to be more specific to the context and type of organisation. In this study, we refer to an IS organisation in a developing country (Mexico). The framework also incorporates the nature of the leadership type (i.e., opinion, social or technical) and its influence to shape informal leaders in organisations [29, 36, 47, 48, 51]. The framework is a starting point to investigate informal leaders in a case study and test its usefulness for addressing the following research questions:

1. What are the characteristics and behaviours that define and identify informal leaders in IS organisations?
2. What is the nature of the leadership exerted by informal leaders in IS organisations?



**Figure 1:** Conceptual framework for identifying informal leaders



### 3. Methodology

Given the exploratory nature, this research employed an interpretative case study approach to gather and analyse data associated with this study [66]. The case study allows to understand multiple perspectives and human action in social and organisational contexts, explore contested viewpoints, demonstrate the influence of key actors and interactions between them in the studied phenomenon [60]. This qualitative approach helps to uncover deeper issues and allows the examination of perceptions and understandings regarding individuals and supports the development of theories based on the experiences and perspectives of the research participants [61]. A semi-structured questionnaire was developed for the 15 interviews with employees of different levels and roles within an IS organisation in Mexico (see Appendix A). The participants included a systems engineer, software engineer, business analyst, architect of solutions, IT manager, technical support manager, project manager, senior delivery manager and security coordinator.

Signed approval was obtained from the Chief Executive Officer from the IS organisation under study, providing approval to approach employees for participation in the study using a company email. In some cases, participants were called directly to participate. The identity of participants has been kept confidential following the protocol of ethical clearance. Participation in this study was voluntary. The lead researcher was responsible to collect, store and access signed informed consent, accomplishing all procedures according to ethics clearance obtained from affiliated university. The questions were designed to provide an understanding of the participants' perceptions of informal leadership, its characteristics, behaviours, and nature of leadership. A pilot test was conducted on two participants who gave feedback on the questionnaire and conduct of the interview. Following this pilot, the questionnaire was reorganised, hence that it became easy to follow by the target audience. Some questions that were redundant or not directly related to the initial topic were deleted or replaced.

The interviews were conducted virtually, using the Microsoft Teams program, due to the COVID 19 pandemic restrictions in place at the time of this study. The participants answered 20 questions during 20- to 55-minute interviews. Their responses provided the data that was extracted and analysed step by step using NVivo software. The steps included (i) getting a general sense of the information, (ii) coding the material, (iii) identifying themes, (iv) representing the material, and (v) making an interpretation or meaning of the data [67].

Before each interview commenced, the participant we explicitly informed that there were no right or wrong answers to the questions in the survey. The collected data did not include sensitive personal data. Consequently, the participants were invited to answer the questions openly and extensively. The transcriptions and interpretations were conducted by the lead author, who is a Mexican native with a strong understanding of local cultures.

#### 3.1. Case description

The case study was conducted in a private IS organisation in Mexico, with offices in the main cities (Mexico City, Guadalajara and Monterrey). The organisation's main functions include application development, infrastructure projects and technical support services for government and private companies across the country. Founded in 2003 by the chief executive officer (CEO) and chief operating officer, the organisation has 350 employees. It is associated with leading international companies, such as Microsoft, IBM, Cisco Systems and Dell, and is a growing organisation in the national market.

Its founders are both 45-year-old systems engineers with more than 20 years of experience developing IT projects. They began their professional careers in operational positions and decided to form their own company during the growth stages of their careers. The company has an organic structure that consists of the CEO, to whom three directors report: finance and administration, operations and the innovation department. With six managers in the different areas, 10 supervisors and 10 project leaders hold the formal leadership positions within the company and the other staff members are operational personnel.

About 60 per cent of the staff members are support personnel and infrastructure and software engineers. Their educations range from high school to master's degrees, and they are mostly men, aged

21 to 45 years, with an average seniority within the company of three years. Thus, the turnover rates are high, and they have difficulty attracting new talent to the organisation.

Middle management has been developed within the company. People were identified for their good performance and given leadership roles without any prior training or soft skills. Because of the large workforce with few formal leaders, the presence of informal leaders has been constant. This has been useful in most cases because there are people who take responsibility and make decisions effectively.

## 4. Findings

The findings have helped uncover the nature and characteristics of informal leaders in an IS organisation using the conceptual framework derived from the literature review and considering the diverse interactions between leaders, followers, cultures, situations, characteristics and behaviours [19, 44, 59, 62]. The study revealed some new considerations for this conceptual framework, some of which may also be applicable beyond the study’s specific socio-cultural context of Mexico and IS organisations.

### 4.1. Nature of informal leadership

The evidence for the three types of leadership (i.e., opinion, social and technical) and the extent of their influence proposed in the conceptual framework have been demonstrated in this study.

The findings indicated that opinion-type leaders exert informal leadership within the organisation. For example, Participant 3 (business analyst with the company for 1 year) explained: ‘an informal leader is a congruent person, that shared our values, that clearly understands our role within the company, obviously with knowledge about our labour circumstances’. Participant 9 (software engineer with the company for 10 years) says “must person who sees for the team, a person with character, who knows how far to take responsibility, but also knows how to indicate when it is no longer part of our scope”.

Charisma was indicated as the main characteristic that social-type informal leaders possess, which includes a friendly behaviour in daily dealings and a convening power for social events. For example, Participant 4 (business analyst with the company for 1 year) explained: ‘regardless [of] whether [or not] we have a project manager, we sometimes look for support from the informal leader because it can take advantage of friendship with the end-user to a better understanding of requirements. Another, participant 13 (senior deliver manager with the company for 10 years) added "it is very funny, if I sent an invitation from my role as a formal leader an invitation to 20 people, 10 don’t, but if the informal leader sends it, they go 20, 25, or 30, but they go".

Technical influence received the most observations during the survey, possibly because the company has a technological profile, which demands experience and expertise in specialised technologies and tools. For example, Participant 2 (software engineer with the company for 2 years) stated: ‘the informal leader is someone on whom you do not depend directly but who for some special characteristic helps you to do some specialised work or solve a technical problem, using its [*sic*] expertise and knowledge, and his [*sic*] ability even to communicate with others’.

The participants indicated that the technical-type, informal leaders have more influence than formal leaders when considering factors such as experience in a position and knowledge about practical applications. The different leadership types have been classified according to situations where an informal leader may exert their influence (see Table 3).

**Table 3**  
Situations when different leadership types exert their influence

Situation	Leadership type
A strong voice for representing staff when speaking to their superiors	Opinion
Seeking advice to adopt new products or services	Opinion
The superior is not present in the office when issues occur	Opinion
Intermediary to communicate information at operational levels	Social
Facilitating the resolution of personal conflicts	Social

Organising social events	Social
Attending to emergencies	Technical
Implementing new projects because of knowledge and expertise	Technical
Solving technical problems	Technical
Resolving project delays	Technical
Teams are too large for one leader to manage	Technical
Workload is too much for the team	Technical

## 4.2. Characteristics and behaviours

In relation to the characteristics (see Table 1) and behaviours (see Table 2) of informal leaders, three new characteristics and four new behaviours have emerged from this case study.

The additional characteristics of informal leaders are congruence, creativity and resilience. Regarding congruence, Participant 1 (systems engineer with the company for 2 years) explained: ‘the informal leader would have to be someone that I can trust, that can represent my ideas, that is congruent with what he [*sic*] says and how he [*sic*] behaves, that is honest and that gives you the certainty that [they are] not going to betray [you]’. Creativity was also explained in the findings. For example, Participant 7 (architect of solutions with the company for 2 years) explained: ‘the informal leader is sometimes the one who guides the team, for example, in the programming area he [*sic*] is very creative, because even though we have a specific problem, it looks for different ways to solve it, regardless of whether [or not] it is in his area of responsibility’. Participant 7 also described resilience: ‘an informal leader is a person who, in the face of failure, finds a way to change things, always being resilient in the face of adversity, sometimes in our case, if there is work that the team has not finished, this leader stays late or is the first to arrive in order to ensure that the work is completed in a timely manner’.

The new behaviours revealed in this study are ‘first to raise their hand to help’, ‘facilitator of communication between users and technologists’, ‘quick response’ and ‘talks openly about project risks’. The ‘first to raise their hand to help’ behaviour was associated with instances when a technical problem arises that has previously occurred, and the informal leader (the person with the most experience) is the first person to raise their hand and explain how the problem should be solved. The study found that the ‘facilitator of communication between users and technologists’ behaviour occurs when, for example, developers rely on informal leaders to communicate any doubts with the project manager or end-user, taking advantage of their interpersonal skills to understand the requirement better and ensure that the development meets the project’s expectations. The ‘quick response’ behaviour was exemplified in the findings as relating to technical problems that generate emergencies. For example, if a system has stopped and the situation requires an immediate solution, the informal leader, in the absence of the formal leader, manages the adversity as soon as possible. Finally, the ‘talks openly about project risks’ behaviour was explained in the findings. For example, informal leaders in work meetings are not afraid to express their concerns regarding the risks of a project, highlighting to others that their concerns are genuine and justified.

## 4.3. Informal leader definition for information system organisations

Based on the analysis of the characteristics and behaviours of informal leaders, Section 4.3 defines informal leaders in IS organisations (considering the present study and prior studies). The word frequency analysis using NVivo software revealed that the keywords of this definition are mainly associated with participation; for instance, ‘confidence’, ‘supporting’, ‘motivate’, ‘following’, ‘hear’, ‘partner’, ‘propose’, ‘considered’ and ‘solving’. The participants also shared their insights from their experiences. Participant 5 (software engineer with the company for 7 years) shared: ‘an informal leader is one who does not necessarily have the official endorsement of the company, who does not have the title in the role of the project as responsible or as the functional leader or as the technical leader; however, it is one in which team mates can get support about technical questions’. Further, Participant 15 (software engineer with the company for 5 years) commented: ‘in work meetings, the informal leader [is] not afraid to express their concerns or comments regarding the risks that exist in the project, pointing

out to others that their concern is genuine and that it makes sense with what they are doing regarding the task to accomplish the planned work’.

Thus, this research defines an informal leader in an IS organisation as a self-confident person who is willing to support and motivate the team, listens carefully to their colleagues’ circumstances, shows consideration and partnership, often proposes improvements to solve problems and has interpersonal skills and technical expertise.

## 5. Discussion and conclusion

The case study conducted in a Mexican IS organisation revealed the existence of informal leaders, their level of influence in teams, the nature of their leadership and the extent of their influence depending on the situations in their organisational environments. Further, the identifying characteristics and behaviours of informal leaders were demonstrated as those outlined by the proposed framework (see Figure 1).

This study has made several contributions. First, the research opens a new avenue of research into an important area within IS organisations that has not been explored in the past with a specific focus on informal leaders. The paper also illustrates the complex interactions between IS leadership and the sociocultural context of Mexico, a developing country with organisational characteristics that can be similar to other developing countries. Stincelli [19] explains these complex interactions as part of the organisational leadership process that influence individuals to work together in order to achieve a common goal, however, some of them have connotations of friendship, sharing same values and ideals.

The in-depth focus on informal leaders in IS organisations provided a rich insight into the ability of informal leaders to facilitate communication between strategic and operational levels of a company, resolve personal conflicts and integrate team members, which exhibits the nature of social-type leaders [48]. Informal leaders were also found to provide encouragement, enhance motivation and illustrate the leader’s vision, values and beliefs by using metaphors, analogies, stories, ceremonies, celebrations, rituals and traditions, demonstrating the nature of opinion-type leaders [50]. The technical influence was also prominent, with some informal leaders tackling emergencies in the absence of formal leaders. Informal leaders often help define new projects derived from their own experiences and technical knowledge, providing a distinct advantage. They can manage emergency situations to ensure deadlines are met when the team is too large for the formal leader to manage adequately or when work has overloaded the team due to a lack of expertise or technical knowledge [29].

Smart [29] posited that informal leaders have the desire to influence others rather than use authority, coercion or threats. They utilise their abilities to communicate and work well with others, thereby building strong relationships. However, this study showed that informal leaders do not necessarily have a desire to influence others or have a position of power within organisations because it may limit their field of action and generate greater responsibilities. This appears to be influenced by the sociocultural context and traditions in Mexico, as outlined by Rodríguez and Ramírez [20]. Likewise, Gibson [65] explains that contemporary organisations cannot depend on the leadership exercised from the authority-control perspective that historically has been effective, and the respect for formal authority is declining, moreover, the level of influence that an informal leader has presented in this study depends on the situation and circumstance that occurs within the labour scope.

Three characteristics emerged in this study that have not been documented in previous informal leadership studies, including congruence, creativity and resilience. Future studies could examine the existence of these characteristics within other contexts and cases.

Further, four new behaviours of informal leaders were identified, including ‘first to raise their hand to help’, ‘facilitator of communication between users and technologists’, ‘quick response’ and ‘talks openly about project risks’, which are also influenced by local organisational cultures. ‘First to raise their hand to help’ is a behaviour associated with the ‘willingness’ [19, 35, 36] characteristic of informal leaders; however, it was not considered within the 98 variables that Pielstick [17] or subsequent studies discussed. The ‘facilitator of communication between users and technologists’ behaviour could be directly associated with the ‘relationships’ theme of informal leaders—more specifically, with the ‘collaborates with others’ variable. However, according to Pielstick [17], it is important to consider that an aspect of technical expertise is presented in the profile of informal leaders in IS organisations. The

'quick response' behaviour is particularly linked to 'willingness' or 'knowledge sharing/willingness' [19, 35, 36]. This behaviour is exhibited in the response time and accountability that distinguishes informal leaders [16] in IS organisations. The 'talks openly about project risks' behaviour is related to the 'honesty' [14, 17] characteristic. However, in this study, this behaviour was identified particularly in relation to informal leaders who are vocal about a project's risks in the IS field. These findings confirm the merits of this conceptual framework, particularly its ability to help management teams identify informal leaders.

Previous studies revealed the importance of an informal leader in the organisation, explaining how the interactions between leader-and-followers contribute to solving organisational issues [19]. This study would allow organisations and management to identify key people and develop them towards formal leadership roles to best benefit from their behaviours and skills. People who demonstrate behaviours such as knowledge sharing, group cohesion, managing diversity, motivating others, intellectual stimulation and social identity exhibits informal leadership.

This study also has implications regarding strategies for implementing better personnel management practices, such as forming and developing formal leaders, improving the work environment and people mobility decisions. CEOs can use the tool for the precise identification of informal leaders to make strategic decisions and monitor their performance and engagement levels. People that are committed to the company consistently promote values and help make the culture and organisational environment enjoyable [29].

The study was limited because it was based on a single case study, which was a medium-sized IS organisation in a developing country and represented a specific socio-cultural environment. Consequently, the findings cannot be generalised. However, the results could be similar in further studies with the comparable sociocultural context and organisational culture.

Nonetheless, this research can lead to future investigations about the levels of influence between formal and informal leadership and the effects of that influence within an organisation using other methods, such as sociometric methods [63, 64]. Subsequent research could quantitatively determine the support that an informal leader could obtain from their followers according to the nature of their leadership (i.e., opinion, social or technical). Another investigation could determine the influence of a team's gender composition, with gender being a representative variable in the dynamics of informal or emerging leadership in teams.

## 6. References

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## Appendix A

### List of interview participants

#	Date	Length of Time (min)	Participant's Data
1	July 2020 (pilot)	20:03	Position: Systems Engineer, Department: IT Internal Services, Gender: Female, Years in the Company: 2, Education: Bachelor's degree, Age: 28
2	July 2020 (pilot)	35:10	Position: Software Engineer, Department: Professional Services, Gender: Male, Years in the Company: 2, Education: Bachelor's degree, Age: 35
3	August 2020	54:59	Position: Business Analyst, Department: Professional Services, Gender: Male, Years in the Company: 1, Education: Bachelor's degree, Age: 34
4	August 2020	28:50	Position: Systems Engineer, Department: IT Internal Services, Gender: Female, Years in the Company: 7, Education: Bachelor's degree, Age: 36
5	August 2020	41:34	Position: Software Engineer, Department: Professional Services, Gender: Male, Years in the Company: 7, Education: Bachelor's degree, Age: 37
6	August 2020	33:38	Position: Architect of Solutions, Department: IT Internal Services, Gender: Male, Years in the Company: 6, Education: Bachelor's degree, Age: 36
7	September 2020	44:19	Position: Architect of Solutions, Department: Professional Services, Gender: Male, Years in the Company: 2, Education: Bachelor's degree, Age: 40
8	September 2020	32:47	Position: IT Manager, Department: IT Internal Services, Gender: Male, Years in the Company: 5, Education: Bachelor's degree, Age: 37
9	September 2020	36:52	Position: Software Engineer, Department: Professional Services, Gender: Male, Years in the Company: 10, Education: High School, Age: 36
10	September 2020	36:17	Position: Technical Support Manager, Department: IT Internal Services, Gender: Female, Years in the Company: 14, Education: Bachelor's degree, Age: 36
11	October 2020	33:55	Position: Project Manager, Department: Professional Services, Gender: Female, Years in the Company: 1.3, Education: Master's degree, Age: 36
12	October 2020	35:16	Position: Software Engineer, Department: IT Internal Services, Gender: Male, Years in the Company: 2, Education: Master's degree, Age: 37
13	October 2020	39:26	Position: Senior Delivery Manager, Department: Professional Services, Gender: Male, Years in the Company: 10, Education: Bachelor's degree, Age: 36
14	October 2020	30:42	Position: Security Coordinator, Department: Cyber Security, Gender: Male, Years in the Company: 3, Education: Bachelor's degree, Age: 41
15	October 2020	48:06	Position: Software Engineer, Department: Professional Services, Gender: Male, Years in the Company: 5, Education: Bachelor's degree, Age: 30