Juxtaposing South Africa's Private Sector and Its Public Service Regarding Innovation Diffusion, to Explore the Obstacles to E-Governance

Petronella Jonck, Freda van der Walt

Abstract—Despite the benefits of innovation diffusion in the South African public service, implementation thereof seems to be problematic, particularly with regard to e-governance which would enhance the quality of service delivery, especially accessibility, choice, and mode of operation. This paper reports on differences between the public service and the private sector in terms of innovation diffusion. Innovation diffusion will be investigated to explore identified obstacles that are hindering successful implementation of e-governance. The research inquiry is underpinned by the diffusion of innovation theory, which is premised on the assumption that innovation has a distinct channel, time, and mode of adoption within the organisation. A comparative thematic document analysis was conducted to investigate organisational differences with regard to innovation diffusion. A similar approach has been followed in other countries, where the same conceptual framework has been used to guide document analysis in studies in both the private and the public sectors. As per the recommended conceptual framework, three organisational characteristics were emphasised, namely the external characteristics of the organisation, the organisational structure, and the inherent characteristics of the leadership. The results indicated that the main difference in the external characteristics lies in the focus and the clientele of the private sector. With regard to organisational structure, private organisations have veto power, which is not the case in the public service. Regarding leadership, similarities were observed in social and environmental responsibility and employees' attitudes towards immediate supervision. Differences identified included risk taking, the adequacy of leadership development, organisational approaches to motivation and involvement in decision making, and leadership style. Due to the organisational differences observed, it is recommended that differentiated strategies be employed to ensure effective innovation diffusion, and ultimately e-governance. It is recommended that the results of this research be used to stimulate discussion on ways to improve collaboration between the mentioned sectors, to capitalise on the benefits of each sector.

Keywords—E-governance, ICT, innovation diffusion, comparative analysis.

I. INTRODUCTION

INNOVATION has been identified as one of the main drivers of growth and development. The advent of the

P. Jonck is with the National School of Government, 70 Meintjes Street, Sunnyside, Pretoria, South Africa, 0001 (phone: +27 71 2995 162; email: petronella.jonck@thensg.gov.za).

F. van der Walt is with the Faculty of Management Sciences, Central University of Technology, Free State, South Africa, 9301 (email: fvdwalt@cut.ac.za).

knowledge economy has seen accelerated technological change as a key determinant in competitive positioning of national economies. [1] Innovation has also been characterised as essential for realising aggressive top-line growth and increasing bottom-line results, by introducing change into a stable system. [2] This is attributed to the fact that new incentives are provided, where, by contrast, resting on past successes often results in inertia and stagnation, as organisations cling to what was for them a winning formula before. [3] In the contemporary world, timely adoption of innovation is becoming critical, in order to ensure organisational success. [4], [5] Furthermore, continuous innovation has become fundamental for achieving sustained competitive advantage. [3] Within the South African context, the National Development Plan 2030 (NDP) indicates that South Africa should sharpen its innovative edge and foster innovative advancement. Furthermore, the NDP indicates that innovation is necessary for a middle-income country to develop optimally. [6] However, many organisations at various levels of complexity are finding it problematic to deploy new technologies, even though innovation holds many obvious benefits for the organisation.

An innovation can be defined as "an idea, practice, or object that is perceived as novel by an individual or other unit of adoption". [7] Another definition refers to innovation as the generation of fresh ideas, accompanied by successful implementation thereof. [8] It has also been asserted that the concept of innovation encompasses novel production-process technologies, original structures, or administrative systems, as well as innovative plans or programmes pertaining to organisational members. [9] Thus, applied to the context of work, innovation can potentially refer to the implementation of a new intervention in the work environment, normally supported by technologies, and a strategy to improve organisational performance and the quality of jobs. [10] Two types of innovation have been identified, namely product innovation, and changes to business processes, or process innovation. [3] Within each category there are three degrees of complexity in terms of the innovation, namely incremental, synthetic or discontinuous innovation. [11]

Previous research has expanded on the above concepts, by indicating that the dispersion of innovative products, practices and/or ideas in a population or a well-defined network structure, such as an organisation, [12] is termed "innovation

diffusion". [13] Research on innovation diffusion has established that it increases employee productivity and creativity. [14], [15] A large-scale study conducted in the Netherlands has established a positive relationship between workplace innovation and organisational performance, as well as employee commitment. [10] Innovation can also be linked to organisational performance and growth, through improvements in efficiency, effectiveness, productivity, quality of service and products, competitive positioning, and market share. [2] In addition, it has been indicated that information innovation, as one type of innovation, increases the ability of organisational members to communicate. [16], [17] However, previous research on innovation diffusion has mostly underscored market penetration and advertising campaigns, [18], [19] covering a wide range of products, including durables, [20], [21] and recreational goods and/or services, such as movies. [22] Another stream of research underscores micro-level factors that influence how consumer attitudes and behaviours are determined by the characteristics inherent in the product, such as compatibility and complexity, [23] as well as social influences that predict consumer behaviour. [13] The third stream of research highlights team attributes which may impact on innovation, [5] such as collective and creative processes. [24]

Besides the above-mentioned body of knowledge on innovation diffusion, which mostly focuses on the product and personal characteristics of team members, there is a paucity of research on innovation diffusion in the public service. In the light of increasing demand for quality service delivery by the public service, particularly in terms of accessibility and choice, the modus operandi in government departments in South Africa has been to embrace modernisation efforts. [25], [26] Hence, the implementation of e-government, which has been acclaimed as a new impetus to service delivery. [27] E-government can be defined as the use of ICTs (information and communication technologies), such as wide area networks, the Internet, and mobile computing, by government agencies, in order to transform relations with the citizenry, the private sector, and other structures of government. [28] A broader definition of e-government implies a modernised way to provide services, share data, and communicate, which can include adoption of any information and communication technology by a government, such as video conferencing, the Internet and private intranets, interactive television, and Internet access via mobile phones. [29] Nevertheless, a United Nations Educational, Scientific and Cultural Organization [30] report titled "Harnessing information technology for development in Africa" noted that innovations such as ICTs were less frequently used in the public service. [15] The report listed the following benefits of adopting innovation in the public service: enhanced information access, greater efficiency, improved service delivery, increased accessibility of public services, greater transparency and accountability, and a significant reduction in the administrative burden of government at large, among other things. [31] Factors identified that hinder the diffusion of innovation in the public service included a lack of government policies to regulate

training of staff, inadequate fiscal resources to implement existing policies, a lack of infrastructure, and negative attitudes of public service employees towards innovation. [15] Other challenges include the subjection of ICT-related goods and services to foreign regulations, overdependence on foreign goods and services, the lack of a culture of sharing of information between organisations, the need for timeous elimination of the current disparities between ICT systems, and significant differences in the level of e-government readiness between departments in various provinces and municipalities. [32]

The benefits of innovation diffusion in the public service are undisputed. The importance of innovation diffusion is evident from the way the Department of Political Affairs of the African Union Commission, in collaboration with the Specialised Technical Committees of the African Union, hosted an Africa Public Service Day, underscoring innovation in public service performance, towards accessible and effective service delivery. [33] In addition, the Medium-Term Strategic Framework (2014-2019) refers to the implementation of ICTs under the umbrella concept of e-governance, as an important tool for improving service delivery. This can be categorised under priority 12, namely "[a]n efficient, effective and development-orientated public service". It has been asserted that ICTs can be used to make services more accessible, reduce the cost of accessing services, streamline administrative processes, improve turnaround times, and improve accountability and responsiveness. [34] Nevertheless, research on the factors that have been identified as potential obstacles to innovation diffusion has been limited, and has focused on municipalities, [15] thus not taking into account provincial and national spheres of government. Another limitation in the body of knowledge is that research into innovation diffusion has focused on the implementation of ICTs in government, with a paucity of research that has been conducted on organisational aspects that drive innovation diffusion as a phenomenon. Thus, previous research has mostly focused on operationalising innovation diffusion, with limited attention having been given to strategic management, which should ideally drive the innovation diffusion process.

Against the above background, the question that arises is whether the key success factors for implementing new technologies differ between the private sector and the public service within the South African context with regard to organisational characteristics.

II. THEORETICAL FRAMEWORK

Over the years, various theoretical frameworks have been proposed to explain possible patterns in the innovation process. [35] One of these frameworks was a framework describing technological progress. [36] Other researchers developed a model that identified innovation in three phases. [37] However, the majority of theories on innovation refer to the seminal work of Rogers on the diffusion of innovation theory. [38] This theory can be summarised in essence as representing a social process in which subjectively perceived

information concerning an innovation is communicated based on the premise that an original idea, practice, or object has a distinct channel, time, and mode of being adopted by employees or the organisation at large. [39] Elaborating on this, it was asserted that innovation is communicated over time among the members of a social system (e.g. an organisation), which is referred to as "diffusion". [38] Thus, diffusion is regarded as an adoption process consisting of information gathering about a new idea or intervention, and the reduction of uncertainty associated with that idea or intervention. [40] When an employee receives information about new technology, the employee proceeds through a process from receiving the information until an attitude is formed towards the innovation, after which the decision will be made whether the innovation will be adopted or rejected. [39] Four distinct elements of the diffusion process are highlighted when defining diffusion as a process of communication by which an innovation, in the form of a new idea, practice or product, is spread, through certain channels, over time, among the members of a social system. [41] Innovation theorists furthermore posit that certain inherent characteristics predict the rate at which an innovation will be adopted, namely relative advantage, compatibility, complexity, trialability, and observability of the innovation. [42]

While the diffusion of innovation theory focuses on micro-level diffusion in a social system, such as an organisation, innovation diffusion can also take place on a macro level. This is premised on the national system of innovation (NSI) theory. According to this theory, a system of innovation is defined as a conglomerate, which can be either informal or formal, within which innovation occurs, and it is usually demarcated at national level. [43] It should also be noted that systems of innovation occur at different levels of aggregation, namely the national, the subnational and the supranational levels. [1]

III. METHODOLOGY

It is a known fact that it is problematic to conduct controlled experiments on the processes of innovation diffusion, due to a lack of experimental control over moderating variables. As a result, percolation modelling has emerged as a simulation technique to determine whether the agent will purchase an innovation or not. [13] In light of the aim of the paper, which is to determine the differences between the public service and the private sector in terms of key success factors for innovation diffusion, a comparative thematic analysis will be utilised to conduct a content document investigation within the South African context. A similar approach has been followed to compare regional higher education reform initiatives in Africa with the Bologna Process in Europe. [44] Regarding innovation diffusion, a similar approach has been followed in a research project on information technology adoption in the Australian health-care sector, in terms of comparing organisational and technological aspects. [42] It has been noted that even though documents are peripheral in empirical consideration, the contemporary world is constructed by means of documentation, which is the driving force behind the current emphasis on knowledge

management. [45], [46] Document analysis is a qualitative research design in which documents are interpreted by the researcher(s), to give voice and meaning to the written word, based on either content themes or discourse analysis. [47] The former, namely thematic analysis, attempts to capture important aspects of the data as it relates to the research question, and it depicts a level of patterned responses, or meanings, within the data set. [48] As such, the comparative thematic analysis will assist in answering the research question as stated in the introduction to this paper.

To provide a lens through which to analyse the public service and the private sector, the diffusion of innovation theory, as proposed in the theoretical framework, will be applied as theoretical underpinning. Moreover, a sound conceptual framework is essential for providing a comprehensive guide for supporting the document analysis. The conceptual framework is illustrated in Fig. 1. [42]
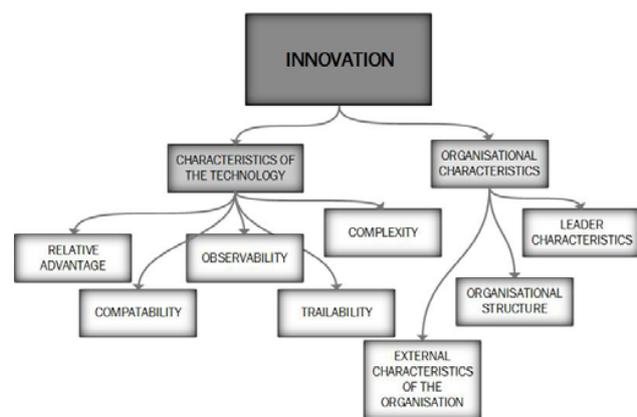

Fig. 1 Factors influencing the diffusion of an innovation

For the purposes of this paper, only the organisational characteristics will be explored to determine the possible differences between the public service and the private sector in terms of innovation diffusion. To increase the rigour of the study, researcher triangulation will be used, in that one researcher originates from the private sector, while the other is employed in the public service.

IV. FINDINGS

In this section, the organisational variables depicted in Fig. 1 will be elaborated on, with reference to the private sector and the public service.

A. External Characteristics of the Organisation

The external environment includes factors outside the operating state of the organisation, such as social, political, technological and ecological factors. [49] It should be emphasised that the external environment plays a crucial role in developing innovation and stimulating technological transfer. [50] The main difference between the external characteristics of the private sector and those of the public service can be found in the focus of private sector organisations, which is usually on profitability and

shareholder value, operating within a business or entrepreneurial framework, while public service organisations typically focus on regulatory implementation of legislation and service delivery to citizens, operating within a unique constitutional framework. [51], [52] The advantage of being profit-driven is that profit can be quantified, which makes it easy to measure inputs against outputs. [53]

Internationally, more similarities than differences have been reported between the private sector and the public service. In countries such as the United States and the United Kingdom, the public service is becoming increasingly modernised, through innovation, entrepreneurship, and client and employee empowerment. [54] It also seems that similar factors stimulate innovation in both the private and the public sector, such as new leadership, a budget crisis, an economic downturn, or a loss of market share. Furthermore, in First World countries, more emphasis is placed on collaborative innovation in the public service, which cuts across institutional and organisational boundaries. [55] For example, in France and Japan, collaborative innovation between the private sector and the public service is regarded as essential. [56] However, the situation seems different in developing countries, where innovation in the public service is less frequently adopted. [30], [15]

B. Organisational Structure

The organisational structure is crucial to innovation diffusion, as it defines the organisation's sub-units, through horizontal differentiation, it locates decision-making responsibilities, through vertical differentiation, and it establishes integrating mechanisms. [57] Research asserts that three components, namely organisational structure, business planning systems, and control mechanisms, should be aligned to improve innovation diffusion. [58] With regard to innovation diffusion, organisations can be categorised according to the degree to which they have either a mechanistic or an organic organisational structure. [59] A mechanistic organisation tends to be more traditional, tightly controlled, and hierarchical, while an organic organisational structure is a flat structure, which is more loosely controlled and conducive to open communication and stakeholder consensus. [58] Innovation diffusion appears to be better suited to less bureaucratic organic organisational structures than mechanistic organisational structures. The public service is typically an example of a mechanistic organisational structure (see Fig. 2). [60]

A case study published in 2009 elaborated on the organisational structure of the Department of Trade and Industry as an example of a typical government structure. According to this case study, two pillars were established pursuant to the King report, namely the Executive Board, under the ambit of the Director-General (DG), and the Operations Committee (also called the "project management office" in other departments), chaired by the Deputy Director-General (DDG). [61] As a result of its organisational complexity and fragmentation, the public service is less able to foster coordination, [62], [63] giving rise to the

phenomenon of "limits to governance" when it comes to innovation diffusion. [63], [64] On the other hand, private sector organisations have veto power in terms of their structure. When considering Ford Motor Company of Southern Africa as an example of a private sector organisation, it is clear from their corporate ethos of "Kaizen" (a Japanese word meaning "never-ending improvement") that innovation is part of their organisational culture. To give expression to their corporate ethos, Ford Motor Company has a global matrix organisational structure. [57] Such a structure is a flat structure, where horizontal differentiation proceeds along two dimensions, namely product division and geographical area. [65] Thus, a global matrix organisational structure is similar to a typical organic organisational structure, which is best suited to the innovation diffusion process (see Fig. 3). [58], [60]
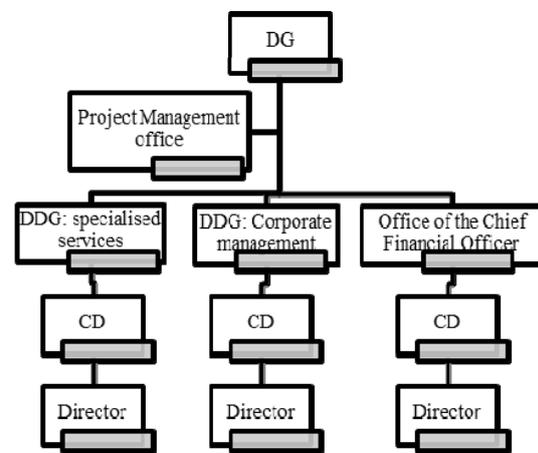

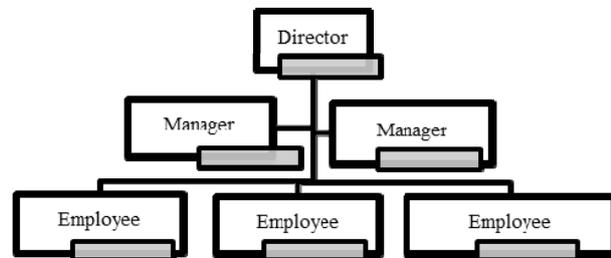Fig. 2 A typical mechanistic organisational structure

Fig. 3 A typical organic organisational structure

Against the background of the above discussion, it is argued that the need for innovation is paramount in sectors where the accretion of structural complexity may threaten to overwhelm public service delivery. [63], [66] A networked pattern has come to the fore as a possible starting point for innovation diffusion, manifesting in public-private collaborations, intergovernmental initiatives, and consortia, which are popular in the current wave of governmental innovation. The networked pattern is premised on the assumption that from the perspective of public sector service delivery, no single stakeholder has the knowledge or the means required to solve an array of cross-cutting societal problems. [63]

C. Leader Characteristics

Leadership plays a fundamental role in the development of innovation [51] and adaption to the increasingly complex external environment. [67] However, varied results have been obtained regarding leadership characteristics in the private sector and the public service. Some scholars report differences between the two sectors, [68] while others report more similarities than differences. [52] Furthermore, some research findings report both similarities and differences in terms of leadership. Similarities observed include social and environmental responsibility and employees' attitudes towards their immediate line managers, while identified differences include risk taking, the adequacy of leadership development, organisational approaches to motivation and involvement in decision making, and individual and charismatic leadership versus collective and networked leadership, particularly in times of crisis. [54]

Other important differences in terms of leadership are accountability and freedom. It is asserted that in the private sector, leaders are accountable to owners, customers, and shareholders, while public sector leaders are accountable to government constituencies and elected officials. Leadership in the private sector also seems to have more freedom to make decisions regarding the types of activities they engage in, [51] while government officials are constrained due to the regulative nature of the organisation.

Apart from the similarities and the differences in leadership characteristics, leaders play a critical role in communicating the role of innovation within an organisation, and in developing innovation strategies, which is regarded as one of the most important drivers of innovation, but also one of the greatest barriers to innovation.[56] Another critical role of leaders, regardless of the organisation or the sector, is to harness the creative thinking of their human capital, in order to maximise innovation. This is how the field of neuro-leadership emerged. Neuro-leadership is a field devoted to understanding the neurological functioning of the leader's cognitions, particularly relating to strategic thinking and collaborating with others. The aforementioned is fundamental for innovative thinking. [69]

V. DISCUSSION

Applying the theory of innovation diffusion in the South African public service commences from training policies on innovation technologies (for example ICT's) which should be utilised by the departments to assist public service employees to gain information on the innovation. As such, training would decrease the uncertainty of public service employees. Knowledge gained from training should be applied practically (referring to transfer of learning) in the work context on ICT systems to assist trainees to assimilate information. Afterwards, an enduring attitude towards the ICT are formed. Based on the aforementioned innovation diffusion process ICT's would either be accepted or rejected. However, as a result of previously identified stumbling blocks subsuming lack of training policies, and financial restrains resulting in either the absence of ICT systems or poor performing ICT systems information cannot be assimilated by public service employees which might give rise to the formation of negative attitudes regarding ICT's by the aforementioned employees.

Furthermore, the results indicate that the main difference between the external characteristics of the two sectors lies in the focus of the private sector, which is usually on profitability and shareholder value, operating within a business/ entrepreneurial framework, while the public service typically focuses on regulatory implementation of legislation and service delivery, operating within a unique constitutional framework. With regard to organisational structure, private organisations have veto power in terms of their structure. For example, Ford Motor Company of Southern Africa has a global matrix structure, similar to an organic organisational structure, which is more suited to innovation diffusion, while the public service typically has a bureaucratic, hierarchical mechanistic organisational structure, which is less suited to innovation diffusion. Regarding leadership, similarities were observed in social and environmental responsibility and employees' attitudes towards their line manager. Identified differences include risk taking, adequacy of leadership development, organisational approaches to motivation and involvement in decision making, and individual and charismatic leadership versus collective and networked leadership.

Linking the organisational characteristics with the innovation diffusion theory it could be said that leadership plays a crucial role in initiating policies to train employees on innovation and therefore provide the impetus for the innovation diffusion process. How the information about the innovation is diffused in the organisation would depend on the complexity of the organisational structure. The external environment of the organisation influences the measurement of success of the innovation diffusion process as service delivery quality in the case of the public service is difficult to quantify.

From the information presented, it becomes clear that innovation in the public service is often not necessarily initiated by exceptional leaders, but rather by collaboration between the private sector and the public service. During collaboration, new ideas are developed, processes of mutual learning are accelerated, and joint ownership of new and bold solutions are fostered. [55] However, due to the bureaucratic nature of the public service, and the complexity of the projects undertaken, effective implementation of innovation often takes longer in the public service. For this reason, most research emphasises collaborative innovation or networked patterns as a way forward to address the obstacles that hinder innovation diffusion in the public service. [63]

VI. CONCLUSION

The aim of this paper was to determine whether key success factors for implementing new technologies differ between the private sector and the public service with regard to organisational characteristics. The results indicate significant differences, and collaborative innovation, or networked

patterns, is proposed as a way forward. [63] Other scholars recommend that the public service spend a significant portion of their overall budget on information technology, that they place greater focus on clients' needs, that they value market research and feedback, that they implement managerial and team incentives to promote innovation, that they learn from best practices of the private sector, and that they link resource allocation with client satisfaction. [70] This implies that the public service needs to redesign their current practices, so that they are informed by the needs of the citizenry. Other research proposes a greater focus on neuro-leadership, to understand and improve the cognitive processing of public service leadership. [69] However, most of the above recommendations are operational, and they do not focus on organisational characteristics that are assumed to drive innovation diffusion at a strategic level.

Based on the findings presented in the previous section, it is the recommendation of the authors of this paper that an entrepreneurial orientation (EO) be incorporated in and fostered within the public service. An EO encompasses organisation-level processes, practices and decision-making styles inherent in innovative organisations. [53], [71] In order for the public service to respond to the dynamic environment of this sector, an entrepreneurial orientation should be transferred into feasible strategic activities that fulfil organisational objectives. [72], [73] As such, the literature identifies three dimensions that characterise an EO, namely innovativeness, risk taking, and proactiveness. [71]-[74] In addition, it is recommended that future research should focus on investigating how to infuse public service organisations with an entrepreneurial orientation. Moreover, since network organisational patterns are recommended [63] as a way forward, the national systems of innovation theory should be investigated within the context of private-public sector collaboration.

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