Knowledge transfer and decision making in municipal government: A case study on The City of Calgary

By: andy derksen

Submitted to OCAD University (Ontario College of Art and Design University) in partial fulfillment of the requirements for the degree of Master of Design in Inclusive Design
Toronto, Ontario, Canada, 2025

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Abstract

This study explores the challenges and opportunities of knowledge transfer and decision making within The City of Calgary's municipal government. The primary research question investigates how knowledge transfer between Line staff, Middle management, and Leadership can be improved to better inform decision making processes. Using a mixed-methods approach, the study combines quantitative surveys and qualitative interviews to capture perspectives from two functional areas. Key findings highlight the impact of organizational structure, culture, and trust on knowledge sharing and decision making. The results suggest adopting flexible organizational structures, fostering a culture of openness to improve trust, enhanced communication channels, and developing creating inclusive communication and connection practices to enhance collaboration and achieve citizen-focused outcomes. These insights offer a roadmap for transforming municipal governance through strategic knowledge management and inclusive decision making.

Abstract Flesch-Kincaid reading level: 18.8

Keywords

Municipal government; Knowledge transfer; Decision making; Organizational structure

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List of abbreviations, acronyms, & definitions

- OS: Operational Services
    - A department within the municipal organization focused on “providing strategic oversight and integrated management for City enabling services” (City of Calgary, n.d.)
- PICS: People, Innovation & Collaboration Services
    - A department within the municipal organization focused on maintaining “valuable public infrastructure, natural spaces, ecosystems and parks, civic buildings and facilities, City vehicles and equipment and our utility corridors” (City of Calgary, n.d.)
- REB: Research Ethics Board

- Decision making: The action or process of making decisions
- Knowledge transfer: “refers to a process in which employees or employers share their skills, information, experience, or ideas with other departments or other individuals in a business” (Gallemard, 2023)
- Line staff: those involved with daily groundwork operations of a business from the initial requests to administrative choices. These individuals have no direct reports, report to a middle management position, and have the main portion of their role dedicated to fulfilling tasks.
- Middle management: These individuals have more than two direct reports, be in a position to disseminate decisions, report to a leadership position, and have a portion of their role dedicated to managing Line staff
- Leadership: These individuals have a position to disseminate decisions and have a portion of their role dedicated to managing Middle management.

Introduction

Organizations are increasingly building communication frameworks that detach the Line staff (Line staff are those involved with daily groundwork operations of a business (Bragg, 2023)) from the initial requests, administrative choices, and stripping them of working autonomy, setting the organization up for potential struggles (Argote et al., 2000). Effective knowledge transfer requires individuals to share a common space, whether physical or digital (Policy Horizons Canada, 2021). The interpersonal gap (University of Calgary, 2023) in communication impacts the business unit's productivity and benefit to citizens. The value of direct knowledge transfer is being lost in many organizational structures based on the linear top-down decision making tactics (Maessen et al., 2018). Many Line staff feel a lack of connection and autonomy in their work (Towers, 2020).

The contemporary work environment presents unique challenges and opportunities for knowledge management. Often people use knowledge to gain merit and prestige in organizations (Disterer, 2001). Factors such as organizational culture, leadership styles, perception of merit, and employee engagement play important roles in shaping the success of knowledge transfer. "Knowledge transfer is recognized as a fundamental issue for organizations" (Albino et al., 2004) and The City of Calgary is no different.

This study seeks to build on existing knowledge transfer theories and models by examining their applicability in today's dynamic work landscape through the experiences of organizations and employees with a focus on The City of Calgary's direct needs. By exploring both quantitative and qualitative aspects, the research aims to provide valuable insights into the strategies that foster successful knowledge transfer of elements that impact decision making to provide individuals with a sense of autonomy and value in the workplace. The study aims to uncover insights that can inform both academic research and, most importantly, provide practical applications to facilitate knowledge transfer and autonomy between individuals.

Primary research question

How can knowledge transfer between Line staff, Middle management, and Leadership in The City of Calgary municipal government be improved to better inform decision making processes to be inclusive of those directly and indirectly impacted by decisions within the organization?

Sub-research questions

The following are sub-research questions:

Organizational structure

- ORQ1: To what extent does the organizational structure influence the success of knowledge transfer efforts, particularly in the presence of cross-functional teams and dynamic work environments?
    - Explanation: How organizational structure impacts knowledge transfer is important since various structures will either enable or inhibit the flow of information. Cross-functional teams and dynamic work environments require more flexible communication channels for their purposes, allowing for the successful transfer of knowledge.
    - Rationale: The question seeks to determine the strengths and limitations in different forms of organizational structures concerning their facilitation of effective knowledge transfers, which are fundamental determinants of sound decision making and operational efficiency.
- ORQ2: How does organizational culture, micro cultures, and implied cultures impact the effectiveness of knowledge transfer?
    - Explanation: Organizational culture is the primary shape of how knowledge is shared and put into practice within an organization. There are micro cultures and implied cultures that can either hinder or enhance the effective transfer of knowledge (Mambo & Smuts, 2022).
    - Rationale: The focus of this question is the role of organizational culture and its varying attributional effects on knowledge transfer, which could inform strategies to promote a more collaborative and inclusive environment.

Knowledge transfer

- KRQ1: How does encoded information created by individuals not in the impacted party affect the receiver's trust in the information?
    - Explanation: Trust is one of the most critical determinants in the effective transfer of knowledge. When individuals who have not been affected encode the information, it impacts the trust level and willingness of the receiver to use the information (Boyes, 2017).
    - Rationale: It seeks to explore the trust between the information source and the recipient and how that can lead to improvements in credibility and reliability in knowledge transfer processes.
- KRQ2: What challenges and barriers do organizations encounter when attempting to transfer knowledge?
    - Explanation: The process of knowledge transfer is commonly impeded by several challenges and barriers, including, among others, communication gaps, technological limitations, and resistance to change (FasterCapital, n.d.).
    - Rationale: Identifying those challenges and barriers is critical in developing effective strategies for overcoming them, thereby ensuring smooth and effective knowledge transfer processes.

Decision making

- DRQ1: How are cognitive biases, the perception of merit, and heuristics identified in decision making, and how do they impact the quality of decisions?
    - Explanation: Cognitive biases (Ruhl, 2023), the perception of what is deserved, and heuristics can all affect decision making processes to an extent that might entail bad results.
    - Rationale: This question aims to determine how these mechanisms are recognized and how they compromise decision quality, thus providing avenues for the intervention of bias and better decision making.
- DRQ2: How can effective decision making be facilitated in organizational processes to reach citizen benefiting outcomes?
    - Explanation: Effective decision making is also what makes it possible to realize the objectives concerning which citizens are beneficiaries, for which such processes must be inclusive and wide-ranging voices and needs (Holladay, 2005).
    - Rationale: The very question explored strategies under which effective decision making can be facilitated, thereby enhancing that organization in making decisions that would positively influence the community and the citizenry.

This thesis is structured to outline the findings and differences between Line staff, Middle management, and leadership levels and how the relationship of the roles are intertwined.

Literature review

Organization structure

There are many types of organizational structures, each with their own benefits and detriments to staff and operations. The type of organization structure chosen reflects the organization's philosophical reason for existence and activity (Ahmady et al., 2016). Seven key organizational structures were identified: functional, divisional/multidivisional, team-based, flat, matrix, circular, and network (*Organizational Structure for Companies With Examples and Benefits*, n.d.). It was determined that The City of Calgary currently operates primarily in the context of a functional (or bureaucratic) organizational style with areas leaning to a team-based structure.

The functional structure is characterized by a clear hierarchy and specialized departments. While it can enhance efficiency and expertise, it may also create silos that hinder knowledge transfer. In contrast, a team-based structure promotes collaboration and flexibility, which can facilitate knowledge transfer. However, it may also lead to ambiguity in roles and responsibilities. A study on the impact of organizational structure on knowledge transfer in municipal governments found that team-based structures significantly enhance knowledge sharing and collaboration (Smith et al., 2023). Additionally, research on cross-functional teams

in dynamic work environments highlighted the importance of flexible structures that adapt to changing needs (Johnson & Lee, 2022).

Despite these insights, there is limited research on the specific impact of different organizational structures on knowledge transfer within municipal governments. More studies are needed to explore the effectiveness of hybrid structures that combine elements of functional and team-based models. Addressing these gaps can provide a more comprehensive understanding of how organizational structure influences knowledge transfer in municipal settings.

Knowledge transfer

Knowledge transfer is crucial for information distribution. There are three types: implicit (application of explicit and are transferable), tacit (gained from personal experience) and explicit (easy to articulate) (Anderson, 2023) Organizations may only capture the explicit knowledge as implicit and tacit can be more difficult to capture (EX: one pagers, step-by-step directions, etc.) Knowledge transfer is not training but goes beyond the facts and steps of training to apply the niches of experiential learning (Brown, 2024). Effective knowledge transfer requires individuals to share a common space, whether physical or digital (Policy Horizons Canada, 2021). According to the Government of British Columbia, there are six stages to the employee knowledge cycle: identifying and learning needs, learn, create, and innovate, use, and share knowledge, knowledge succession, off board and legacy (Government of British Columbia, n.d.).

Implicit knowledge is often difficult to capture and transfer because it is deeply embedded in individual experiences. Tacit knowledge transfer can be facilitated through mentorship and hands-on training, but it requires a culture of openness and trust. Explicit knowledge is easier to document and share, but it may lack the depth and context provided by implicit and tacit knowledge. A study on knowledge management systems in local government highlighted the importance of capturing and disseminating both tacit and explicit knowledge to improve service delivery (Ncoyini & Cilliers, 2020). Additionally, research on barriers to knowledge transfer in municipal organizations identified strategic communication, trust, and absorptive capacity as critical factors (Sunnemark et al., 2024).

However, there is a need for more research on the integration of diverse types of knowledge transfer within municipal governments. Studies exploring the impact of digital platforms and tools on knowledge transfer in public sector organizations are limited. Addressing these gaps can enhance our understanding of how to effectively manage and transfer knowledge in municipal settings.

Decision making

The City of Calgary Web and Digital team conducted a six month project where they performed a design thinking cycle to better understand the decision making process needs for the team. Four key types of decisions were established: delegated, cross-cutting, ad hoc, and big bet (City

of Calgary - Web and Digital, 2022). According to The City of Calgary the four types are based on frequency, permanency, and perception of risk.

- Delegated decisions are narrow scope, frequently often “day-to-day" individual work decisions, and can be reversed, if necessary, as a direct report can be held accountable.
- Cross-cutting decisions are regular decisions but made over time by a variety of involved parties through crossing through broad organizational levels and boundaries.
- Ad hoc decisions are defined as infrequent, extremely low risk, and often inconsequential.
- The final decision making type is big bet; these decisions are infrequent, high stake, with potential for major consequences or shape the future of the organization but often have unclear direction of what might be “right” or “wrong” choices.

The City of Calgary modified a decision making process based on the six steps developed by Peter Drucker: classify the problem, define the problem, specify the problem, decide what is “right”, create an action plan, test the validity (Drucker, 1967) and a seven step plan as outlined by Dartmouth: identify the decision, gather information, identify alternatives, weigh the evidence, choose among alternatives, take actions, review decision (Dartmouth, n.d.). Having a process helps to eliminate decision bias and make the collaboration more objective. Decision making at any level often will impact other parties so a process that outlines and inclusive criteria ensures that decisions are not made in silos.

Cognitive biases, like confirmation bias and anchoring, can greatly affect decision quality. Mitigation strategies include structured decision making processes and incorporating diverse perspectives to avoid siloed processes. Strategies to mitigate these biases include structured decision making processes and diverse perspectives. One influence on trust in decision making is the perception of merit. The perception of merit in organizations functions under the belief that merit is tied directly to fairness, equality, or objectivity and assumes that there is equal opportunity by all to achieve the same level of merit (Whelan, 2013). A study on decision making processes in municipal governments found that inclusive and transparent practices lead to better outcomes for citizens (Brown et al., 2023) which means not only conducting decisions based on merit. Additionally, research on cognitive biases in public sector decision making highlighted the importance of training and awareness programs to mitigate biases (Green & Taylor, 2022). Heuristics can simplify and start to reduce biases in decision making but may also lead to errors via the types of data and the type of analysis used. Balancing heuristics with data-driven approaches can enhance decision quality.

Despite these findings, there is limited research on the specific impact of cognitive biases on decision making processes within municipal governments. More studies are needed to explore the effectiveness of different decision making models in achieving citizen-benefiting outcomes. Addressing these gaps can provide valuable insights into improving decision making processes in municipal settings.

Methodology

The study is a mixed-methods approach, combining both quantitative and qualitative methods to capture a comprehensive understanding. All methods of collection were with current employees within Data collection involved current employees from The City of Calgary's Operational Services (OS) and People, Innovation, & Collaboration Services (PICS) functional areas. To gather data through these approaches participants were selected for the qualitative portion based on a randomization strategy to select business units and participants that represented diverse industries, team sizes, and organizational cultures.

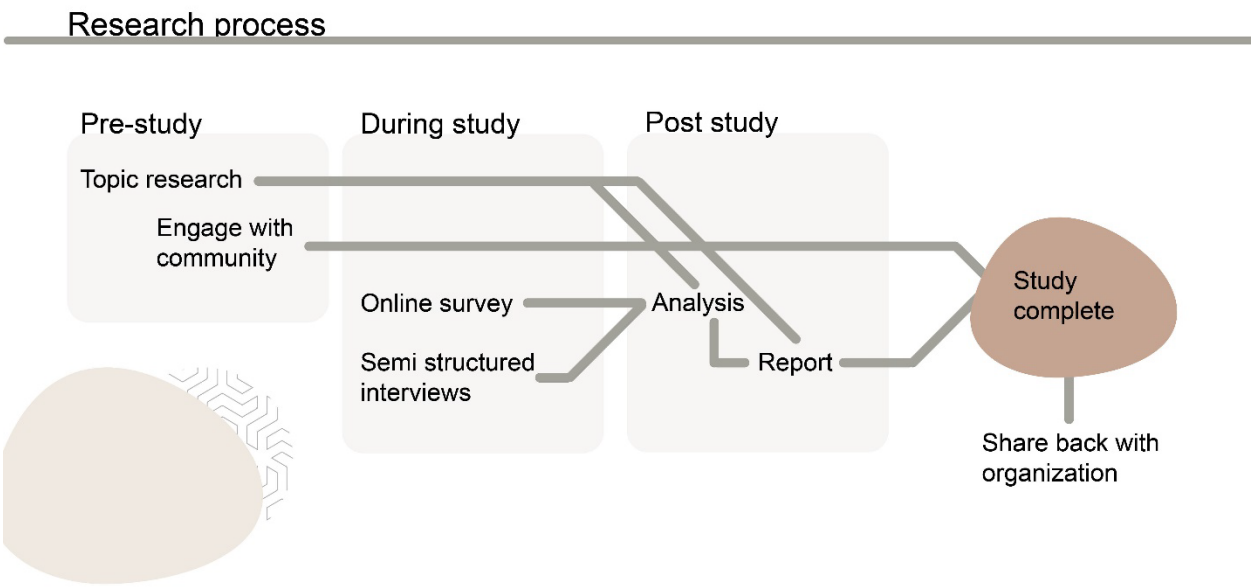

Figure 1: Research process

Community engagement

The study worked with three types of groups from The City of Calgary, Line staff, Middle management, and Leadership.

1. Leadership that typically develops and has final say about information and processes
    a. These titles include Leader and Manager
2. Middle management that receives and disseminates information and processes
    a. These titles include Team Lead, Supervisor, Foreman, Coordinator, and other similar titles
3. Line staff that typically receives information
    a. These include an array of titles

The reason for the inclusion of three groups is to understand the chain of knowledge dissemination and the factors that are at play for each group. The study did not include members of the Executive Leadership Team (ELT), such as departmental General Managers or City Councilors, because their decision making processes and knowledge-sharing structures

differ significantly from the operational focus of this study. Instead, the research prioritized employees directly involved in day-to-day knowledge transfer and decision making.

The study included two of the seven departments and participants were from the accompanying 12 business units.

Functional area	Business units	Reason
Operational Services (OS)	• Mobility • Parks & Open Spaces • Water Services • Waste & Recycling Services • Calgary Transit • Fleet & Inventory • Facility Management	Representation of staff that are manual labour and generally directly public facing
People, Innovation, & Collaboration Services (PICS)	• Customer Service & Communication • Information Technology • Human Resources • Occupational Health & Safety • Collaboration, Analytics & Innovation	Representation of staff that are desk based and generally internal facing

Table 1: City of Calgary organization chart table as of 2024

The following image is the organizational chart of The City of Calgary as of 2024 for further context as to the exclusion and inclusion of functional areas in context with the whole organization.

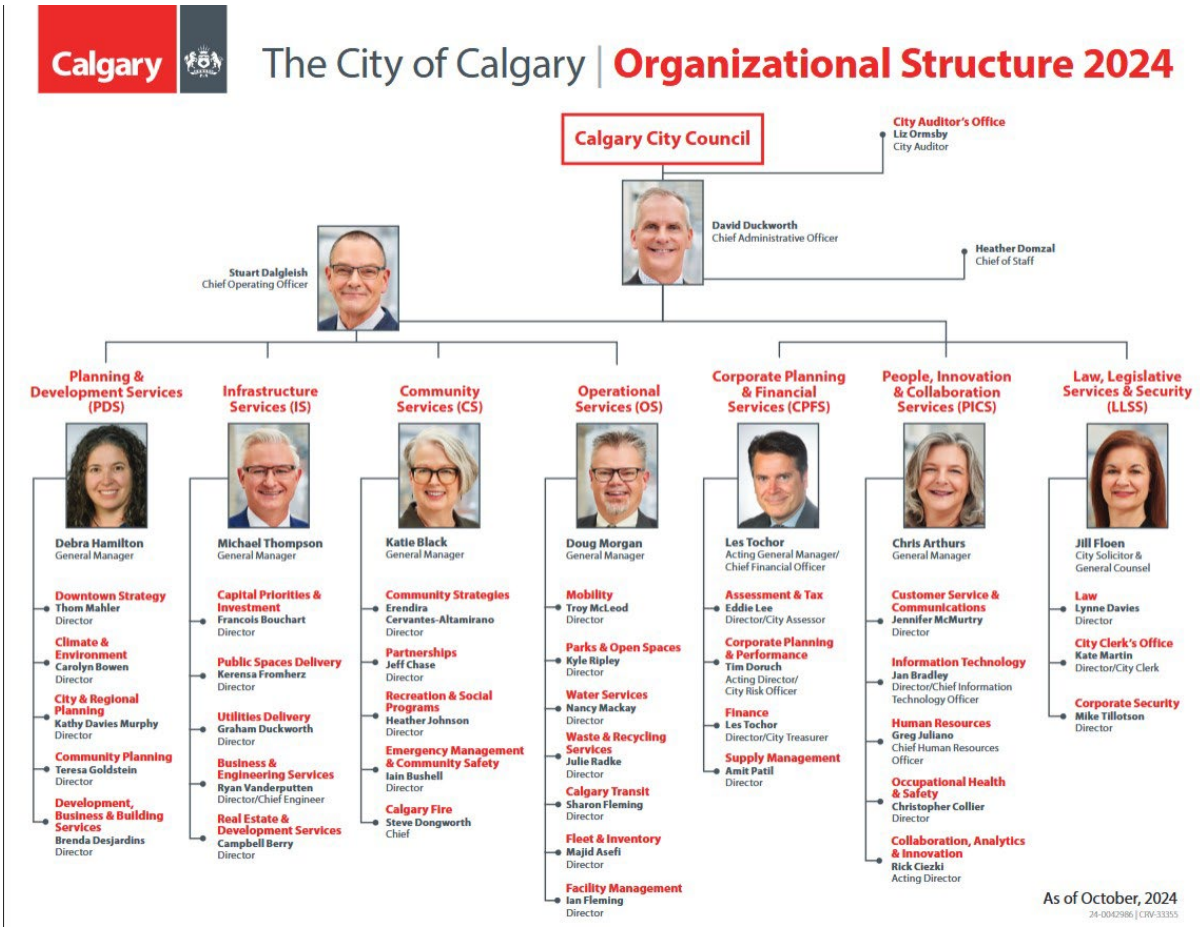

Figure 2: The City of Calgary organizational chart

(City of Calgary - City Manager's Office, n.d.)

Contact

Pre-Research Ethics Board approval contact

To get an understanding of the functional areas (OS and PICS) and business unit readiness and willingness to participate, leadership levels that would not be included in the study were contacted. The General Manager of OS and individual Business Unit leaders in PICS were contacted via email and then participated in a 30 minute explanation presentation where they were afforded the opportunity to ask questions and to provide consent for the staff in the areas to participate in the study. This also provided an opportunity for individuals to help with the dissemination of the study materials if they chose to.

Post-Research Ethics Board approval contact

The initial participant contact began right after REB approval. The modes of communication were email, word-of-mouth, short blurbs in business unit newsletters, and cold "calls" to

potential participants. All starting points reigned from the internal organization chart in the internal intranet section called myHRconnect (City of Calgary, n.d.).

Research design

Prior to designing the study permission was needed to use The City of Calgary employees while being an employee in the organization. Permission from organizational lawyers, freedom of information policy staff, Union representatives, and OS and PICS Managers was required to ensure that the study was designed in an organizational approved way. The key factors to consider in the study design were confidentiality, data storage and retention, and representation of The City of Calgary.

Data collection methods

Participants were selected from two functional areas within The City of Calgary: Operational Services (OS) and People, Innovation & Collaboration Services (PICS). A combination of sampling methods was used:

- Random sampling to ensure representation across departments
- Sample of convenience (Edgar & Manz, 2017), as the researcher works within the organization
- Self-selection (Sharma, 2017), allowing employees to voluntarily participate
- Snowball sampling (Mason, 2018), where participants referred colleagues to the study

Engagement with the community in the form of mentioning the future research in casual conversations and with leadership levels began in the second half of 2024. The open active data collection period was a span of 28 days in early 2025. Nine of the days consisted of weekends or statutory holidays, leaving 19 weekdays to disseminate and conduct interviews.

Realizing a short timeline was imminent, the researcher created a mixed methods study with current employees within The City of Calgary in the Operational Services or People, Innovation, & Collaboration Services functional areas.

Quantitative data collection

Online survey

An online survey hosted via OCADU's Microsoft Teams forums was shared and distributed via email and posters in shops. This survey collected quantitative data on knowledge transfer strategies, organizational culture, leadership styles, and perceived impact through open ended and Likert scale questions. There were nine Likert scale questions in a section related to knowledge transfer with one open ended text field asking participants about what could be better for them. The second section asked 10 questions about decision making in Likert scale questions with an open text question with a similar sentiment to the previous section. The

survey was shared in the form of a link and a QR code. It was encouraged to share widely via snowballing. A full list of survey questions can be found in Appendix 01: Data collection questions.

Qualitative data collection

Literature review

By conducting a review of the literature on knowledge transfer, organizational psychology, and related fields to identify documented theories, models, and gaps that may inform the study, the literature review helped to shape the primary and secondary thesis questions as well as the survey and semi-structured conversational interview questions. The review was conducted over the course of six months in the last half of 2024.

Semi-structured interviews

The 60 minute semi-structured interviews were conducted via Microsoft Teams with seven participants. Each participant received an email invite to their City of Calgary email with a brief overview of what to expect and an attachment that consisted of the informed consent form. The meeting copy indicated that the form was for personal records and to read over prior to the interview if they desired. The invitation also established that if the time needed to be moved or there was any need for assistance with booking a private space or technology the researcher would be able to assist. Each interview started with asking for permission to transcribe the session and reviewing the informed consent form via a screen share of the researcher's screen and both parties verbally consenting. A set of seven questions was developed and loosely followed throughout the conversational interviews. These questions were all open ended and covered the following themes: knowledge sharing across levels, challenges in knowledge transfer, role of organizational structure, impact of culture, trust in information, improving decision making, and citizen focused decisions. At the closing of each interview, participants were asked if they wanted their emails and names included on a list of individuals that wanted to be included in updated on the research, if not, the research would have no way to reach out after the data anonymization of the interview.

The anonymization process of interviews allowed participants to feel in control of their participation. Participants were informed that they could retract any and all parts of the interview within seven days of completion. After this period, their name and all identifying elements in the transcript, emails, and other materials (apart from the verbally consented consent form) were stripped and assigned a codified number. The number indicated the functional area (OS or PICS), their hierarchy level (Line staff- S, Middle management-M, and Leadership-L), and an interview number. (EX: PICS-M-01) Once all interviews were complete, this allowed for comparison between hierarchy levels and functional areas.

Participation in data collection

The following chart indicates the engagement levels among Line staff, Middle management, and Leadership employees, the mode of engagement (survey or semi-structured conversational interview) and their functional area (OS or PICS).

Over the data collection period, there were 44 voluntary participants, seven interviews and 37 survey engagements. Based on the estimated employee numbers for The City of Calgary being ~16000 in 2024 (Dupuis, 2024) the study engaged less than 0.30% of staff. At the time of the study. Operational Services accounted for ~49% of all staff and People, Innovation & Collaboration Services accounted for ~11%. These two functional areas account for ~9000 employees (~60% of all staff), creating a slight increase in engagement based on only the two functional areas of ~0.49% engagement.

This engagement falls short of hopeful goals of a sample size for direct engagement with the researcher at ~24 participants. Eight participants from each of the hierarchy levels, Line staff, Middle management, and Leadership and the survey target of ~80 participants that was initially proposed.

This calculation is based on a 95% confidence level and a 20% margin of error with 16000 employees. The margin of error was calculated at 20% due to the study parameters automatically excluding 40% of the organization.

The overall participation based on the two functional areas was heavily populated by PICS participants. PICS participation was ~93% of all participation; OS was ~7%. The functional area division is not considered in the analysis of this research. Overall, voluntary participation was primarily from PICS staff and Line staff. Reasons can be speculated but no definite reason can be recorded.

The type of engagement was 84% (37 participants) in the online survey and 16% (7 participants) in a semi structured interview.

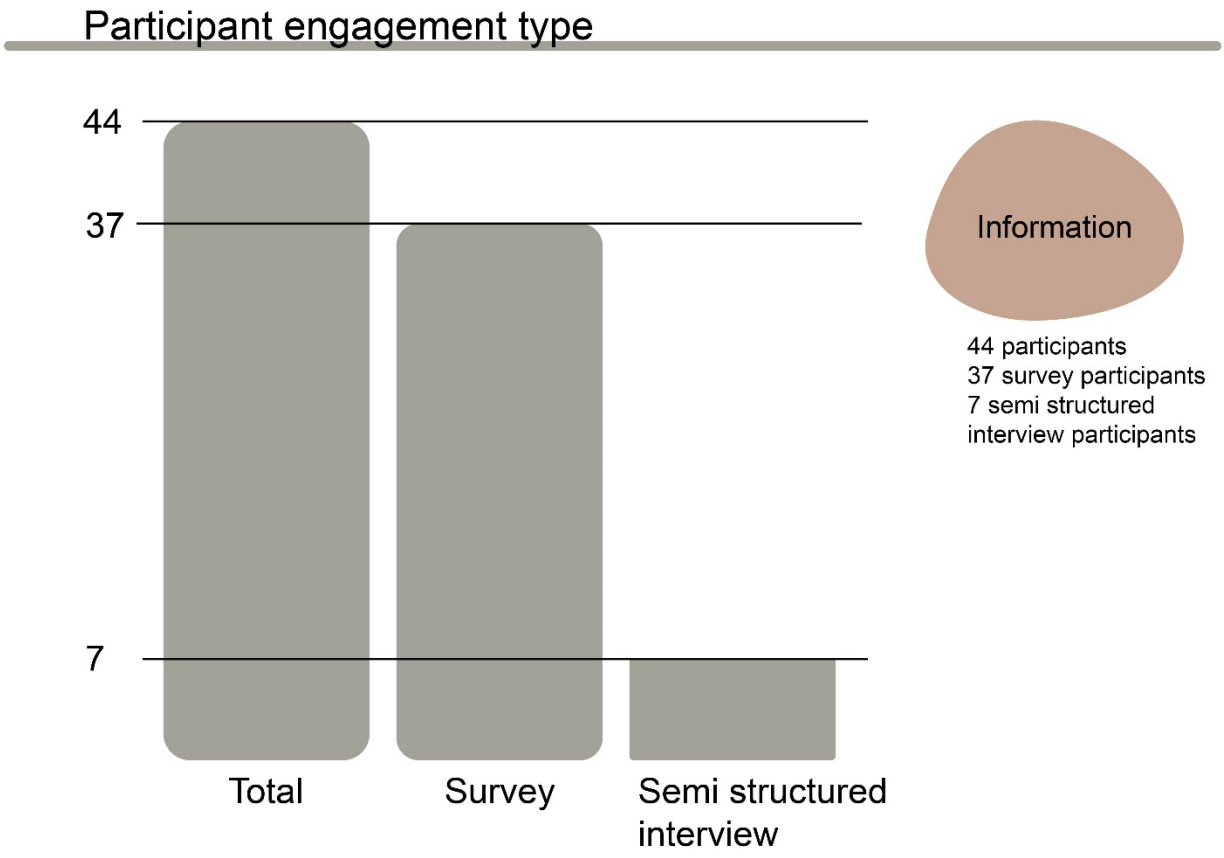

Figure 3: Participant engagement type

The spread of roles based on organizational hierarchy is presented in a much more consistent representation of the number of roles at each level. The Line staff participation was ~61%, Middle management ~25%, and Leadership ~14%.

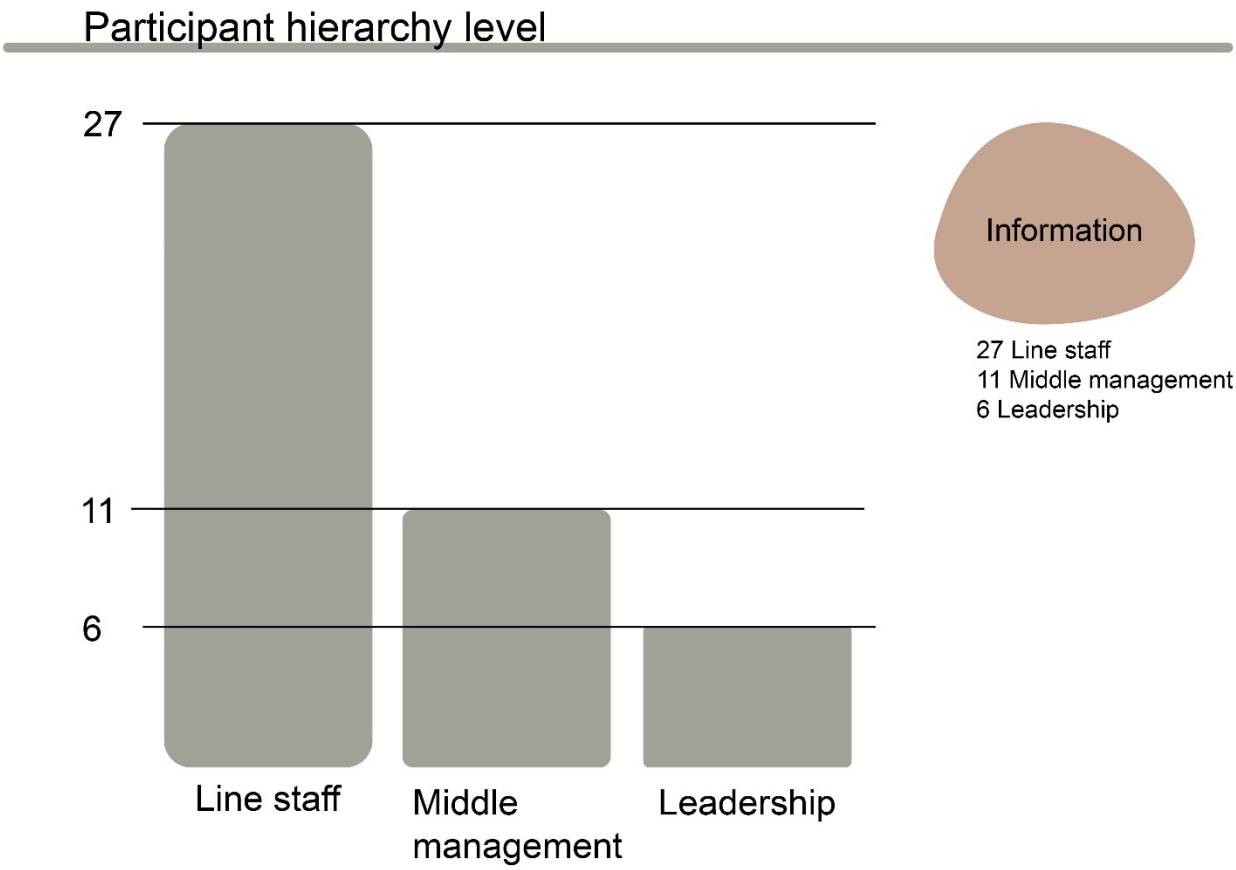

Figure 4: Participant hierarchy level

Finally, the engagement for each hierarchy level with the engagement types was a consistent representation.

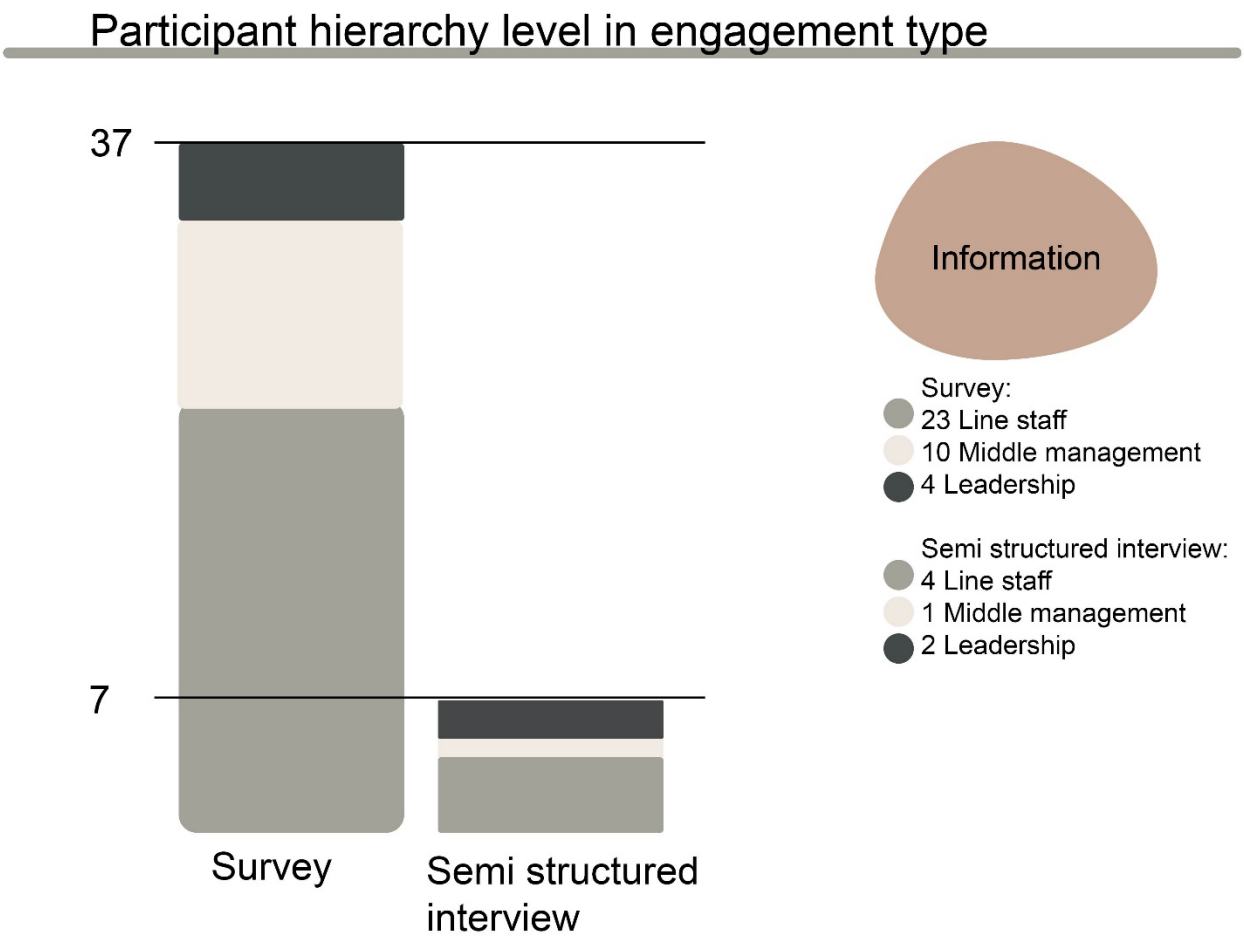

Figure 5: Participant hierarchy level in engagement type

Analysis techniques

The study used three different analysis techniques to provide analysis to the quantitative (Likert scale data) and qualitative (open text fields and interviews) data.

1. Descriptive statistics, for Likert scale survey responses
2. Qualitative data coding, for semi structured interviews
3. Comparative analysis, to compare the various groups in the study

Descriptive statistics

Descriptive statistics were applied to analyze the quantitative survey responses collected through Likert scale questions. Measures such as means, standard deviations, and frequency distributions helped summarize participant perceptions regarding knowledge transfer and decision making processes (Field, 2018). The survey had a four choice scale, and each choice was provided with a numerical value: +2, +1, -1, -2. This approach provides an overview of trends, central tendencies, and variability in the data, allowing for an initial understanding of key

patterns across different organizational levels (Mertler & Reinhart, 2017). This analysis was conducted first to gather a general sense of sentiment.

Qualitative data coding

Interview transcripts were further examined through qualitative data coding, a method used to label and categorize qualitative data (Saldaña, 2021). Using an open-coding process, key themes were identified, followed by axial coding to explore relationships between categories (Charmaz, 2014). This process ensured that qualitative responses were systematically organized, allowing for deeper insights into the lived experiences of employees regarding knowledge transfer practices.

Comparative analysis

Comparative analysis is conducted to examine differences in perspectives across line staff, middle management, and leadership regarding knowledge transfer and decision making inclusive. By systematically comparing responses across these groups, this method helps identify variations in perceived effectiveness, trust in shared knowledge, and barriers to communication (Ragin, 2014). This approach is particularly useful for understanding how knowledge flows between hierarchical levels and whether organizational structures impact the inclusion of diverse voices in decision making.

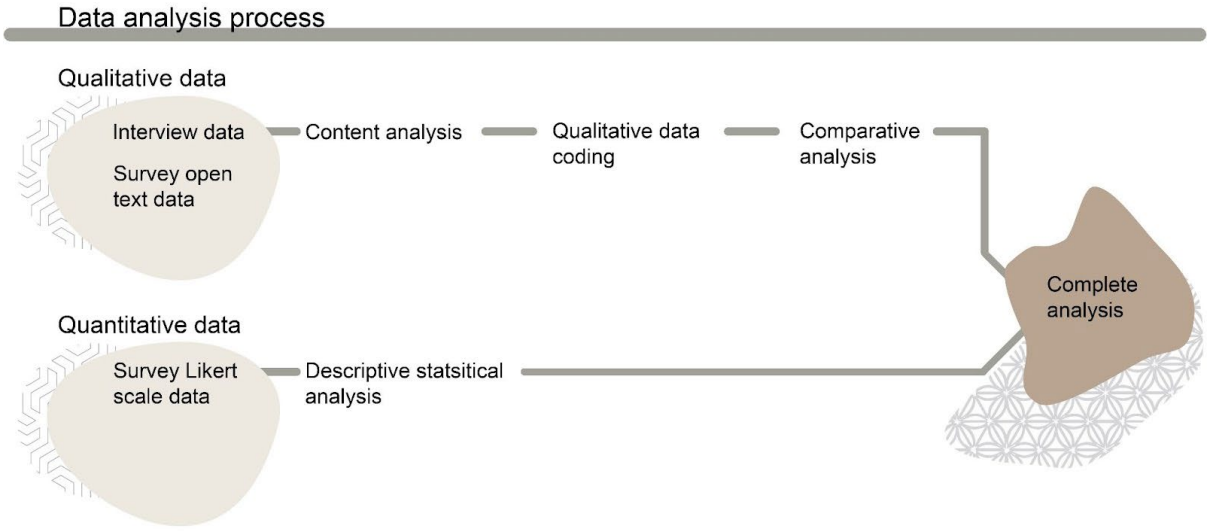

Figure 6: Data analysis process

Benefits, risks, and limitations

Below are tables of benefits, risks, and limitations of this study on the third largest municipality in Canada, Calgary.

Benefits

The potential benefits of the study include enhanced employee engagement, as increased awareness of organizational systems can lead to a deeper understanding of these systems (Dunn, 2023). Improved organizational performance is another key benefit, with successful knowledge transfer strategies potentially boosting productivity and efficiency. Additionally, focusing on productivity can reduce the time employees spend on the initial learning curve when encountering new situations (Dunn, 2023). Finally, involving individuals in the decision making process can mitigate organizational risk and highlight benefits, as it increases their understanding of various aspects of the situation (Document360 Team, 2019).

Benefits	Description
Enhanced employee engagement (Dunn, 2023)	Increased awareness of organizational systems could lead to understanding of organizational system
Improved organizational performance	Successful knowledge transfer strategies can enhance organizational performance, productivity, and efficiency
Focus on productivity (Dunn, 2023)	Reduced time spent in the initial learning curve when individuals encounter new situations
Mitigate organizational risk and highlight benefits (Document360 Team, 2019)	Involve individuals in the decision making process can increase understanding of various aspects of the situation

Table 2: Benefits of conducting the study

Risks

The potential risks associated with the study include issues related to sharing culture, where increased awareness of organizational systems might lead to internal conflict and fear of replacement. To mitigate this, the study clearly communicated the benefits of knowledge transfer strategies and addressed any concerns about disruptions. Confidentiality concerns, as noted by Dunn (2023), may cause participants to hesitate in sharing certain knowledge or experiences, especially if the study involves sensitive organizational information. Creating and disclosing confidentiality measures and clearly communicating how participant data will be anonymized and protected may help alleviate these concerns.

Time constraints posed another risk, as participation conflicted with some of participants' daily work and holiday times. Creating a flexible system of participation helped mitigate this issue. Leadership support was crucial, as a lack of support from leadership levels may have hindered the availability of participants. Ensuring that the potential benefits are understandable and addressing worries such as time, hours, and privacy in a way that outlined the benefits of participation helped secure leadership support.

Selection bias was a risk if the participants chosen for the study were not representative of the broader population. Creating a general sample size and allowing for participation based on interest and snowball sampling (Mason, 2018) helped mitigate some of this risk. Finally, generalizability was a concern, as data collected may not be applicable to contexts outside The City of Calgary. Ensuring that the data collected can be referenced within other municipal contexts in Canada can help address this issue.

Risks	Description	Mitigation efforts
Sharing culture	Increased awareness of organizational systems could lead to internal conflict and fear of replacement	Ensure that the study communicates the potential benefits of knowledge transfer strategies and addresses concerns about disruptions
Confidentiality concerns (Dunn, 2023)	Participants may be hesitant to share certain knowledge or experiences due to concerns about confidentiality, especially if the study involves sensitive organizational information	Implement robust confidentiality measures and clearly communicate how participant data will be anonymized and protected
Time constraints	Time conflicts with participation and the participants daily work	Create a system of participation that is flexible for participants
Leadership support	Lack of support from leadership levels may hinder the availability of participants	Ensure the potential benefits are understandable, ensure worries such as time, hours, privacy, etc. are described in a way that outlines the benefit of participation
Selection bias	The sample of organizations or participants chosen for the study is not representative of the broader population	Create a general sample size but allow for participation outside based on interest and snowball sampling (Mason, 2018).
Generalizability	Data collected may not be able to be extrapolated to other	Ensure that the data collected can be referenced at least within other municipal contexts in Canada.

	contexts outside The City of Calgary.	

Table 3: Risks of conducting the study

Limitations

The study was conducted with several limitations. Minimal research time was a significant constraint, as the active data collection period lasted 28 days, with 9 of those days being weekends or statutory holidays, leaving only 19 weekdays for disseminating information and conducting interviews. Information dissemination often takes a long time in larger organizations, causing this research to be rapidly pushed through various communication channels, which may have been missed by individuals due to work schedules, locations of work, vacation, and other diverse factors.

Minimal time to follow up on leads for interviews was another limitation. Eight participants were randomly selected for one-on-one interviews and contacted via internal email systems. This randomization process was only initiated post-REB acceptance and required cataloguing and systemizing all levels in each functional unit, taking multiple days. This impacted the time available to reach out to the selected individuals, making it difficult to engage with them and schedule interviews.

Additionally, four separate times, while not in an official interview or survey situation, individuals in the organization provided leads on who they thought might be a good fit or beneficial to participation. These leads took precedence over anonymized selection as the individuals were identified as likely to be available within the timeline of the study.

The study was conducted within a single organization, The City of Calgary, which may limit the extrapolation and applicability of findings to other municipal organizations, government organizations, and small or large organizations. The survey and semi-structured conversational interviews specifically asked about the participants' context within The City of Calgary. It is noted that some experiences and responses may have been consciously or unconsciously influenced by experiences not created while within The City of Calgary’s employment.

Selection bias in functional area choice was present, as the two functional areas were chosen based on the researcher’s employment in the organization, their perceived diversity of roles, and personal engagement with individuals in various roles.

Minimal engagement points for non-desk-based staff were another limitation. The organization has a history of using online surveys to gather information from individuals, making the emailed survey link with a short blurb an accessible norm for desk-based staff. Non-desk-based staff may have a shared location, but many individuals forgo these locations and opt to arrive at the location required for their workday. The researcher was unable to visit many of the sites as there are dozens located around Calgary.

Lastly, largely self-selection was encouraged as part of the research, with a recommendation to avoid having those in power (Middle management, Leadership, Managers, etc.) push participation in the research. This led to a large perceived sample of self-selection, filtering out voices that may have provided alternative perspectives and voices.

Theme	Reason
Minimal research time	The active data collection time was 28 days with 9 for those days consisting of weekends or statutory holidays, leaving 19 weekdays to disseminate and conduct interviews. Information dissemination often takes a long time in larger organizations causing this research to be rapidly pushed through various communication channels. These channels may have been missed by individuals due to work schedules, locations of work, vacation, and time away, or other diverse factors.
Minimal time to follow up on leads for interviews	Eight participants were randomly selected to have a one-on-one interview and were contacted via internal email systems. This randomization process was only initiated post-REB acceptance and required cataloguing and systemizing all levels in each functional unit, taking multiple days. This impacted the time the researcher was able to reach out to the selected individuals. Given an appropriate time to reply and follow up was close being able to engage with these individuals to schedule an interview was difficult. Four separate times, while not in an official interview or survey situation, individuals in the organization provided leads with who they think in their personal network in the organization may be a good fit or beneficial to participation. These leads took precedence over anonymized selection as the individuals were identified as likely to be available in the timeline of the study.
Single organization	While directly beneficial to The City of Calgary, extrapolation, and applicability of findings to other municipal organizations, government organizations, and small or large organizations may be limited. The survey and semi-structured conversational interviews specifically asked about the participants' context within The City of Calgary. It is noted that some experiences and ways participants responded may have been consciously or unconsciously influenced by experiences not created while within The City of Calgary’s employment.
Selection bias in functional area choice	Based on the researcher’s employment in the organization, the two functional areas were chosen based on their perceived diversity of roles and personal engagement with individuals in various roles.

Minimal engagement points for non-desk based staff	The organization has a history of using online surveys to gather information from individuals, making the emailed survey link with a short blurb an accessible norm for desk based staff. Non-desk based staff may have a shared location, but the researcher was advised that many individuals forgo these locations and opt to arrive at the location that they are required to be at for the workday. The researcher was unable to visit many of the sites as there are dozens located around Calgary.
Largely self selection	As part of the research, it was encouraged to not have those in power (Middle management, Leadership, Managers, etc.) push participation in the research. This led to a large perceived sample of self selection filtering out voices that may have provided alternative perspectives and voices.

Table 4: Limitations of conducting the study

Results

Each analytical process was conducted in sequential order.

Descriptive statistics results

The descriptive statistics analysis was conducted using the Likert scale questions of the online survey. Analysis was conducted by breaking down the responses into the decision making and knowledge transfer sections as outlined in the flow of the survey. The data was analyzed with all hierarchy levels.

The minimum will always be –2 and the maximum always 2. With a range of 4, many elements of the descriptive statistical analysis are not meaningful for this analysis; excluding are elements like kurtosis and outliers. Full details per each question are outlined in Appendix 02: Descriptive statistics analysis.

Knowledge transfer analysis

Statistic	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Mean	0.11	-0.58	-0.61	-0.08	0.14	0.19	0.17	-0.72	-0.25
Std Dev	1.24	1.20	1.15	1.20	1.33	1.12	1.42	1.09	1.11
Median	1	-1	-1	0	1	1	1	-1	-1
Skewness	0.13	0.57	0.46	-0.14	-0.04	-0.54	-0.18	0.97	0.13

Table 5: Descriptive statistics for knowledge transfer

Each question has 36 responses, ensuring a consistent sample size across all questions. The data reveals a mix of positive and negative perceptions among respondents, with significant variability in opinions. While some questions show slight positive inclinations, others indicate

dissatisfaction, particularly with tools and processes, cross-functional team collaboration, and opportunities for informal knowledge exchange. The diverse opinions highlight the need for targeted improvements in knowledge sharing and collaboration practices to address the varied experiences and perceptions of the staff.

Decision making analysis

Statistic	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21
Mean	0.49	-0.54	-0.54	0.22	0.3	0.32	0.43	-0.54	-0.03	0.49	-0.54	-0.54
Std Dev	1.15	1.31	1.12	1.14	1.04	1.28	1.26	1.30	1.34	1.21	1.31	1.08
Median	-1	1	-1	-1	-1	2	1	1	1	-1	1	1
Skewness	0.46	-0.36	0.83	0.82	0.91	-1.76	-0.14	-0.92	-0.45	0.16	-0.04	-0.95

Table 6: Descriptive statistics for decision making

Each question has 36 responses, ensuring a consistent sample size across all questions. The data reveals a mix of positive and negative perceptions among respondents, with significant variability in opinions. While some questions show slight positive inclinations, others indicate dissatisfaction. The diverse opinions highlight the need for targeted improvements in decision making practices to address the varied experiences and perceptions of the staff.

Qualitative data coding results

The qualitative data coding process began seven days after each interview was conducted and after the online survey was closed. Lines of text from transcripts, researcher notes from the interviews, and open text answers in the online survey were all considered in relation to the thesis question and sub thesis questions. In total 477 lines of text were pulled into a Microsoft Excel sheet and were codified with relation to sub thesis questions, level of hierarchy, and key sentiment of the line. From this, 157 unique key sentiments were coded based on if the original key sentiment was similar to another original key sentiment. An example of this merging is “Challenges in sharing information” and “Challenges in knowledge transfer.” The merging took into account if the sub thesis question alignment was different; if so, it was not merged.

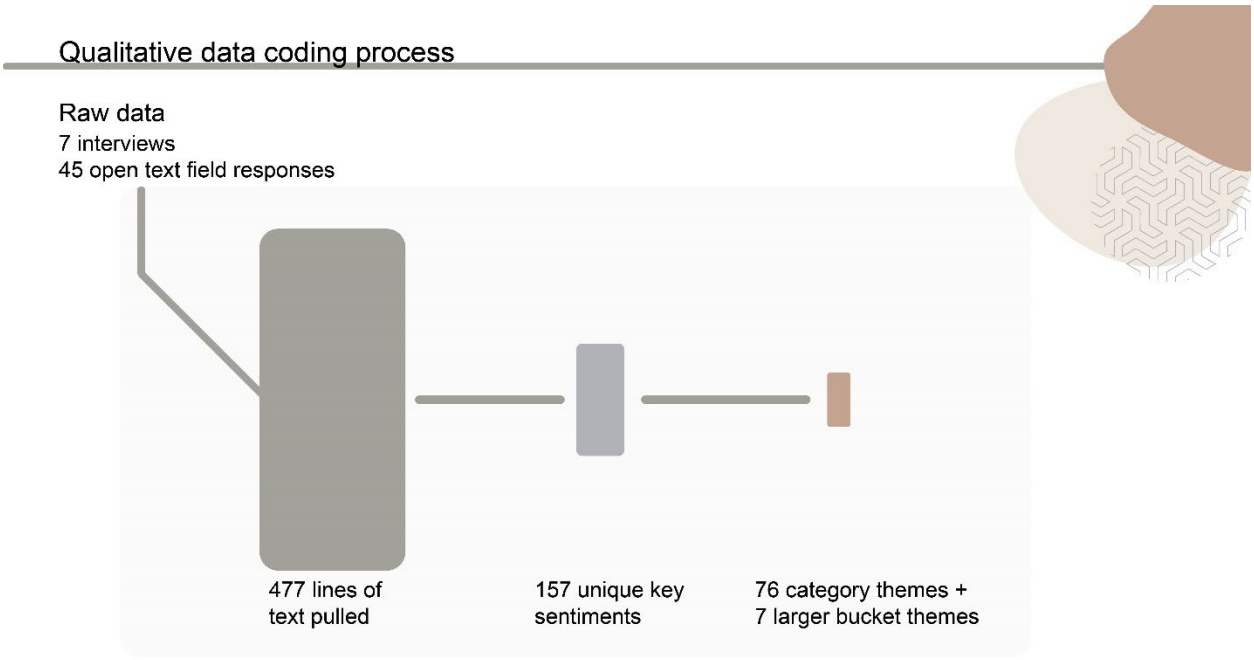

Figure 7: Qualitative data coding process

Once the 157 unique key sentiments were coded then underwent a two-step axial coding process. The first step assessed similar themes in the 157 unique codes to create a broader key sentiment. An example of this merging is the initial coding's of “Decision making involvement,” “Inclusion in conversations,” and “Inclusive decision making” to create the category theme "Decision making involvement". Creating 76 categories that were grouped into seven larger buckets of themes. Each category was then reassigned a relatedness to a sub-thesis question. This merging and categorization allowed for the creation of manageable information chunking while keeping the niche elements and topics from the data. The large bucket themes are as follows with the associated broader key sentiments:

Larger bucket theme	Category themes	Related Sub research question
Citizen Engagement and Feedback Mechanisms	• Citizen Feedback • Curated Surveys for Gathering Feedback • Focus Groups • Including Citizens in Decision making • Survey Lists • Usability Tests • Using Page-Level Feedback Tools and Connecting with 311 • Value of Dedicated Budget for Citizen Outreach	• DRQ2

Cognitive Biases and Decision making Processes	• Approaches to Reduce Bias • Cognitive Biases in Decision Making • Ensuring Transparency in Decision Making • Fostering Collaboration and Open Communication • Influence on Decision Outcomes • Perception of Merit and Trust Issues • Structured Decision making Processes • Use of Heuristics	• DRQ1
Decision making and Organizational Structure	• Accountability in Decision making • Action Needed for Inclusive Decision making • Challenges in Cross-Functional Teams and Dynamic Work Environments • Challenges in Metrics Involvement • Consulting Line Staff on Decisions • Decision making Involvement • Disconnect Between Levels • Impact of Hierarchical Structure on Decision making and Knowledge Sharing • Leadership Accountability and Decision Support • Leadership Involvement • Over-Reliance on Performance Management • Role of Organizational Structure • Senior Executives' Awareness and Involvement • Span of Control • Transparency and Inclusion in Decision Making	• ORQ1
Knowledge Transfer and Communication	• Challenges in Knowledge Transfer • Cost and Time Barriers • Encoded Information and Trust • Encouraging Openness • Fear of Sharing Knowledge • Geographical Challenges • Impact of Realignment on Knowledge Sharing • Informal Knowledge Sharing and Lack of Formal Processes • Managing Content and Context • No Consistent Model for Sharing Information • Perception of Merit • Preference for In-Person Communication	• KRQ1 • KRQ2

	• Reducing Noise in Knowledge Sharing • Retention Policies Barriers • Sources of Information • Tailoring Communications • Trust in Information • Verbal Communication	
Leadership, Influence, and Trust	• Building Trust and Transparency • Fear of Sharing Knowledge • Honesty and Transparency • Influence of Senior Leadership • Rebuilding Trust • Trust and Communication Gaps • Trust Issues and Broken Relationships • Trusting Staff and Quick Information Sharing	• ORQ1 • DRQ1 • KRQ2
Organizational Culture and Workplace Dynamics	• Breaking Down Silos • Collaboration Opportunities • Encouraging Openness • Impact of Organizational Culture • Inclusion in Conversations • Micro Cultures and Implied Cultures • Team Collaboration • Value of Shared Knowledge • Workplace Culture and Team Dynamics	• ORQ2
Training, Governance, and Documentation	• Challenges in Consistency • Corporate Training Programs • Documentation and Rationale • Engagement Opportunities • Formalizing Knowledge Transfer in Project Close-Out Process • Job-Specific Training • Process Definition • Training Structure • Transparency and Open Communication • Trust in Decision making	• DRQ1 • KRQ2

Table 7: Key sentiment theming

The following graphic is a visual representation of the table above to further illustrate the representation of each category to the themes and the relation to sub-thesis questions. Topics involving knowledge transfer and organizational structure have the highest number of connections.

The far left side is the theme, the centre items are the categories, and the right side is the relation to sub-thesis questions.

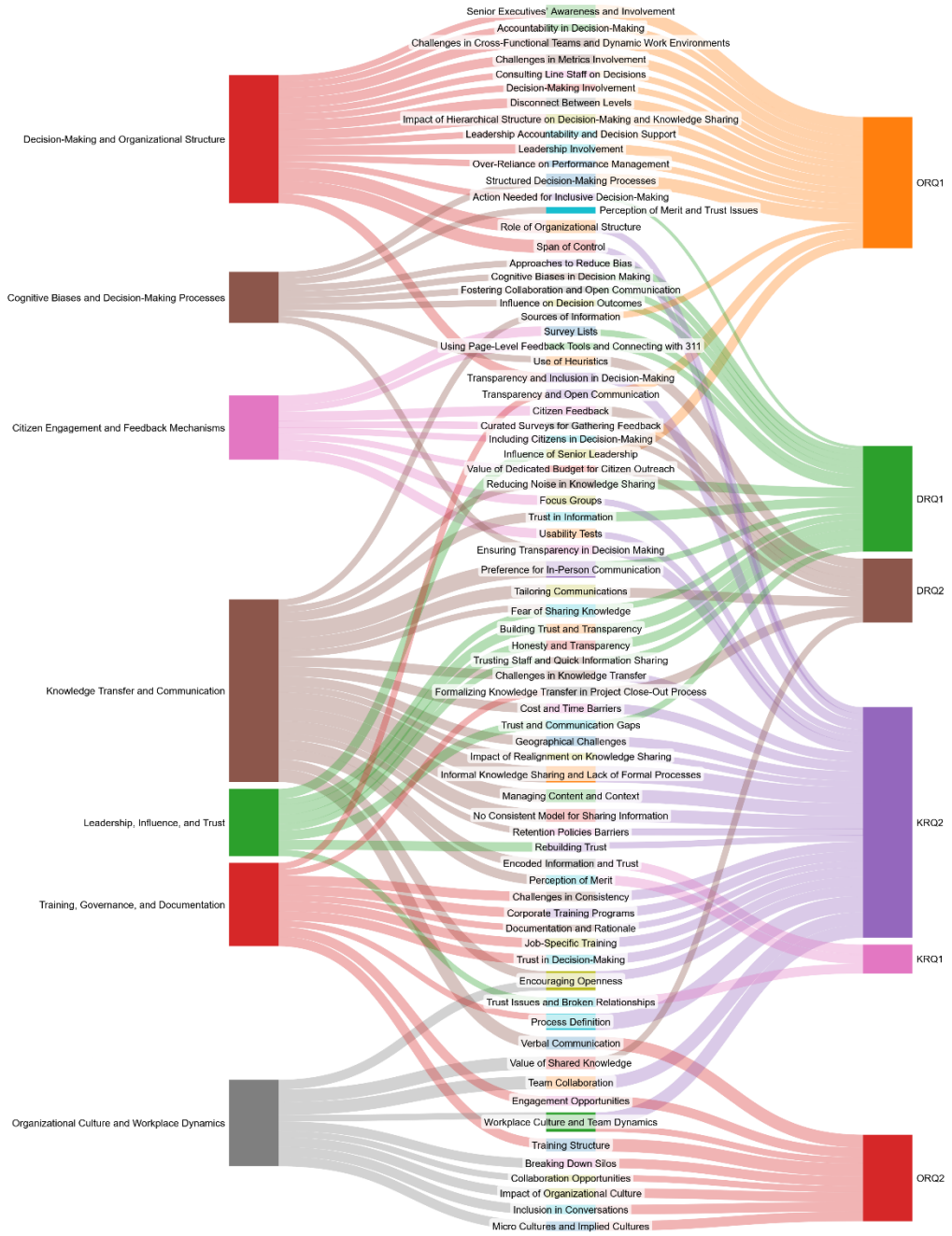

Figure 8: Key sentiment theming graphic

Comparative analysis results

After conducting analysis on the collective responses of the data, a comparative analysis was conducted between all responses, Leadership, Middle management, and Line staff responses.

Descriptive statistics comparison

For this section of the comparative analysis only the mean and standard deviation were compared for each question. Their simplicity and interpretability were key in being able to compare results to other analysis methods. The mean gives an average, while the standard deviation describes spread or variability. Together, they can give a good first impression of the shape the data will take. The second reason is that when comparing two datasets or two groups, the mean takes care of an average difference in the midst of samples under the two groups, while the standard deviation captures the differences in spread among the two. It should be noted that that data may be slightly misleading as relying solely on the pair of these two variables some distributions may be skewed. To counter this, the results will be compared to the other data analysis methods. A deeper analysis of all sections can be found in Appendix 03: Descriptive statistics comparison.

Knowledge transfer

	Statistic	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Line staff	Mean	1	-0.77	-0.5	-0.09	0.18	0.41	0.45	-0.91	-0.36
	Std Dev	1.26	1.19	1.34	1.15	1.37	1.01	1.41	0.87	1.09
Middle management	Mean	-0.3	-0.5	-0.7	-0.4	0.4	0	-0.1	-0.8	-0.5
	Std Dev	1.34	1.08	0.95	1.26	1.26	1.33	1.45	1.03	1.08
Leadership	Mean	0.75	0.25	-1	0.75	-0.75	-0.5	-0.75	0.5	1
	Std Dev	1.26	1.5	0	1.26	1.26	1	1.26	1.73	0

Table 8: Descriptive statistics for knowledge transfer: comparison

The responses from line staff show a mix of positive and negative fluctuations, with the highest mean value of 1 in Q1 (“I feel confident that knowledge shared across levels of the organization is accurate and reliable”) and the lowest of -0.91 in Q8 (There are enough opportunities for teams to exchange knowledge informally), indicating significant variability in their feedback. Middle management's responses are predominantly negative, except for a slight positive spike in Q5 (Different team or departmental cultures create barriers to effective knowledge transfer), with the highest mean of 0.4 in Q5 and the lowest of -0.8 in Q8, suggesting a generally critical

view but with moderate to high variability in opinions. Leadership's responses are more positive overall, with the highest mean of 1 in Q9 (Line staff, middle management, and leadership collaborate effectively to create citizen-focused outcomes) and the lowest of -1 in Q3 (Cross-functional teams in my organization share knowledge effectively), showing significant fluctuations and varying levels of consistency, including unanimous agreement in Q3 and diverse opinions in Q8.

The data reveals distinct patterns in the responses from Line staff, Middle management, and Leadership. Line staff show moderate variability with mixed positive and negative feedback. Middle management tends to be more critical but also exhibits high variability. Leadership generally has a more positive outlook, with varying levels of consistency.

Decision making

	Statistic	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21
Line staff	Mean	-0.68	0.32	-0.45	-0.77	-0.64	1.55	0.64	0.86	0.45	-0.05	0.36	0.91
	Std Dev	1.13	1.29	1.18	0.92	1.22	0.74	1.22	1.25	1.41	1.21	1.33	1.15
Middle management	Mean	-0.7	0.1	-0.9	-1.3	-1.4	0.6	-0.2	1.3	0.4	0	-0.1	1.2
	Std Dev	1.25	1.45	1.10	0.95	0.52	1.43	1.32	1.25	1.26	1.33	1.20	0.92
Leadership	Mean	0	0.75	-1.25	1.25	-1	1.5	0	-0.5	0.25	0	1	0.75
	Std Dev	1.15	1.26	0.5	0.5	0	0.58	1.15	1	1.5	1.15	1.41	1.26

Table 9: Descriptive statistics for decision making: comparison

The responses from Line staff show a mix of positive and negative fluctuations, with the highest mean value of 1.55 in Q15 (Decisions are more effective when knowledge from line staff is included) and the lowest of -0.77 in Q13 (There are formal processes in place to gather feedback from interested parties before decisions are made), indicating significant variability in their feedback. Middle management's responses are predominantly negative, except for slight positive spikes in Q15 and Q17 (Organizational silos hinder collaboration and effective decision making), with the highest mean of 1.3 in Q17 and the lowest of -1.4 in Q14 (The organization uses knowledge-sharing practices to improve the quality of decisions), suggesting a generally critical view but with moderate to high variability in opinions. Leadership's responses are more

positive overall, with the highest mean of 1.5 in Q15 and the lowest of -1.25 in Q12 (Indirectly impacted parties are adequately represented in decision making discussions), showing significant fluctuations and varying levels of consistency, including unanimous agreement in Q14 and diverse opinions in Q18 (A lack of clear processes makes decision making inconsistent).

The data reveals distinct patterns in the responses from line staff, middle management, and leadership. Line staff show moderate variability with mixed positive and negative feedback. Middle management tends to be more critical but also exhibits high variability. Leadership generally has a more positive outlook, with varying levels of consistency.

Qualitative data coding comparison

Using the category themes created each theme was revisited and from the original lines of copy pulled sorted into the themes based on the hierarchy level the copy came from.

Overall
The Line staff sentiment analysis reveals a mix of positive, neutral, and negative sentiments. Positive sentiments were associated with coding related to accountability, transparency, and collaboration. For example, the importance of sharing updates with Calgarians to build trust and understanding is viewed positively. Neutral sentiments are found in statements that describe processes or challenges without expressing strong emotions, such as the need for structured decision making processes. Negative sentiments were typically related to frustrations with decision making processes and the perceived disconnect between senior leaders and other staff members.

The Middle management sentiment analysis predominantly highlights positive sentiments, emphasizing the importance of including citizen feedback in decision making processes and fostering collaboration. Statements that suggest conducting more focus groups with real citizens to gather feedback on city projects are viewed positively. Neutral sentiments are present in descriptions of challenges faced by different departments in sharing information effectively. Negative sentiments are less common but are found in discussions about the lack of consistency in information sharing practices among supervisors.

The Leadership sentiment analysis shows a strong emphasis on positive sentiments, particularly in discussions about good leadership practices and the importance of transparency and accountability. Statements that highlight the qualities of good leadership, such as owning decisions and recognizing the contributions of others, are viewed positively. Neutral sentiments are found in descriptions of processes and strategies to mitigate biases. Negative sentiments are present in discussions about the frustration with the perceived disconnect between senior leaders and other staff members.

Hierarchy level	Positive	Neutral	Negative
Line staff	• Accountability • Transparency • Collaboration	• Structured decision making processes	• Decision making processes • Perceived disconnect between hierarchy levels and others
Middle management	• Citizen feedback in decision making processes • Fostering collaboration	• Challenges in sharing information effectively	• Lack of consistency in information sharing practices
Leadership	• Good leadership practices • Transparency • Accountability	• Processes and strategies to mitigate biases	• Perceived disconnect between senior leaders and other staff members

Table 10: Qualitative data coding comparison for all data

Knowledge transfer

For line staff, the analysis shows the provision of corporate training programs, including a code of conduct training, to all employees, which emphasizes the importance of continuous learning and adherence to organizational standards. However, the data also discusses challenges and expenses associated with certain processes, emphasizing the need to consider cost and time barriers. On the negative side, there is inaction by another department and a lack of participation in knowledge sharing, suggesting difficulties in fostering a collaborative environment.

For Middle management, the analysis shows the importance of documentation to understand the process, highlighting the need for thorough record-keeping to ensure clarity and consistency. The data also mentions logistical challenges and the need for better sharing practices, indicating areas for improvement in communication and coordination. However, there are challenges in consistency among supervisors, pointing to issues in maintaining uniform standards and practices across different teams.

For Leadership, the analysis shows the importance of being open and receptive to sharing knowledge, highlighting the role of leaders in fostering a culture of transparency and collaboration. The data discusses challenges in effectively sharing information within the organization, indicating neutral points about the current state of knowledge transfer. On the negative side, there is a fear of sharing knowledge due to potential repercussions, suggesting that leaders need to address concerns about safety and trust to improve knowledge sharing practices.

Hierarchy level	Positive	Neutral	Negative
Line staff	• Provision of corporate training programs, including code of conduct training, to all employees	• Challenges and expenses associated with certain processes • Cost and time barriers	• Inaction by another department and lack of participation in knowledge sharing
Middle management	• Documentation to understand the process	• Logistical challenges and the need for better sharing practices	• Challenges in consistency among supervisors
Leadership	• Being open and receptive to sharing knowledge	• Effectively sharing information within the organization	• Fear of sharing knowledge due to potential repercussions

Table 11: Qualitative data coding comparison for knowledge transfer

Decision making

For Line staff, the analysis found the importance of data and raising awareness about cognitive biases, emphasizing the need for transparency and accountability in decision making processes. These positive points underscore the value of informed and transparent decision making at the frontline level. However, the document also discusses strategies to mitigate biases without expressing strong positive or negative sentiment, indicating a neutral stance on the effectiveness of these strategies. On the negative side, there is frustration with the decision making process and the perceived wrong level of decision making, suggesting challenges in implementing these principles effectively.

For Middle management, the analysis found the importance of including citizen feedback in decision making processes and conducting more focus groups with real citizens. These positive points highlight the need for middle managers to engage with the public to ensure projects align with community needs. The document also discusses the importance of sharing updates with Calgarians to build trust and understanding, which is viewed neutrally. However, it points out the difficulties in finding correct departments and the inconclusive leads, indicating challenges in navigating the organizational structure and obtaining clear information.

For Leadership, the analysis found the importance of thoughtful decision making and trusting managers, emphasizing the need for transparency and inclusion in decision making processes. These positive points highlight the role of leadership in guiding and supporting decisions. The

document also discusses strategies to mitigate biases without expressing strong positive or negative sentiment, indicating a neutral stance on these strategies. On the negative side, there is frustration with the decision making process and the perceived wrong level of decision making, suggesting ongoing issues in achieving effective leadership and collaboration.

Hierarchy level	Positive	Neutral	Negative
Line staff	• Importance of data and raising awareness about cognitive biases • Importance of transparency and accountability	• Strategies to mitigate biases	• Frustration with the decision making process and the perceived wrong level of decision making
Middle management	• Importance of including citizen feedback • Conducting more focus groups with real citizens	• Sharing updates with Calgarians to build trust and understanding	• Finding correct departments and the inconclusive leads
Leadership	• Thoughtful decision making • Trusting managers	• Strategies to mitigate biases	• Frustration with the decision making process and the perceived wrong level of decision making

Table 12: Qualitative data coding comparison for decision making

Organization structure

For Line staff, the analysis found the importance of including frontline workers in decision making processes, highlighting their crucial role in ensuring effective and informed decisions. The data also discusses the opportunities for collaboration due to realignment, which can foster better teamwork and communication. However, the document also points out the self-interest of higher-level decision-makers and frustration with senior leadership, indicating challenges in achieving a cohesive and supportive environment.

For Middle management category, the analysis found that there are improvements in the process with more opportunities for internal team members, emphasizing the positive impact of involving middle managers in decision making. It also discusses the hierarchical structure impacting information sharing, which is viewed neutrally, suggesting that there are both benefits

and drawbacks to the current system. However, there is frustration with decisions made by senior leadership without input from middle management, pointing to issues in communication and collaboration between different levels of the organization.

For Leadership, the analysis found the importance of including relevant stakeholders in conversations to break down silos, highlighting the positive impact of collaborative decision making. It also discusses the challenges faced by city managers and the thoughtful decision making by the people they work with, emphasizing the need for effective leadership. However, the document points out difficulties in finding correct departments and the inconclusive leads, indicating ongoing challenges in navigating the organizational structure and obtaining clear information.

Hierarchy level	Positive	Neutral	Negative
Line staff	• The importance of including frontline workers in decision making processes • Opportunities for collaboration due to realignment	• Understanding the context in projects	• The self-interest of higher-level decision makers • Frustration with senior leadership
Middle management	• Improvements in the process with more opportunities for internal team members	• Hierarchical structure impacting information sharing	• Frustration with decisions made by senior leadership without input from middle management
Leadership	• importance of including relevant parties in conversations to break down silos • The challenges faced by city managers and the thoughtful decision making	• Strategies to mitigate biases	• Difficulties in finding correct departments and the inconclusive leads

	by the people they work with		

Table 13: Qualitative data coding comparison for organization structure

Discussion

The findings of this study provide valuable insights into the dynamics of knowledge transfer, decision making processes, and organizational structure within The City of Calgary's municipal government. By examining the experiences of line staff, middle management, and leadership, the study highlights the challenges and opportunities for improving knowledge transfer and decision making to be inclusive of those directly and indirectly impacted by decisions within the organization.

Hierarchy disconnect

The study reveals important perceptual differences among Line staff, Middle management, and Leadership regarding knowledge transfer and decision making. The differences suggest a disconnect in how each group experiences and evaluates organizational processes. Line staff responses were mixed, indicating a nuanced view with both positive and negative experiences, and moderate variability suggests a range of perspectives within the group. Middle management displayed the most consistently critical views, particularly around decision making, which may reflect their unique position as intermediaries balancing strategic directives with operational realities. Leadership responses were generally more positive, yet the variability in their answers suggests that consensus is not always present at the top levels. This divergence in perception highlights a potential misalignment in organizational communication and expectations, which could impede efforts to foster collaboration and implement effective change. These findings highlight the importance of integrating feedback from all organizational levels to develop more cohesive strategies for knowledge sharing and participatory decision making.

Organizational structure

The study reveals that the organizational structure of The City of Calgary, which is primarily functional with elements of team-based structures, significantly influences the success of knowledge transfer efforts. Line staff emphasized the importance of including frontline workers in decision making processes, highlighting their crucial role in ensuring effective and informed decisions. Middle management pointed out the need for better communication and collaboration across hierarchical levels, while leadership acknowledged the benefits of breaking down silos and fostering a more inclusive organizational culture. The presence of cross-functional teams and dynamic work environments requires flexible structures that can adapt to changing needs, facilitating better knowledge transfer and collaboration. Research by Smith, Johnson, and Lee (2023) supports these findings, indicating that team-based structures significantly enhance knowledge sharing and collaboration. Additionally, Johnson and Lee (2022) highlighted the importance of flexible structures in dynamic work environments.

Organizational culture, including micro cultures and implied cultures, plays a significant role in the effectiveness of knowledge transfer within The City of Calgary. The study found that a culture of openness, trust, and collaboration is essential for facilitating knowledge transfer. Line staff expressed concerns about the accuracy and reliability of shared knowledge, indicating a need for a more robust and transparent knowledge-sharing culture. Middle management highlighted the importance of documentation and consistency in information sharing, while leadership emphasized the role of openness and receptivity in fostering a culture of knowledge sharing. Addressing these cultural factors can enhance the effectiveness of knowledge transfer across all organizational levels. Research by Ncoyini and Cilliers (2020) underscores the importance of capturing and disseminating both tacit and explicit knowledge to improve service delivery, while Sunnemark et al. (2024) identified strategic communication, trust, and absorptive capacity as critical factors influencing knowledge transfer.

Knowledge transfer

The study indicates that encoded information created by individuals not in the impacted party can affect the receiver's trust in the information. Line staff expressed concerns about the trustworthiness of information created by those not directly involved in their work processes. Middle management emphasized the need for thorough documentation and consistency to ensure the reliability of shared knowledge. Leadership recognized the importance of being open and receptive to sharing knowledge, highlighting the need to address concerns about safety and trust. Ensuring that encoded information is accurate, transparent, and created with input from relevant parties can enhance trust and improve knowledge transfer. Anderson (2023) discusses the importance of diverse types of knowledge transfer, including implicit, tacit, and explicit, and how they impact trust and reliability.

The study identifies challenges and barriers to knowledge transfer within The City of Calgary. Line staff pointed out the challenges and expenses associated with certain processes, emphasizing the need to consider cost and time barriers. Middle management highlighted logistical challenges and the need for better sharing practices, indicating areas for improvement in communication and coordination. Leadership discussed the fear of sharing knowledge due to potential repercussions, suggesting that leaders need to address concerns about safety and trust to improve knowledge-sharing practices. Addressing these challenges and barriers is essential for developing effective strategies to facilitate knowledge transfer. Brown (2024) emphasizes the importance of experiential learning in knowledge transfer, while the Government of British Columbia (n.d.) outlines the stages of the employee knowledge cycle, highlighting the need for effective knowledge management practices.

Decision making

Cognitive biases, the perception of merit, and heuristics significantly impact the quality of decision making within The City of Calgary. Line staff and middle management both identified the need for more inclusive decision making practices that consider the input of all organizational levels. Leadership recognized the importance of transparency and accountability

in decision making but also noted challenges in mitigating biases and ensuring effective collaboration. Raising awareness about cognitive biases and implementing structured decision making processes can help mitigate these biases and improve the quality of decisions. Research by Green and Taylor (2022) highlights the importance of training and awareness programs to mitigate cognitive biases in public sector decision making.

Effective decision making in The City of Calgary can be facilitated by developing inclusive processes that consider diverse perspectives and needs. Line staff emphasized the importance of data and raising awareness about cognitive biases, underscoring the value of informed and transparent decision making at the frontline level. Middle management highlighted the need for including citizen feedback in decision making processes and conducting more focus groups with real citizens. Leadership recognized the importance of thoughtful decision making and trusting managers, emphasizing the need for transparency and inclusion in decision making processes. By fostering a culture of openness and collaboration, The City of Calgary can enhance its decision making processes to achieve outcomes that benefit citizens. Brown, Green, and Taylor (2023) found that inclusive and transparent decision making practices lead to better outcomes for citizens.

Implications

The implications of this study highlight several key areas for organizational improvement. By examining the impact of enhanced knowledge management systems, inclusive decision making practices, organizational culture and trust, and flexible organizational structures, the study provides valuable insights into how organizations can optimize their operations and foster a more collaborative and efficient work environment. Each implication is explained in detail, demonstrating how these strategies can address specific concerns and contribute to overall organizational success.

The study has several implications for The City of Calgary, and by extension, potentially other similar government structures:

Implication	Explanation
Enhanced knowledge management systems	Implementing more effective knowledge management systems could improve the accuracy and reliability of shared knowledge, addressing the concerns of line staff and middle management.
Inclusive decision making practices	Developing decision making processes that include input from all organizational levels can enhance transparency, accountability, and the quality of decisions.
Organizational culture and trust	Fostering a culture of openness, trust, and collaboration can facilitate knowledge transfer and improve decision making processes. Leadership plays a crucial role in setting the tone for such a culture.

Flexible organizational structures	Adopting more flexible organizational structures that combine elements of functional and team-based models can enhance communication and collaboration across departments.

Table 14: Study implications

Potential areas for future research

There are several areas that could be investigated to provide further insights to municipal governments. By examining the impact of digital platforms on knowledge transfer, the integration of knowledge transfer theories, the influence of cognitive biases on decision making, and conducting comparative studies on organizational structures, the research would aim to enhance communication, collaboration, and decision quality within municipal governments. Each area is described in detail, highlighting the potential benefits and implications for organizational design and management.

Area	Description
Impact of digital platforms on knowledge transfer	Investigating the role of digital platforms and tools in facilitating knowledge transfer within municipal governments can provide insights into how technology can enhance communication and collaboration.
Integration of knowledge transfer theories	Investigating the role of digital platforms and tools in facilitating knowledge transfer within municipal governments can provide insights into how technology can enhance communication and collaboration.
Cognitive biases on decision making	Conducting in-depth studies on the specific impact of cognitive biases on decision making processes within municipal governments can help develop strategies to mitigate these biases and improve decision quality.
Comparative studies on organizational structures in various areas of large organizations	Comparing the effectiveness of different organizational structures in promoting knowledge transfer and decision making in various municipal governments can provide valuable insights for organizational design and management.

Table 15: Potential future research areas

Recommendations

Based on this study, the researcher has drafted a sample of potential next steps that may address the various concerns by each hierarchical level.

Recommendation	Explanation	Actionable in 12 months
Enhance knowledge management systems	• Implement robust knowledge management systems that capture and disseminate both tacit and explicit knowledge. This includes developing consistent digital platforms and tools to facilitate knowledge sharing and collaboration across departments • Conduct training sessions to raise awareness about the importance of accurate and reliable knowledge sharing. Ensure that all employees understand the processes and tools available for effective knowledge transfer	1. **Implement Digital Knowledge Platforms** • **Action**: Develop and deploy a digital knowledge management platform that captures and disseminates both tacit and explicit knowledge. This platform should include features for document sharing, collaborative workspaces, and knowledge repositories. 2. **Conduct Training Sessions** • **Action**: Organize regular training sessions for employees on how to use the new knowledge management platform and the importance of accurate and reliable knowledge sharing. 3. **Establish Knowledge Sharing Protocols** • **Action**: Develop and implement standardized, yet flexible, protocols for knowledge sharing, including documentation practices and guidelines for encoding information.
Develop inclusive decision making practices	• Establish formal processes to gather feedback from all organizational levels, including line staff, middle management, and leadership. This ensures that diverse perspectives are considered in decision making • Implement structured decision making processes to mitigate cognitive biases and improve the	1. **Develop Structured Decision Making Processes** • **Action**: Create and implement structured decision making processes that include input from all organizational levels. This can involve setting up decision making committees or working groups that represent diverse perspectives. 2. **Raise Awareness About Cognitive Biases**

	quality of decisions. Training programs focused on recognizing and addressing biases should be conducted regularly	• **Action**: Conduct workshops and training sessions to raise awareness about cognitive biases and how they impact decision making. Provide tools and techniques to mitigate these biases. 3. **Gather Citizen Feedback** • **Action**: Establish formal consistent and regular processes to gather feedback from citizens, such as surveys, focus groups, and public consultations. Ensure that this feedback is considered in decision making processes.
Foster a culture of openness and trust	• Promote a culture of transparency and collaboration by encouraging open communication and trust among employees. Leadership should set the tone by being receptive to sharing knowledge and involving relevant stakeholders in decision making • Address concerns about safety and trust to improve knowledge sharing practices. This includes creating a safe environment where employees feel comfortable sharing information without fear of repercussions	1. **Promote a Culture of Openness and Trust** • **Action**: Launch initiatives to promote a culture of openness and trust within the organization. This can include leadership training, team-building activities, and open forums for discussion. 2. **Address Safety and Trust Concerns** • **Action**: Develop and implement policies to address safety and trust concerns related to knowledge sharing. This can include anonymous reporting mechanisms and assurances of no repercussions for sharing knowledge. 3. **Enhance Communication Channels** • **Action**: Improve communication channels to facilitate better knowledge transfer and decision making. This can include regular newsletters, internal social media platforms, and town hall meetings while balancing communication fatigue.

Adopt flexible organizational structures	• Consider adopting hybrid organizational structures that combine elements of functional and team-based models. This can enhance communication and collaboration across departments and adapt to changing needs • Break down silos and foster cross-functional teams to improve knowledge transfer and decision making. Encourage collaboration and inclusivity in all organizational processes	1. **Adopt Hybrid Organizational Structures** • **Action**: Pilot hybrid organizational structures that combine elements of functional and team-based models. Evaluate their effectiveness and adjust as needed. 2. **Break Down Silos** • **Action**: Implement initiatives to break down silos and encourage cross-functional collaboration. This can include cross-departmental projects and regular inter-departmental meetings. 3. **Foster Cross-Functional Teams** • **Action**: Create and support cross-functional teams to work on specific projects or initiatives. Provide the necessary resources and support to ensure their success.
Improve documentation and consistency	• Ensure thorough documentation of processes and decisions to maintain clarity and consistency. This helps in building trust and reliability in shared knowledge • Standardize knowledge sharing practices across departments to reduce variability and improve coordination	1. **Implement Digital Communication Platforms**: • **Action**: Develop and deploy digital communication platforms that facilitate real-time knowledge sharing and collaboration across departments. 2. **Encourage Informal Knowledge Sharing**: • **Action**: Create opportunities for informal knowledge sharing, such as regular team-building activities, lunch-and-learn sessions, and internal social media platforms.
Enhance communication channels	• Develop better communication channels to facilitate knowledge transfer and decision making. This includes leveraging digital platforms and tools to streamline information sharing	

	• Encourage informal knowledge sharing opportunities to foster collaboration and build relationships among employees	
Include citizen feedback in decision making	• Conduct more focus groups and surveys to gather feedback from citizens on city projects and decisions. This ensures that decisions are aligned with community needs and preferences • Allocate dedicated budgets for citizen outreach and engagement to improve the quality of decisions and build trust with the community	1. **Establish Formal Feedback Mechanisms**: • **Action**: Develop formal processes to gather feedback from citizens, such as surveys, focus groups, and public consultations. Ensure that this feedback is considered in decision making processes. 2. **Allocate Budget for Citizen Engagement**: • **Action**: Allocate dedicated budgets for citizen outreach and engagement activities to ensure that sufficient resources are available for gathering and incorporating citizen feedback.
Address logistical challenges	• Identify and address logistical challenges that hinder effective knowledge transfer and decision making. This includes improving coordination and communication across hierarchical levels • Develop strategies to overcome cost and time barriers to facilitate smoother knowledge sharing and collaboration	1. **Improve Coordination and Communication**: • **Action**: Develop strategies to improve coordination and communication across hierarchical levels and departments. This includes regular inter-departmental meetings and cross-functional projects. 2. **Overcome Cost and Time Barriers**: • **Action**: Identify and address cost and time barriers that hinder effective knowledge transfer and decision making. This includes streamlining processes and providing necessary resources and support.

Sub-thesis questions

The study provides a comprehensive examination of the complexities surrounding knowledge transfer, decision making, and organizational structure within The City of Calgary's municipal government. By capturing perspectives across hierarchical levels, it reveals critical perceptual gaps and structural challenges that, if addressed, can lead to a more collaborative, transparent, and responsive organization. The findings highlight the importance of inclusive practices, flexible structures, and a culture rooted in trust and open communication. These insights not only offer actionable pathways for improvement within The City of Calgary but also hold relevance for other public sector organizations facing similar structural and cultural dynamics. Ultimately, fostering alignment across all organizational levels can enhance both internal operations and service delivery to the broader community.

With respect to the organizational structure sub-question (ORQ1), the discussion outlines the influence of the City's hybrid structure—comprising both functional hierarchies and cross-functional teams—on knowledge flow. It is noted that while this hybrid model allows for some level of collaboration, it also presents challenges in terms of siloed communication and inconsistent integration across departments. The study suggests that a more adaptive structure that promotes cross-departmental interactions could enhance the fluidity and effectiveness of knowledge transfer, particularly in dynamic and interdependent work environments.

The impact of organizational culture, including micro cultures and implied norms (ORQ2), demonstrate that culture significantly shapes knowledge sharing behaviors, trust, and openness across various levels of the organization. Instances of inconsistent cultural norms between departments and roles are shown to hinder effective communication and collaboration. The analysis draws on participant experiences to illustrate how a lack of cultural alignment can contribute to misunderstandings and knowledge fragmentation. The research highlights the importance of fostering a cohesive and inclusive organizational culture that supports continuous learning and open dialogue.

In relation to knowledge transfer mechanisms, the study addresses the implications of source credibility (KRQ1), particularly when information is encoded by individuals not directly affected by the subject matter. It is observed that trust in the source of information is a determining factor in whether that knowledge is accepted and utilized by recipients, especially among Line staff. The findings reveal a gap in the perceived legitimacy of information when it is not grounded in lived experience, emphasizing the need for participatory knowledge creation and validation processes to improve trust and relevance.

The study also identifies several key barriers to knowledge transfer (KRQ2), including limited time and resources, technological constraints, and organizational inertia. These challenges are discussed in the context of both structural limitations and individual behaviors. Participants consistently reported that knowledge transfer efforts were often deprioritized due to competing demands, insufficient infrastructure, and a lack of formal mechanisms to capture and disseminate information. These insights align with existing literature and point to the need for

intentional strategies that embed knowledge sharing into routine workflows and leadership practices.

Decision making dynamics are explored through the lens of cognitive biases, heuristics, and perceptions of merit (DRQ1). The research finds that such cognitive processes can adversely impact decision quality, particularly when unchecked. Participants expressed concern about the influence of subjective judgment and unconscious bias, especially in high-stakes or time-sensitive decisions. The discussion advocates for interventions such as decision making frameworks, reflective practices, and training to mitigate these biases and enhance objectivity and inclusiveness in organizational choices.

Finally, the study examines how effective decision making can be fostered to achieve citizen-benefiting outcomes (DRQ2). It is argued that inclusive, transparent, and data-informed decision making processes are critical to aligning municipal operations with community needs. Participants across roles emphasized the importance of incorporating diverse perspectives, fostering accountability, and utilizing feedback loops to continuously improve decisions. The research concludes that by improving knowledge transfer and addressing cultural and structural barriers, The City of Calgary can enhance its ability to make equitable, informed decisions that positively impact both internal stakeholders and the wider public.

Conclusion

Organizational structure

The study reveals that the organizational structure of The City of Calgary, which is primarily functional with elements of team-based structures, significantly influences the success of knowledge transfer efforts. Line staff emphasized the importance of including frontline workers in decision making processes, highlighting their crucial role in ensuring effective and informed decisions. This inclusion fosters a sense of ownership and accountability among line staff, which can lead to more effective knowledge sharing and decision making. Middle management pointed out the need for better communication and collaboration across hierarchical levels, noting that the current structure sometimes creates silos that hinder effective knowledge transfer. Leadership acknowledged the benefits of breaking down these silos and fostering a more inclusive organizational culture, which can enhance collaboration and knowledge sharing across departments.

Organizational culture, including micro cultures and implied cultures, plays a significant role in the effectiveness of knowledge transfer within The City of Calgary. The study found that a culture of openness, trust, and collaboration is essential for facilitating knowledge transfer. Line staff expressed concerns about the accuracy and reliability of shared knowledge, indicating a need for a more robust and transparent knowledge-sharing culture. Middle management highlighted the importance of documentation and consistency in information sharing, while

leadership emphasized the role of openness and receptivity in fostering a culture of knowledge sharing. Addressing these cultural factors can enhance the effectiveness of knowledge transfer across all organizational levels. Research by Ncoyini and Cilliers (2020) underscores the importance of capturing and disseminating both tacit and explicit knowledge to improve service delivery, while Sunnemark et al. (2024) identified strategic communication, trust, and absorptive capacity as critical factors influencing knowledge transfer.

Knowledge transfer

The study indicates that encoded information created by individuals not in the impacted party can affect the receiver's trust in the information. Line staff expressed concerns about the trustworthiness of information created by those not directly involved in their work processes. This lack of trust can hinder effective knowledge transfer and collaboration. Middle management emphasized the need for thorough documentation and consistency to ensure the reliability of shared knowledge. Leadership recognized the importance of being open and receptive to sharing knowledge, highlighting the need to address concerns about safety and trust. Ensuring that encoded information is accurate, transparent, and created with input from relevant parties can enhance trust and improve knowledge transfer.

Several challenges and barriers to knowledge transfer were identified within The City of Calgary. Line staff pointed out the challenges and expenses associated with certain processes, emphasizing the need to consider cost and time barriers. These barriers can prevent effective knowledge sharing and collaboration. Middle management highlighted logistical challenges and the need for better sharing practices, indicating areas for improvement in communication and coordination. Leadership discussed the fear of sharing knowledge due to potential repercussions, suggesting that leaders need to address concerns about safety and trust to improve knowledge sharing practices. Addressing these challenges and barriers is essential for developing effective strategies to facilitate knowledge transfer. Brown (2024) emphasizes the importance of experiential learning in knowledge transfer, while the Government of British Columbia (n.d.) outlines the stages of the employee knowledge cycle, highlighting the need for effective knowledge management practices.

Decision making

Cognitive biases, the perception of merit, and heuristics significantly impact the quality of decision making within The City of Calgary. Line staff and middle management both identified the need for more inclusive decision making practices that consider the input of all organizational levels. This inclusivity can lead to more informed and effective decisions that benefit the entire organization. Leadership recognized the importance of transparency and accountability in decision making but also noted challenges in mitigating biases and ensuring effective collaboration. Raising awareness about cognitive biases and implementing structured decision making processes can help mitigate these biases and improve the quality of decisions. Research by Green and Taylor (2022) highlights the importance of training and awareness programs to mitigate cognitive biases in public sector decision making.

Effective decision making in The City of Calgary can be facilitated by developing inclusive processes that consider diverse perspectives and needs. Line staff emphasized the importance of data and raising awareness about cognitive biases, underscoring the value of informed and transparent decision making at the frontline level. Middle management highlighted the need for including citizen feedback in decision making processes and conducting more focus groups with real citizens. This approach ensures that decisions are aligned with the needs and preferences of the community. Leadership recognized the importance of thoughtful decision making and trusting managers, emphasizing the need for transparency and inclusion in decision making processes. By fostering a culture of openness and collaboration, The City of Calgary can enhance its decision making processes to achieve outcomes that benefit citizens. Brown, Green, and Taylor (2023) found that inclusive and transparent decision making practices lead to better outcomes for citizens in municipal settings.

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Appendix 01: Data collection questions

Online survey

The online survey was conducted via Microsoft forms.

Opening copy

What is this study?
A research study that aims to give insight to how decision making processes in the line staff, middle management, and leadership levels can be impacted by an increase focus and alteration of knowledge transfer within The City of Calgary.

This study is conducted by a. derksen. A current employee of the City of Calgary and Master of Design student in the Inclusive Design program at Ontario Collage of Art and Design (OCADU).

Privacy of staff: all data will be codified and stripped of all personally identifying information
Participation: completely voluntary
Data storage: Data is stored within OCADU's Microsoft platform and **The City of Calgary will NOT have access to any raw data** (survey responses or emails)

Benefits, risks, and discomforts
While there are no significant risks anticipated, you may experience emotional or cognitive discomfort during the survey when sharing and reflecting on individual experiences.

Your participation may contribute to a better understanding of the topic within The City and the potential for change in the future. However, you may not receive any direct benefit from participating.

The survey will close March 7th, 2025 at 11:59pm.

Survey questions

Area	Type	Question	Code
Knowledge transfer	Likert scale	I feel confident that knowledge shared across levels of the organization is accurate and reliable.	Q1
		The tools and processes we use for sharing knowledge are effective and efficient.	Q2
		Cross-functional teams in my organization share knowledge effectively.	Q3
		The organizational culture encourages open and inclusive knowledge sharing.	Q4

		Different team or departmental cultures create barriers to effective knowledge transfer.	Q5
		I trust information created by individuals who are not directly impacted by the decisions being made.	Q6
		Time constraints often prevent effective knowledge sharing	Q7
		There are enough opportunities for teams to exchange knowledge informally.	Q8
		Line staff, middle management, and leadership collaborate effectively to create citizen-focused outcomes.	Q9
	Open text field	What is something that would encourage and better support knowledge transfer for you?	
Decision making	Likert scale	Decisions in my organization are made efficiently and effectively.	Q10
		The decision making process in my team is inclusive of diverse perspectives.	Q11
		Indirectly impacted parties are adequately represented in decision making discussions.	Q12
		There are formal processes in place to gather feedback from interested parties before decisions are made.	Q13
		The organization uses knowledge-sharing practices to improve the quality of decisions.	Q14
		Decisions are more effective when knowledge from line staff is included.	Q15
		Time pressures often compromise the quality of decision making.	Q16
		Organizational silos hinder collaboration and effective decision making.	Q17
		A lack of clear processes makes decision making inconsistent.	Q18
		Technology and tools in the organization help streamline the decision making process.	Q19
		Decision making processes in my organization prioritize outcomes that benefit the citizens we serve.	Q20
		Cross-department collaboration enhances the quality of decisions made.	Q21
	Open text field	What is something that would encourage and better support decision making for you?	
	Open text field	Do you have any additional comments about knowledge transfer and decision making? Any situations or suggestions that this survey brought up?	

Ineligible copy

You are ineligible for this study.
Thanks for being interested in this study. Unfortunately you are ineligible to participate.

Closing copy

If you have questions, or want to be included in updates, please leave your email address and the research team will be in contact. (It will not be attached to your responses, alternatively you can email aderksen@ocadu.ca)

Semi-structured interview base questions

The following are the base questions for the semi-structured interviews. Many interviews deviated from these exact questions.

1. Knowledge Sharing Across Levels
    a. How do you learn from or share information with line staff, middle management, and leadership? What makes this process hard or easy?
2. Challenges in Knowledge Transfer
    a. What are the biggest obstacles to sharing knowledge at work? What have you done to overcome these?
3. Role of Organizational Structure
    a. Does the City's structure help or hurt how teams share knowledge? Why?
4. Impact of Culture
    a. How do workplace culture and team dynamics affect your willingness to share information?
5. Trust in Information
    a. When people outside the group create information, how does that make you feel? What are some examples?
6. Improving Decision making
    a. What could be done to improve how decisions are made at work?
7. Citizen-Focused Decisions
    a. How can decisions better include and benefit the people affected by them?

Appendix 02: Descriptive statistics analysis

The following is a detailed explanation of the descriptive statistics analysis for the knowledge transfer and decision making sections of the online survey.

Knowledge transfer

Statistic	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Count	36	36	36	36	36	36	36	36	36
Mean	0.11	-0.58	-0.61	-0.08	0.14	0.19	0.17	-0.72	-0.25
Std Dev	1.24	1.20	1.15	1.20	1.33	1.12	1.42	1.09	1.11
Median	1	-1	-1	0	1	1	1	-1	-1
Skewness	0.13	0.57	0.46	-0.14	-0.04	-0.54	-0.18	0.97	0.13

Figure # | Descriptive statistics for knowledge transfer:

Each question has 36 responses, ensuring a consistent sample size across all questions. The mean values range from -0.72 to 0.19, indicating a mix of positive and negative perceptions among respondents. Questions Q2, Q3, Q8, and Q9 have negative mean values, suggesting dissatisfaction or disagreement, while Q1, Q5, Q6, and Q7 have positive mean values, indicating some level of agreement or satisfaction. The standard deviations range from 1.09 to 1.42, showing considerable variability in responses. Higher standard deviations (e.g., Q7) suggest more diverse opinions among respondents. The median values range from -1 to 1, with several questions having a median of -1, indicating that at least half of the respondents have negative perceptions for those questions. The skewness values range from -0.54 to 0.97, indicating varying degrees of asymmetry in the data distribution. Positive skewness (e.g., Q2, Q3, Q8) suggests a longer tail on the right, while negative skewness (e.g., Q6) indicates a longer tail on the left.

For Q1 (Confidence in Knowledge Sharing), the mean of 0.11 and median of 1 suggest a slight positive perception, but the standard deviation of 1.24 indicates diverse opinions. For Q2 (Effectiveness of Tools and Processes), the mean of -0.58 and median of -1 suggest dissatisfaction with the tools and processes used for sharing knowledge. The positive skewness (0.57) indicates a longer tail on the right. For Q3 (Cross-functional Teams), the mean of -0.61 and median of -1 indicate dissatisfaction with cross-functional team collaboration. The positive skewness (0.46) suggests a longer tail on the right. For Q4 (Organizational Culture), the mean of -0.08 and median of 0 suggest mixed perceptions about the organizational culture. The negative skewness (-0.14) indicates a longer tail on the left. For Q5 (Barriers to Knowledge Transfer), the mean of 0.14 and median of 1 suggest a slight positive perception, but the standard deviation of 1.33 indicates diverse opinions. For Q6 (Trust in Information), the mean of 0.19 and median of 1 suggest a positive perception, but the negative skewness (-0.54) indicates a longer tail on the left. For Q7 (Time Constraints), the mean of 0.17 and median of 1 suggest a positive perception, but the standard deviation of 1.42 indicates diverse opinions. For Q8

(Opportunities for Informal Knowledge Exchange), the mean of -0.72 and median of -1 indicate dissatisfaction with opportunities for informal knowledge exchange. The positive skewness (0.97) suggests a longer tail on the right. For Q9 (Collaboration for Citizen-focused Outcomes), the mean of -0.25 and median of -1 suggest dissatisfaction with collaboration efforts. The positive skewness (0.13) indicates a longer tail on the right.

Decision making

Statistic	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21
Mean	36	36	36	36	36	36	36	36	36	36	36	36
Std Dev	1.15	1.31	1.12	1.14	1.04	1.28	1.26	1.30	1.34	1.21	1.31	1.08
Median	-1	1	-1	-1	-1	2	1	1	1	-1	1	1
Skewness	0.46	-0.36	0.83	0.82	0.91	-1.76	-0.14	-0.92	-0.45	0.16	-0.04	-0.95

Figure # | Descriptive statistics for decision making:

Each question has 36 responses, ensuring a consistent sample size across all questions. The mean values for all questions are 36, which seems to be an error or placeholder value. The standard deviations range from 1.04 to 1.34, showing considerable variability in responses. Higher standard deviations (e.g., Q18) suggest more diverse opinions among respondents. The median values range from -1 to 2, with several questions having a median of -1, indicating that at least half of the respondents have negative perceptions for those questions. The skewness values range from -1.76 to 0.91, indicating varying degrees of asymmetry in the data distribution. Positive skewness (e.g., Q10, Q12, Q13, Q14) suggests a longer tail on the right, while negative skewness (e.g., Q11, Q15, Q17, Q18, Q20, Q21) indicates a longer tail on the left.

For Q10, the standard deviation of 1.15 indicates diverse opinions. The positive skewness (0.46) suggests a longer tail on the right. For Q11, the standard deviation of 1.31 indicates diverse opinions. The negative skewness (-0.36) suggests a longer tail on the left. For Q12, the standard deviation of 1.12 indicates diverse opinions. The positive skewness (0.83) suggests a longer tail on the right. For Q13, the standard deviation of 1.14 indicates diverse opinions. The positive skewness (0.82) suggests a longer tail on the right. For Q14, the standard deviation of 1.04 indicates diverse opinions. The positive skewness (0.91) suggests a longer tail on the right. For Q15, the standard deviation of 1.28 indicates diverse opinions. The negative skewness (-1.76) suggests a longer tail on the left. For Q16, the standard deviation of 1.26 indicates diverse opinions. The negative skewness (-0.14) suggests a longer tail on the left. For Q17, the standard deviation of 1.30 indicates diverse opinions. The negative skewness (-0.92) suggests a longer tail on the left. For Q18, the standard deviation of 1.34 indicates diverse opinions. The negative skewness (-0.45) suggests a longer tail on the left. For Q19, the standard deviation of 1.21 indicates diverse opinions. The positive skewness (0.16) suggests a longer tail on the right. For Q20, the standard deviation of 1.31 indicates diverse opinions. The negative skewness (-

0.04) suggests a longer tail on the left. For Q21, the standard deviation of 1.08 indicates diverse opinions. The negative skewness (-0.95) suggests a longer tail on the left.

Appendix 03: Descriptive statistics comparison

Knowledge transfer

The mean values for line staff show a mix of positive and negative fluctuations across the nine questions. The highest mean value is 1 in Q1, while the lowest is -0.91 in Q8. This indicates that the responses from line staff vary significantly, with some questions eliciting more positive feedback and others more negative. The standard deviation values range from 0.87 to 1.41, suggesting moderate variability in their responses. This variability implies that there is a diverse range of opinions among line staff, which could be due to differing experiences or perspectives within this group.

Middle management's mean values are predominantly negative, with a slight positive spike in Q5. The highest mean value is 0.4 in Q5, while the lowest is -0.8 in Q8. This trend indicates that middle management generally has a more critical view compared to line staff. The standard deviation values range from 0.95 to 1.45, showing moderate to high variability. This suggests that while middle management tends to have a more negative outlook, there is still a significant range of opinions within this group. The higher variability could be due to the diverse roles and responsibilities that middle managers hold, influencing their perspectives.

Leadership's mean values are more positive overall, with significant fluctuations. The highest mean value is 1 in Q9, while the lowest is -1 in Q3. This indicates that leadership tends to have a more optimistic view, although there are notable exceptions. The standard deviation values range from 0 to 1.73, indicating varying levels of consistency. The zero standard deviation in Q3 suggests unanimous agreement among leadership for that question, while the highest variability in Q8 indicates a wide range of opinions. This could reflect the different strategic priorities and experiences among leadership members.

Decision making

The mean values for line staff show a mix of positive and negative fluctuations across the twelve questions. The highest mean value is 1.55 in Q15, while the lowest is -0.77 in Q13. This indicates that the responses from line staff vary significantly, with some questions eliciting more positive feedback and others more negative. The standard deviation values range from 0.74 to 1.41, suggesting moderate variability in their responses. This variability implies that there is a diverse range of opinions among line staff, which could be due to differing experiences or perspectives within this group.

Middle management's mean values are predominantly negative, with a slight positive spike in Q15 and Q17. The highest mean value is 1.3 in Q17, while the lowest is -1.4 in Q14. This trend indicates that middle management generally has a more critical view compared to line staff. The standard deviation values range from 0.52 to 1.45, showing moderate to high variability. This

suggests that while middle management tends to have a more negative outlook, there is still a significant range of opinions within this group. The higher variability could be due to the diverse roles and responsibilities that middle managers hold, influencing their perspectives.

Leadership's mean values are more positive overall, with significant fluctuations. The highest mean value is 1.5 in Q15, while the lowest is -1.25 in Q12. This indicates that leadership tends to have a more optimistic view, although there are notable exceptions. The standard deviation values range from 0 to 1.5, indicating varying levels of consistency. The zero standard deviation in Q14 suggests unanimous agreement among leadership for that question, while the highest variability in Q18 indicates a wide range of opinions. This could reflect the different strategic priorities and experiences among leadership members.