

Do impression management tactics and/or supervisor–subordinate guanxi matter?

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ABSTRACT

This study compares the relative role of impression management tactics and the other form of supervisor–subordinate guanxi (s–s g) in predicting supervisor-rated employee performance. Empirical data were collected from 175 supervisor–subordinate dyads working full-time in Taiwanese organisations. Specifically, this study uses the Dominance-based Rough Set Approach (DRSA) to formulate employee social skills by generating “if-then” decision rules. Then, flow network graphs are applied to represent employee decision rules. The results indicate that the personal-life inclusion of supervisor–subordinate guanxi matters more than various impression management tactics in achieving high performance ratings. Additionally, employees avoiding engaging in the supplication tactic may face in low performance ratings. The findings have implications for many of the decision rules that influence performance ratings from supervisors.

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1. Introduction

Most individuals desire promotion to high-level positions, as well as power associated with such positions, but few successfully realise these desires. Given the enormous variety of direct and indirect collaborative interactions that exist in every industrial workplace, the daily business activities of organisations require employees at several different positions to cooperate and collaborate to achieve common goals. Individuals must manage impressions to achieve their desired goals in work settings [18,56,61]. Impression management (IM) refers to the attempt to control images projected in real or imagined social interactions [34,46], and with various uses [30,53,56]. Extant research has addressed the direct relationship between impression management tactics and work outcomes, such as performance appraisal [7,8,30,57,61], career success [31,32] and group performance [39].

Although studies have demonstrated the effectiveness of impression management tactics, they have failed to disentangle the effects of impression management tactics from supervisor–subordinate guanxi. The Chinese term “guanxi” (interpersonal connections) as a social and cultural asset in Chinese society is an avenue that individuals and firms can use to promote cooperation and efficiently govern relationships [40]. Supervisor–subordinate guanxi (s–s g)

describes the dyadic relationship between subordinates and their immediate supervisors within which they can develop a particular and sentimental relationship via favourable exchanges both inside and outside working hours [13]. Previous research has examined the role of s–s g, which is a key individual variable that enables individuals to obtain network benefits for desired goals [25,58].

Social influence theory [27,36] leads us to postulate that impression management tactics and s–s g are important social skills that exhibit an influence on performance ratings. Individuals who have higher social skills understand others and use this knowledge to effectively influence situations so that they will achieve their desired goals than those who have low social skills. Accordingly, this study extends impression management research by examining whether impression management tactics and/or s–s g matter in predicting performance evaluations. In particular, this study uses the Dominance-based Rough Set Approach (DRSA) rather than traditional statistical methods to formulate employee “if-then” decision rules.

Organizational behaviour or human resource management researchers often use regression analysis or structural equation models (SEMs) to test the relationships between variables based on some assumptions, such that the assumed explanation variables should be independent (called independent variables) and not reflect the complexities of the real world. The major problem with their studies replying on predetermined or fitting model measurements is that they cannot identify what subsets of variables (e.g., attributes, items) critically influence the decision variable. DRSA can be considered applicable and elaborate a mechanism whereby

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employees effectively engage in various impression management tactics and/or *s-s g* to achieve high job performance ratings while avoiding low ones. The essence of DRSA can be simply described by classes of dominance relationships and can relax traditional assumptions/hypotheses. A set of “if conditions, then decision” can eliminate dispensable items/attributes without affecting outcomes and combine all antecedents to maximise job performance ratings. In addition, the decision rules developed by DRSA are directly translated into the path-dependent flow network graph to infer the decision path and parameters between impression management tactics, *s-s g* and job performance ratings and may relax traditional assumptions/hypotheses. Therefore, employee decision rules are formulated in natural language combining flow network graphs, which is also easier to understand for decision-makers than traditional statistics and multivariate analysis approaches, such as SEMs. Therefore, the major purpose of this study is to better understand the possible rules of specific employee social skills and job performance, by using several items related to latent variables conditional on the inherent characteristics of the original data. We believe that DRSA hybrid flow network graphs provide greater insight for employee behavioural decisions and facilitate organisations development of human management strategy.

The remainder of this paper is organised as follows. Section 2 reviews the theoretical background. Section 3 then introduces the basic concepts of the Dominance-based Rough Set Approach (DRSA) and flow network graphs. Subsequently, an empirical sample from Taiwan is used to demonstrate the proposed method in Section 4. The results are presented in Section 5. Then, in Section 6, discussions are presented. Finally, Section 7 presents conclusions.

2. Theoretical background

This study examines the relationships between impression management tactics, *s-s g* and job performance based on the following perspectives or theories.

2.1. Impression management tactics and job performance

From a dramaturgical perspective, scholars view impression management as comprising selected settings, people and roles [21,34]. Employees ‘perform’ in various organisational settings for particular target audiences (e.g., supervisors, coworkers) to create meaning and influence.

So far, researchers have developed different taxonomies of impression management tactics that individuals can use in work settings [30,53,56]. This study adopts the five assertive impression management tactics proposed by Jones and Pittman [30] for three reasons. First, the three assertive measurements developed by Wayne and Ferris [56] are ambiguous [6,8,57]. Second, the set of five different tactics advanced by Jones and Pittman [30] cover a wide variety of behaviours occurring in organization settings, and this breadth will provide greater scope for our research. Third, the five classification measurement developed by Bolino and Turnley [6] exhibits good impression management measurement validity based on the taxonomy of Jones and Pittman [30]. The five impression management tactics are as follows: ingratiation, where individuals use flattery or perform favours to appear likeable to targets; exemplification, where individuals go above and beyond the call of duty to appear dedicated; self-promotion, where individuals attempt to exhibit competence towards their targets; supplication, where individuals reveal their weaknesses or shortcomings to solicit help; intimidation, where individuals threaten targets to appear dangerous.

Several empirical studies have examined the impact of three impression management tactics (namely, ingratiation, self-promotion and exemplification) on working outcomes [7,26,57,61].

Ingratiation obtain positive working outcomes because those who create good images are likeable by supervisors. Furthermore, self-promoters and exemplifiers both desire respect and admiration, but the former may actually attract dislike from supervisors and then yield negative work outcomes, whereas the latter project integrity and moral worthiness and their supervisors are guilty of not rewarding them or rating their performance highly [30].

Compared to the above three impression management tactics, few empirical studies have focused on the issue of the linking of supplication and intimidation tactics with working outcomes. Employees’ use of supplication or intimidation tactics to escape unpleasant duties yields positive results [6,26]. However, supervisors tend to regard intimidation tactics as both an aggressive threat and an example of disobedience; supervisors believe that supplicants are unable to complete the assigned tasks [30]. Extant empirical research reveals inconsistent findings. For example, Bolino and Turnley [7] proposed that male intimidators may obtain positive performance appraisals. Harris et al. [26] found that only supplication tactics were significantly negatively associated with supervisor-rated employee performance. The conflict effects demonstrate that empirical research is insufficient for hypothesising about whether these tactics yield positive or negative outcomes. This study thus attempts to understand the effectiveness of these tactics in work settings.

2.2. Supervisor–subordinate *guanxi* and job performance

Unlike the term “relationship” in the west, the Chinese term “*guanxi*” describes an informal relationship. *Guanxi*, embedded in individual daily life and business activities, is deeply affected by Wu Lun of Confucianism, which has influenced Chinese society for over 2500 years. Confucius emphasised clan relations and interpersonal harmony. Fei’s Chaxu Geju (differential mode of association) [10,17,35] expressed the structure of Chinese society as having the characteristic that all people judge others within the context of their *guanxi* networks and thus establish role relationships and interacts according to several distinctions of rank distance.

Guanxi, as social capital, is important in several situations. In work settings, supervisor–subordinate *guanxi* (*s-s g*), extending from kin relationships, is considered a dyadic, particular and sentimental relationship that facilitates favour exchanges such as gift-giving and affective communication [13,58]. In Chinese organisations, supervisors in social networks are accustomed to identifying members of in-groups or out-groups [29]. Good *s-s g* indicates membership of in-groups. Subordinates who have developed good personal *guanxi* with their supervisors are usually treated as in-group members and provided favours [16,55].

Empirical research on *s-s g* has shown significant relationships with work outcomes [55]. Individual networks of interpersonal ties in organisations increase effective performance because such relationship networks provide a conduit through which individuals obtain valuable information, resources and benefits to perform tasks [3,48]. This study also examines whether the other social skill of *s-s g* affects supervisor-rated employee performance.

2.3. Impression management tactics, supervisor–subordinate *guanxi* and job performance

In competitive work environments, individuals have difficulty relying on working competence to achieve their desired goals (e.g., promotion, powers). Therefore, individuals may seek efficient methods within social networks. Social influence theory [27,36] suggests that the ability of influencers to understand and manage the dynamics of their relationship with targets is crucial for success. An individual high in impression management tactics

and/or informal s–s g is able to use social cues to understand people. He or she is then able to use this understanding to effectively influence others and achieve more positive outcomes. If impression management tactics or s–s g can affect supervisor-rated employee performance, a key research question concerns whether impression management tactics matters more than s–s g or both matter. This question is important because this study understands how employees develop the centrepiece of successful social skills in pursuit of their desired goals. To date, little empirical research has effectively responded to this question. This study thus compares the relative influences of impression management tactics and s–s g on supervisor ratings of employee performance.

2.4. Existing approaches and characteristics of DRSA

Researchers on organizational behaviour and human resource management have adopted qualitative and quantitative methods to refer antecedents of job performance. In qualitative methods, meta-analysis, which is an important component of a systematic review procedure, is utilised by Higgins et al. [27] to estimate the true population correlations between various impression management tactics and work-related outcomes (e.g., job performance). The meta-analysis combines several studies and is less influenced by local findings than a single study would be.

In quantitative methods, researchers often examine the relationship between impression management tactics or s–s g and work outcomes via a questionnaire survey. For example, Chen and Fang [11], Cheung et al. [13], and Wei et al. [58,59] used hierarchical regression analysis to examine their mediating or moderating effects. Bolino et al. [8] applied structural equation models (SEMs) to analyse the causal relationship. Furthermore, a few researchers, such as Harris et al. [26] used hierarchical linear modelling (HLM) to analyse the impact of political skill on impression management effectiveness from a supervisor-level perspective.

Although some of these traditional statistical methods lead to models with a satisfactory ability to analyse social skills' effect on job performance ratings, the methods that are more descriptive and inclusive in the number of antecedent attributes may not reflect the real relationships based on some assumptions/hypotheses and may not be used to forecast. However, DRSA does the opposite by pruning away dispensable attributes (or items) that do not affect the overall performance ratings. Furthermore, rather than modelling employee behaviour explicitly in terms of parameter estimation of linear models and other preference thresholds, DRSA induces the employee behaviour model through classification examples provided by employees in a questionnaire survey (traditional assumptions/hypotheses can be relaxed). Therefore, this study fills this gap, extending the knowledge about employee behaviour through a data-mining technique. The information obtained may be used for better decision-making in the organisational settings and may also be used to forecast for new samples. The basic concepts of DRSA are presented in the next section.

3. The basic concepts of DRSA

Both the Classical Rough Set Approach (CRSA) and the Dominance-based Rough Set Approach (DRSA) are valuable mathematical tools for addressing vagueness and uncertainty. DRSA, which extends from CRSA for multi-criteria decision analysis (MCDA), can address classification problems that CRSA has restricted to preference-ordered decision classes. This method is based on the indiscernibility relation by a dominance relation in the rough approximation of decision classes. The basic concepts of DRSA are described as follows [4,9,12,14,22–24,28,38,45,49,50,52].

3.1. Decision table

In DRSA, data are frequently presented in the form of a decision table. Formally, a DRSA decision table is a four-tuple information system $IS = (U, Q, V, f)$, where U denotes a finite set of objects (universe), Q represents a finite set of criteria, V_q is the domain of attribute q , $V = \cup_{q \in Q} V_q$ and $f: U \times Q \rightarrow V$ is an information function such that $f(x, q) \in V_q$ for each $(x, q) \in U \times Q$. The set Q is generally divided into set C of condition attributes and set D decision attributes.

3.2. Rough approximation via the dominance relation

The assumption that the domain of a criterion $q \in Q$ is pre-ordered by an outranking relation \succeq_q , such as $x \succeq_q y$, which means that x is at least as good as y with respect to criterion q . Furthermore, let $\mathbf{Cl} = \{Cl_t, t \in T\}$, $T = \{1, \dots, n\}$ be a set of classes of U , such that each $x \in U$ belongs to one and only one class $Cl_t \in \mathbf{Cl}$. Assume that for all $r, s \in T$, such that $r > s$, the class Cl_r is preferred to the class Cl_s . Consequently, it is possible to define upward and downward unions of classes, respectively as

$$Cl_t^{\geq} = \bigcup_{s \geq t} Cl_s, \quad Cl_t^{\leq} = \bigcup_{s \leq t} Cl_s, \quad t \in T$$

x is said to dominate y with respect to $P \subseteq C$, denoted by $x D_P y$, if C meets every criterion from P , $x \succeq_q y$, for all $q \in P$. Because $D_P = \cap_{q \in P} \succeq_q$, the dominance relation D_P is a partial pre-order. Given $P \subseteq C$ and $x \in U$, let

$$D_P^+(x) = \{y \in U : y D_P x\}$$

$$D_P^-(x) = \{y \in U : x D_P y\}$$

represent P -dominating and P -dominated sets, respectively, with respect to $x \in U$. The P -lower and P -upper approximations of Cl_t^{\geq} , $t \in \{2, 3, \dots, n\}$ with respect to $P \subseteq C$, denoted as $\underline{P}(Cl_t^{\geq})$ and $\overline{P}(Cl_t^{\geq})$, respectively, are defined as

$$\underline{P}(Cl_t^{\geq}) = \{x \in U : D_P^+(x) \subseteq Cl_t^{\geq}\}$$

$$\overline{P}(Cl_t^{\geq}) = \bigcup_{x \in Cl_t^{\geq}} D_P^+(x) = \{x \in U : D_P^-(x) \cap Cl_t^{\geq} \neq \emptyset\}$$

The P -lower approximation of an upward union Cl_t^{\geq} , $\underline{P}(Cl_t^{\geq})$, comprises all objects x from the universe, such that all objects y , sharing identical evaluations of criteria from P , also certainly belong to class Cl_t or better. Therefore, one can say that if an object y has at least as good an evaluation on the criteria from P as object x belonging to $\underline{P}(Cl_t^{\geq})$, then certainly y belongs to class Cl_t or better. The P -upper approximation of an upward union Cl_t^{\geq} , $\overline{P}(Cl_t^{\geq})$ comprises all objects x from the universe, whose evaluations of the criteria from P are no worse than the evaluation of at least on other object y belonging to class Cl_t or better. Analogously, the P -lower and P -upper approximation of Cl_t^{\leq} , $t \in \{1, 2, \dots, n-1\}$ are defined as

$$\underline{P}(Cl_t^{\leq}) = \{x \in U : D_P^-(x) \subseteq Cl_t^{\leq}\}$$

$$\overline{P}(Cl_t^{\leq}) = \bigcup_{x \in Cl_t^{\leq}} D_P^-(x) = \{x \in U : D_P^+(x) \cap Cl_t^{\leq} \neq \emptyset\}$$

The P -boundaries (P -doubtful regions) of Cl_t^{\geq} and Cl_t^{\leq} are defined as follows:

$$Bn_P(Cl_t^{\geq}) = \overline{P}(Cl_t^{\geq}) - \underline{P}(Cl_t^{\geq}), \quad Bn_P(Cl_t^{\leq}) = \overline{P}(Cl_t^{\leq}) - \underline{P}(Cl_t^{\leq})$$

This study defines the accuracy of the approximation of Cl_t^{\geq} and Cl_t^{\leq} for all $t \in \{1, \dots, n\}$, respectively, as

$$\alpha_P(Cl_t^{\geq}) = \frac{|\underline{P}(Cl_t^{\geq})|}{|\overline{P}(Cl_t^{\geq})|}, \quad \alpha_P(Cl_t^{\leq}) = \frac{|\underline{P}(Cl_t^{\leq})|}{|\overline{P}(Cl_t^{\leq})|}.$$

The ratio

$$\gamma_p(\mathbf{C}) = \frac{|U - (\cup_{t \in \{2, \dots, n\}} \text{Bn}_p(C_t^{\geq}))|}{|U|} = \frac{|U - (\cup_{t \in \{1, \dots, n-1\}} \text{Bn}_p(C_t^{\leq}))|}{|U|}$$

defines the quality of approximation of partition \mathbf{C} into classes by the set of criteria P . This ratio expresses the relation between all P -correctly classified objects and all objects in the table. Every minimal subset $P \subseteq C$ such that $\gamma_p(\mathbf{C}) = \gamma_c(\mathbf{C})$ is termed a reduct of C and denoted by $RED_C(P)$. A decision table may have multiple reductions. The intersection of all reductions is termed the core denoted by $CORE_C$

3.3. Decision rules

The final result of the DRSA implementation represents the information contained in the considered data table in simple terms of “if [antecedent], then [consequent] decision rules”. For a given upward union of classes C_t^{\geq} , the decision rules induced under the hypothesis that actions belonging to $\underline{P}(C_t^{\geq})$ are positive (while the others are negative) suggest an assignment to “at least class C_t ”. Similarly, for a given downward union C_s^{\leq} , the rules induced under the hypothesis that actions belonging to $\underline{P}(C_s^{\leq})$ are positive and all others are negative suggest an assignment to “at the most class C_s ”. On the other hand, the decision rules induced under a hypothesis that actions belonging to the intersection $\underline{P}(C_s^{\leq}) \cap \underline{P}(C_t^{\geq})$ are positive, and all others are negative, suggesting an assignment to some class between C_s and C_t ($s < t$). This study lists the following three types of decision rules:

1. D_{\geq} : decision rules have the following form: If $f(x, q_1) \geq r_{q_1}$ and $f(x, q_2) \geq r_{q_2}$ and $\dots f(x, q_p) \geq r_{q_p}$ then $x \in C_t^{\geq}$. The rules are supported only by objects from P -low approximations of the upward unions of classes C_t^{\geq} .
2. D_{\leq} : decision rules have the following form: If $f(x, q_1) \leq r_{q_1}$ and $f(x, q_2) \leq r_{q_2}$ and $\dots f(x, q_p) \leq r_{q_p}$ then $x \in C_t^{\leq}$. The rules are supported only by objects from the P -lower approximations of the downward unions of classes C_t^{\leq} .
3. $D_{\geq \leq}$: decision rules have the following form: If $f(x, q_1) \geq r_{q_1}$ and $f(x, q_2) \geq r_{q_2}$ and $\dots f(x, q_k) \geq r_{q_k}$ and $f(x, q_{k+1}) \geq r_{q_{k+1}}$ and $\dots f(x, q_p) \geq r_{q_p}$ then $x \in C_s \subseteq C_{s+1} \dots \cup C_t$. These rules are supported only by objects from the P -boundaries of the unions of classes C_s^{\leq} and C_t^{\geq} , where $P = \{q_1, q_2, \dots, q_p\} \subseteq C, \{r_{q_1}, r_{q_2}, \dots, r_{q_p}\} \in V_{q_1} \times V_{q_2} \dots V_{q_p}$, and $t \in \{1, \dots, n\}$.

Owing to the general syntax of the rules whereby the preference relations “ \geq ” and “ \leq ” substitute for “=”, the sets of decision rules induced from the approximated dominance relations provide a more synthetic representation of knowledge as contained in the decision table than the set of rules induced from the indiscernibility relation of CRSA.

3.4. Decision rules based on flow network graphs

Assuming decision rules of employee social skills, this study finds a path-dependent figure that depends on the potential antecedent items/attributes of supervisor-rated employee performance. The basis of the flow network graph can be traced back to Ford and Fulkerson [19]. According to the flow network graph and the Bayes theorem [41], the model was used to capture and describe the nature of decision processes within flow network graphs rather than to describe flow optimisation. The relationship between flow network graphs and decision algorithms is detailed as follows [15,37,42,43,54].

More precisely, a flow network graph is a directed acyclic finite graph $G = (N, \beta, \varphi)$, where N denotes a set of nodes, $\beta \subseteq N \times N$ is a

set of directed branches, $\varphi: \beta \rightarrow R^+$ is a flow function and R^+ is the set of non-negative real numbers. The throughflow of a branch $(x, y) \in \beta$ can be defined as $\varphi(x, y)$. Furthermore, the input of a node $x \in N$ is the set $I(x) = \{y \in N | (y, x) \in \beta\}$, and the output of a node $x \in N$ is defined as $O(x) = \{y \in N | (x, y) \in \beta\}$. Consequently, the input and output of a graph G are defined as $I(G) = \{x \in N | I(x) = \emptyset\}$ and $O(G) = \{x \in N | O(x) = \emptyset\}$, respectively. For every node x in a flow graph, inflow is defined as $\varphi_+(y) = \sum_{x \in I(y)} \varphi(x, y)$, and outflow is defined as $\varphi_-(y) = \sum_{y \in O(x)} \varphi(x, y)$. Similarly, the inflow and outflow of the entire flow graphs can be defined as $\varphi_+(G) = \sum_{x \in I(G)} \varphi_-(x)$ and $\varphi_-(G) = \sum_{x \in O(G)} \varphi_+(x)$, respectively. This investigation assumes that for any node x in a flow graph G , $\varphi_+(x) = \varphi_-(x) = \varphi(x)$.

To measure the strength of every branch (x, y) in a flow graph $G = (N, \beta, \varphi)$, this study defines the strength as follows: $\sigma(x, y) = \varphi(x, y) / \varphi(G)$. Obviously, $0 \leq \sigma(x, y) \leq 1$. The strength of the branch simply expresses the total flow through the branch. Every branch (x, y) of a flow graph G is associated with certainty and coverage coefficients. The certainty and coverage of every branch are defined as $\text{cer}(x, y) = \sigma(x, y) / \sigma(x)$ and $\text{cov}(x, y) = \sigma(x, y) / \sigma(y)$, respectively, where $\sigma(x, y) = \varphi(x, y) / \varphi(G)$, $\sigma(x) = \varphi(x) / \varphi(G)$ and $\sigma(y) = \varphi(y) / \varphi(G)$ are the normalised throughflow, $\sigma(x) \neq 0$, $\sigma(y) \neq 0$, and $0 \leq \sigma(x, y) \leq 1$. The meaning of the certainty coefficient expresses the outflow distribution between node outputs, whereas the coverage coefficient displays the distribution of inflow between node inputs. The above coefficients simply explain the properties of flow distribution among branches in the entire flow network graph. This investigation combining the DRSA with flow network graphs also applies influence diagrams to help decision-makers and managers understand employees' behavioural decisions. The influence diagram links as many rules as possible based on the contextual aspects of the data. Consequently, the DRSA and influence diagram are complementary.

4. An empirical case

To demonstrate the effectiveness of DRSA, this section presents an empirical sample. The gathered data were obtained via questionnaires administered to a matching sample of supervisor-subordinate dyads in Taiwanese companies.

4.1. Preliminary test

Before the main investigations, this study conducted a pilot study of the survey items/attributes using a sample of 42 supervisor-subordinate dyads obtained from in-job friends and their immediate supervisors. Using the results of factor analysis of the pilot study data, this study revised items with the lowest loadings from each fit scale. Finally, a business professor examined the questionnaires and the content was revised according to suggestions made by this professor.

4.2. Sample and procedure

To answer the research questions, this study gathered supervisor-subordinate dyads via personal contact. Specifically, authors contacted department managers or specialists who distributed the questionnaires within their companies, explained the academic objectives and provided directions for questionnaire completion. The cover letter assured respondents that their responses would be kept confidential and that individual responses would be accessible. The survey pack included coded questionnaires that subordinates and their supervisors could match, as well as pre-stamped envelopes.

After subordinates and their supervisors, respectively completed and sealed their completed questionnaires, they took

the questionnaires to their managers or specialists. These managers or specialists were then contacted to help return the questionnaires by mail. To increase the return rate, every respondent was given a gift with a value of NT \$50-dollars. A total of 184 supervisor-subordinate dyads returned the survey. Finally, the surveys were number coded to match the supervisor and employee responses. The questionnaires were subsequently assessed, and nine were removed, leaving a final sample of 175 supervisor-subordinate dyads.

Of the 175 subordinates, 55.1% were male and 81.3% were married. Most had completed a bachelor's or master's degree (51.7%). Regarding age, 88.1% were under 45 years old. In terms of organisational tenure, 56.3% had been with their present organisations for over 3 years. Furthermore, 68.8% of respondents were employed in management positions. A total of 56.6% worked in service industries, and 41.7% worked in manufacturing.

As for supervisors, 60.8% were male and 75.1% were married. Most supervisors had completed a bachelor's or master's degree (68.8%). Regarding supervisor age, 81.3% of supervisors were under 45 years old. Regarding organisational tenure, over 58% of supervisors had been with their organizations for over 5 years.

4.3. Measures

This section details the following variables: impression management tactics, s-s g and job performance (see Table 1). Subordinates responded to impression management tactics and s-s g and their supervisors responded by evaluating subordinate job performance to avoid overestimation by subordinates.

4.3.1. Impression management tactics

A 22-item scale validated by Bolino and Turnley [6] was used. These items were administered to employees, who were asked to indicate the degree to which they used these tactics on a five-point scale ranging from 1 = never to 5 = always. To assess the reliability, the Cronbach's α for five tactics exceeded 0.70: 0.82 for self-promotion, 0.86 for ingratiation, 0.75 for exemplification, 0.85 for intimidation, and 0.84 for supplication.

4.3.2. Subordinate-supervisor guanxi

This study adopted six items/attributes developed by Law et al. [33]. Preliminary testing found that the item "During holidays or after hours, I would call my supervisor or visit him/her" had two potential meanings, confusing respondents, which thus was divided into two items/attributes: "During holidays or after hours, I would call my supervisor" and "During holidays or after hours, I would visit my supervisor". Furthermore, to accurately test the frequency of employee behaviour, the scale anchors were based on "frequency" rather than "agreement".

In the primary survey, subordinates responded to the seven items/attributes on a five-point scale ranging from 1 (never) to 5 (always), with higher scores indicating a better relationship between targets and supervisors. The Cronbach's α for s-s g was 0.86.

4.3.3. Job performance

This study measured supervisor perceptions of target job performance using 21 items/attributes developed by Williams and Anderson [60]. Every item was assessed using a five-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach's α for job performance was 0.89.

5. Results

To ensure the construct validity of the major variables, this study uses Lisrel software 8.7 to perform confirmatory factor

analyses (CFAs). These variables are assessed for convergent and discriminant validity. Furthermore, hierarchical cluster analysis is performed to classify into three clusters based on supervisor-rated subordinate performance. JAMM software [44] is used to infer employee decision rules and models linking antecedents to supervisor-rated employee performance. Finally, employee decision rules are represented using flow network graphs.

5.1. Results of CFA

Based on the recommendations of Anderson and Gerbing [2] regarding convergent and discriminant validity, this study devises a seven-factor CFA model and finds that all items/attributes have significant factor loadings on the factor identified a priori at a significance level of 0.05 after deleting eight items/attributes with lower factor loadings with the attribute set {IM10, G5, G6, G7, J5, J17, J18, J21}. The fit indices indicate that the Chi-square is significant ($\chi^2 = 1593.74$, $df = 798$, $p < 0.05$) and other practical fit indices also fall within acceptable ranges (Comparative Fit Index (CFI) = 0.91, Root Mean Square Error of Approximation (RMSEA) = 0.08, Non-normed Fit Index (NNFI) = 0.90), suggesting that the model is acceptable.

This study examines the discriminant validity using 21 Chi-square difference tests that fix the correlation between each pair of latent constructs. The Chi-square differences with one degree of freedom range from 58.27 to 535. All 21 tests are significant and provide evidence of discriminant validity. Furthermore, this study also performs five Chi-square difference tests to compare the seven-factor model with alternatives: one six-factor model, one three-factor model, and three two-factor models. Table 2 shows that the seven-factor model fits the data better than the alternatives. Therefore, the results of these Chi-square tests further support the discriminant validity of the seven-factor model.

This study uses CFA to reduce the original 50 items/attributes to 42 important items/attributes for this primary survey. In addition, hierarchical cluster analysis is performed (using Ward's method and squared Euclidean distance) to categorise employees into a definite number of homogeneous and mutually exclusive subgroups based on job performance items/attributes, also labelled types or profiles in cluster analytical parlance [1]. The results yield six persons in the high performance-rating cluster (mean = 4.84), 166 persons in the average performance-rating cluster (mean = 3.76), and three persons in the low performance-rating cluster (mean = 2.39). Finally, discriminant analysis reveals no differences among the three clusters ($\chi^2 = 87.83$, $p > 0.05$), suggesting that a three-cluster solution is suitable.

5.2. Results of the DRSA analysis

JAMM software is used to generate "if-then" decision rules, and the results of the DRSA analysis are presented in the following sequence: quality of approximation, rule validation and rule generation.

5.2.1. Quality of approximation

The overall quality of approximation accuracy is 0.75. The "at most 2" class covers the "low performance ratings" and "average performance ratings" clusters and has an accuracy of 0.84. The "at least 2" class includes the "average performance ratings" and "high performance ratings" clusters and has accuracy of 0.89. However, limited to the minorities of the "low performance ratings" and the "high performance ratings" clusters, the "at most 1" class is the "low performance ratings" cluster and has an approximation accuracy of 0.05. In addition, the "at least 3" class refers to the "high performance ratings" cluster and has an accuracy of 0.04.

Table 1
Description of attributes.

Items/attributes	Domain values	Value set
<i>Condition attributes</i>		
<i>IM tactics</i>		
Self-promotion (IM1-IM4)	IM1: Talk proudly about our experience or education; IM2: Make supervisors aware of your talent or qualification; IM3: Let supervisors know that you are valuable to the organization; IM4: Make supervisors aware of your accomplishment	{1, 2, 3, 4, 5}
Ingratiation (IM5-IM8)	IM5: Compliment your immediate supervisors so they see you as likable; IM6: Take an interest in your supervisors personal lives to show them that you are friendly; IM7: Praise your supervisors for their accomplishment, so they will consider you a nice person; IM8: Do personal favours for your supervisors to show them that you are friendly	{1, 2, 3, 4, 5}
Exemplification (IM9-IM12)	IM9: Stay at work late so supervisors will know you are hard working; IM10: Try to appear busy, even at times when things are slower; IM11: Arrive at work early to look dedicated; IM12: Come to the office at night or on weekends to show that you are dedicated	{1, 2, 3, 4, 5}
Intimidation (IM13-IM17)	IM13: Be intimidating with supervisors when it will help you get your job done; IM14: Let supervisors know you can make things difficult from them if they push you too far; IM15: Deal forcefully with supervisors when they hamper your ability to get your job done; IM16: Deal strongly or aggressively with supervisors who interfere in your business; IM17: Use intimidation to get supervisors to behave appropriately	{1, 2, 3, 4, 5}
Supplication (IM18-IM22)	IM18: Act like you know less than you do so supervisors will help you out; IM19: Try to gain assistance or sympathy from supervisors by appearing needy in some areas; IM20: Pretend not to understand something to gain supervisors' help; IM21: Act like you need assistance so supervisors will help you out; IM22: Pretend to know less than you do so you can avoid an unpleasant assignment	{1, 2, 3, 4, 5}
s-s guanxi (G1-G7)	G1: During holidays or after hours, I would call my supervisor; G2: During holidays or after hours, I would visit my supervisor; G3: My supervisor invites me to his/her home for lunch or dinner; G4: On special occasions such as my supervisor birthday, I would definitely visit my supervisor and send him/her gifts; G5: I always actively share with my supervisor about my thoughts, problems, needs and feelings; G6: I care about and have a good understanding of my supervisor's family and work conditions; G7: When there are conflicting opinions, I will definite stand on my supervisor's side	{1, 2, 3, 4, 5}
<i>Decision variable</i>		
Job performance (JP1-JP21)	JP1: Adequately complete assigned duties; JP2: Fulfill responsibilities specified in job description; JP3: Perform tasks that are expected of him/her; JP4: Meet formal performance requirements of the job; JP5: Engage in activities that will directly affect his/her performance evaluation; JP6: Neglect aspects of the job he/she is obligated to perform (R); JP7: Fail to perform essential duties (R); JP8: Help others who have been absent; JP9: Help others who have heavy work loads; JP10: Take supervisor with his/her work (when not asked); JP11: Take time to listen to co-workers' problems and worries; JP12: Go out of way to help new employees; JP13: Take a personal interest in other employees; JP14: Pass along information to co-workers; JP15: Attendance at work is above the norm; JP16: Give advance notice when unable to come to work; JP17: Take undeserved work breaks (R); JP18: Great deal of time spent with personal phone conversation (R); JP19: Complain about insignificant things at work (R); JP20: Conserver and protect organizational property; JP21: Adhere to informal rules devised to maintain over	{1, 2, 3, 4, 5}

Note: R: reversed items.

Table 2
Confirmatory factor analysis.

No.	Factor	χ^2	df	RMSEA	NNFI	CFI
1	7-Factors ^a	1593.74	798	0.08	0.90	0.91
2	6-Factors ^b	4094.23	804	0.15	0.78	0.79
3	3-Factors ^c	2807.46	816	0.12	0.79	0.80
4	2-Factors ^d	3213.24	818	0.13	0.75	0.77
5	2-Factors ^e	5301.54	818	0.18	0.68	0.69
6	2-Factors ^f	5347.32	818	0.18	0.68	0.69

Note:

^a Including self-promotion, ingratiation, exemplification, intimidation, supplication, supervisor–subordinate guanxi, and job performance.

^b Including self-promotion, ingratiation, exemplification, intimidation, supplication and a factor combining supervisor–subordinate guanxi and job performance.

^c Including supervisor–subordinate guanxi, job performance and a factor combining self-promotion, ingratiation, exemplification, intimidation, supplication.

^d Including job performance and a factor combining self-promotion, ingratiation, exemplification, intimidation, supplication, supervisor–subordinate guanxi.

^e Including supervisor–subordinate guanxi, and a factor combining self-promotion, ingratiation, exemplification, intimidation, supplication, job performance.

^f Including a factor combining supervisor–subordinate guanxi and job performance, and a factor combining self-promotion, ingratiation, exemplification, intimidation, supplication.

5.2.2. Rule validation

The study conducts 10-fold cross-validation to assess the validity of the decision rules. This study randomly selects 90% of the data and uses them to generate decision rules. The remaining 10% of the data are used to validate the hit rate of the generated decision rules—namely the percentage of correct predications for each group. After repeating the process ten times, the correct hit rate for DRSA is 92.19%.

The overall classification error is only 7.8%, with 161 objects determined correctly and only 13 objects determined incorrectly. The three ambiguous objects indicate that the object classification results from respondent hesitation during the validation process.

5.2.3. Rules generation

This study compares the antecedents containing impression management tactics and supervisor–subordinate guanxi items/attributes in predicting supervisor-rated employee performance. This study establishes a set of rules, the “minimal cover rules”. The strength of these decision rules can be used to assess the importance of individual decision rules. The strength of the decision rule is expressed in ratio form—in this case, the number of objects classified using the decision rule divided by the total number of objects. Higher rule strength indicates higher importance. Based on the decision rule extraction procedures of DRSA, 15 minimal cover rules are generated, as listed in Table 3.

The rule set contains 15 rules, with one rule corresponding to class 1, four rules to at most class 2, nine rules to at least class 2, and one rule to class 3. Given two classes of rules, the “at least 2” class corresponds to average or high performance ratings (Rule 6–Rule 14), implying that employees effectively engage in social skills for desired goals. This attributes set is {IM1, IM8, IM13, IM14, IM15, IM18, IM21, IM22, G4}. In terms of impression management tactics, Rules 6–Rule 13 are considered. Except for exemplification tactics, the other four IM tactics matter in the pursuit of average or high performance ratings. In particular, Rule 14 has a higher cover strength than Rule 7 (106 > 63), so employees should improve s–s g based on Rule 14 before engaging in ingratiation tactics based on Rule 7. In other words, the cover strength of the decision rules can reveal employees’ tactics prior to scheduling to achieve average or high performance ratings. The G4 attribute thus matters more than impression management tactics attributes based in the “at least 2” rules.

In contrast, the “at most 2” class ($D \leq 2$) tells employees to avoid certain social skills promoting average or low performance

ratings (Rule 2–Rule 5). In particular, avoiding supplication or intimidation tactics can decrease job performance ratings. Even if supplication tactics are used to create an image of dependency and weakness; intimidation tactics are used to create an image of danger and potency, an individual may effectively mask the negative side of supplication and intimidation tactics from his or her supervisor.

The rules in Table 3 are translated into a single decision algorithm represented by the flow network graphs shown in Figs. 1 and 2. Simplified flow network graphs represent decision algorithms and show throughflows (supports). In Fig. 1, in relation to the “at least 2” class, the total inflow of the graph is 362. Additionally, in Fig. 2, in relation to the “at most 2” class, the total inflow of the graph is 251.

6. Discussions and contribution

Using the DRSA and flow network graphs, this study extends prior impression management research by investigating the boundary conditions, such as the relationship between the use of impression management tactics and/or supervisor–subordinate guanxi by employees in pursuit of supervisor-rated job performance in Chinese cultural contexts. DRSA is used to model employee preference for performance ratings and extract hidden decision rules from the initial information. The result of DRSA is a set of decision rules that can be used to explore undiscovered rules and characteristics. Furthermore, the decision rules are transferred into a flow network graph, used for modelling a flow of information as a set of decision rules and explaining the corresponding flow network in terms of flow patterns. The flow network graph is a bridge connecting the pathway of decision rules with the degree of their interdependency. Importantly, the DRSA and flow network graph are used to find patterns in the original data and dependencies between some data structure for subsequent human resource management implementation.

6.1. Theoretical implications

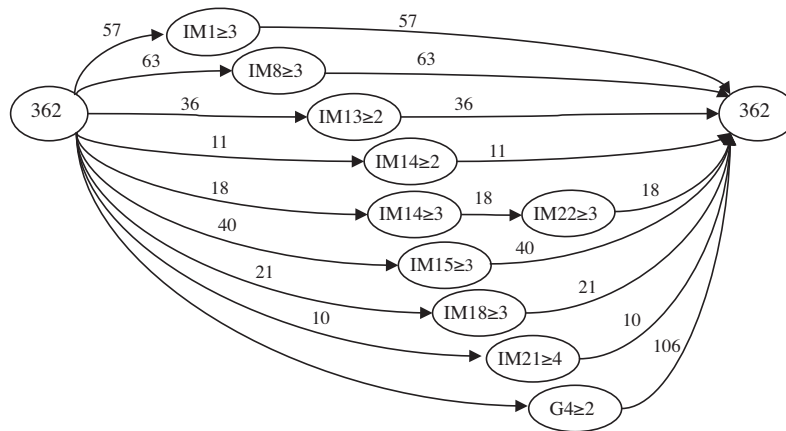
Our conceptual model and translation of social influence theory and constructs in this literature to employee social skills represent a valuable theoretical contribution because they provide a solid start from many potential studies examining the effectiveness of impression management tactics and s–s g from the social influence perspective. Three key findings enrich our understanding of the complex roles of social skills in enabling employees to achieve their desired goals. First, this study is conducted in the Chinese cultural context, which emphasizes guanxi as a unique asset owned by individuals within organisations. Previous studies have found the effects of s–s g to be varied: Wei et al. [58] found s–s g to be positively related to work outcomes. However, Law et al. [33] found no support for the relationship between s–s g and work outcomes. The decision rules of the “the least 2” class indicate that the personal-life inclusion of s–s g (G4 attribute), such as exchanging gifts and home visits, matters more than various impression management tactics in pursuit of medium or high performance ratings. This additional to previous effort is important because s–s g focuses on the sentimental interaction between the subordinate and supervisor, which is essential to help them obtain more resources for favourable outcomes in work contexts.

Second, past empirical studies indicate that impression management tactics influence work outcomes. According to the “the least 2” class ($D \geq 2$), employees choose the IM1 attribute (a self-promotion tactic) and IM8 attribute (an ingratiation tactic) to achieve better job performance ratings according to Rule 7 and Rule 8 (strength sequence: 63, 57). Inconsistent with these

Table 3
Minimal covering rules.

No.	Condition	Decision	Support	Strength
1	(IM1 ≤ 1) & (IM4 ≤ 1) & (IM5 ≤ 1) & (IM21 ≤ 1)	$D \leq 1$	1	0.0057 (0.3333)
2	(IM17 ≤ 1) & (IM20 ≤ 2) & (G3 ≤ 1)	$D \leq 2$	46	0.2629 (0.2771)
3	(IM8 ≤ 2) & (IM12 ≤ 3) & (IM18 ≤ 2) & (IM19 ≤ 2) & (G4 ≤ 1)	$D \leq 2$	46	0.2629 (0.2771)
4	(IM15 ≤ 1) & (IM19 ≤ 2)	$D \leq 2$	73	0.4171 (0.4398)
5	(IM22 ≤ 1)	$D \leq 2$	66	0.3771 (0.3976)
6	(IM1 ≥ 3)	$D \geq 2$	57	0.3257 (0.3433)
7	(IM8 ≥ 3)	$D \geq 2$	63	0.3600 (0.3795)
8	(IM13 ≥ 2)	$D \geq 2$	36	0.2057 (0.2169)
9	(IM14 ≥ 2) & (IM22 ≥ 3)	$D \geq 2$	11	0.0629 (0.0663)
10	(IM14 ≥ 3)	$D \geq 2$	18	0.1028 (0.1084)
11	(IM15 ≥ 3)	$D \geq 2$	40	0.2286 (0.2410)
12	(IM18 ≥ 3)	$D \geq 2$	21	0.1200 (0.1265)
13	(IM21 ≥ 4)	$D \geq 2$	10	0.0571 (0.0602)
14	(G4 ≥ 2)	$D \geq 2$	106	0.6057 (0.6386)
15	(IM9 ≥ 5) & (IM17 ≥ 3)	$D \geq 3$	1	0.0057 (0.1667)

Note: The value in the parentheses in the coverage of a given rule.

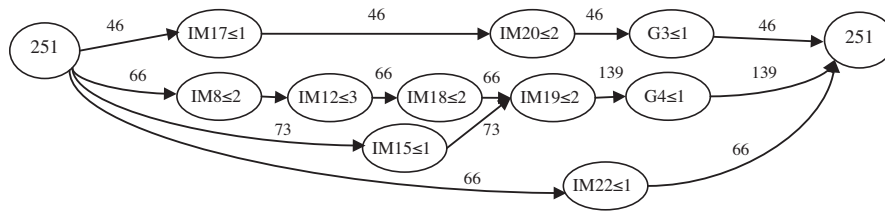


IM1 ≥ 3 means that employees occasionally or more than occasionally talk proudly about their experience or education; IM8 ≥ 3 means that employees occasionally or more than occasionally perform personal favours for supervisors to demonstrate friendliness; IM13 ≥ 2 means that employees rarely or more than rarely are intimidating with supervisors when it will help them get their jobs done; IM14 ≥ 2 means that employees rarely or more than rarely let supervisors know they can make things difficult from them if they push them too far; IM14 ≥ 3 means that employees occasionally or more than occasionally let supervisors know that they can make things difficult for them if they push them too far; IM15 ≥ 3 means that employees occasionally or more than occasionally deal forcefully with supervisors when supervisors hamper their ability to get their jobs done; IM18 ≥ 3 means that employees occasionally or more than occasionally act like they know less than they do so supervisors will help them; IM21 ≥ 4 means that employees often or more than often act like they need assistance so supervisors will help them; IM22 ≥ 3 means that employees occasionally or more than occasionally pretend to know less than you do to avoid an unpleasant assignment; G4 ≥ 2 means that on special occasions, such as supervisor birthdays, employees rarely or more than rarely visit supervisors and send them gifts.

Fig. 1. Decision flow graph and rule set of $D \geq 2$.

findings [8,27,57], employees displaying the self-promotion tactic obtain positive work outcomes. Self-promotion tactics can be more successful when claims of competence are difficult to verify

[27,30]. Furthermore, similar to Bolino et al. [8] and Higgin et al. [27], the ingratiation tactic is used to increase the likelihood of achieving desired goals. Interestingly, intimidation tactics (namely,



$M8 \leq 2$ means that employees rarely or never do personal favors for supervisors to show them that they are friendly; $M12 \leq 3$ means that employees occasionally or less than occasionally come to the office at night or on weekends to show that they are dedicated; $IM15 \leq 1$ means that employees never deal forcefully with supervisors when they hamper your ability to get your job done; $M17 \leq 1$ means that employees never use intimidation to get supervisors to behave appropriately; $IM18 \leq 2$ means that employees rarely or never act like they know less than you do so supervisors will help them; $IM19 \leq 2$ means that employees rarely or never try to gain assistance or sympathy from supervisors by appearing needy in some areas; $IM20 \leq 2$ means that employees rarely or never pretend not to understand something to gain supervisors' help; $IM22 \leq 1$ means that employees never pretend to know less than they do to an unpleasant assignment; $G3 \leq 1$ means that supervisors never invite employees to their home for lunch or dinner; $G4 \leq 1$ means that on special occasions, such as supervisor birthday, employees would never visit supervisors and send them gifts.

Fig. 2. Decision flow graph and rule set of $D \leq 2$.

IM13 and IM 15 attributes) have positive results because individuals deal with hindrance by others or get out of distasteful chores and then successfully complete tasks.

Finally, this study also has implications for how employees avoid obtaining unfavourable outcomes. In particular, if employees decrease the frequency of the supplication tactic usage (IM22 attribute) according to the decision rules of the class “ $D \leq 2$ ”, they may obtain low performance appraisals. Although the end result is positive for the impression manager who ducks unpleasant tasks, the same cannot be said for the person who actually completes the task [5,26]. That is, using such a supplication tactic does not ensure the achievement of high supervisor-rated performance.

6.2. Methodological implications

Our study also represents the contribution of a methodological application to the fields of organisational behaviour or human resource management. Although DRSA has been widely applied in various fields, it is little applied in these fields. Such a model is to be welcomed for its ability to capture the effect of employee social skills on performance ratings and turn this information into a useful device that can be used to assess the repeatability of employee social network activities to achieve their desired goals and provide a template for practices.

The advantages of the DRSA hybrid flow network graphs in the employee social skills are summarised in two points. First, this study substitutes DRSA for parameter estimation of linear modelling. DRSA is able to eliminate antecedents without affecting supervisor-rated employee performance. Furthermore, DRSA with the dominance relationship in preference-ordered data is superior to CRSA's indiscernibility relation. The second point that the flow network and decision algorithms are valuable for identifying whether there are possible paths for which there exists an appropriate set of decision rules for employee social network activities.

Therefore, their use for inducing employee behavioural decisions is advanced as a simple and available means of constructing various social skills and supervisor-rated performance decisions in

organisational settings. Organisations or managers can effortlessly find hidden information in terms of employee social skills and act upon the new information based on the survey questionnaire.

6.3. Managerial implications

Social skills become efficient instruments for employees' desired goals within particularistic ties. Our results imply that engaging in impression management tactics and/or building sentimental s-s g affect supervisor-rated subordinate performance. Because supervisor evaluations provide a basis for organisational rewards (e.g., promotion or pay) within organisations, such evaluations involve the risk of receiving social skill effectiveness rather than objective job-related criteria, leading to damaging organisational human capital. Managers must be cautious when appraising subordinates and avoid promoting individuals they personally prefer at the expense of their organisations. In the long term, it impedes organisational development and competitive advantages. Organisations or managers thus must be conscious of minor matters getting out of control.

6.4. Limitations

Our research design has limitations that could be addressed in further research. First, the study argues for the importance of employee social skills for supervisor-rating performance according to the rule-based decision-making techniques. We cannot draw solid conclusions about causation from a cross-sectional study, and we do not rule out the possibility of reverse causation. It is possible that individuals have high supervisor-rating performance may more effectively use s-s g and/or impression management tactics. Grandy et al. [20] have found that when employees exhibit high performance, they perform efficiently and with a minimal error rate and are more successful in their impression management effort (namely, customer service encounters). Therefore, future studies elaborate causal relationships combining the DEMATEL technique to build an influential network relation map (INRM).

Table 4
The hit rates for new data.

	Class 1	Class 2	Class 3
Class 1	2	2	0
Class 2	1	49	0
Class 3	0	0	1
Ambiguous decision	3		
Overall classification error	0.0909		
Correct hit rate (%)	90.91		

Or future studies could be extended by using longitudinal research design (such as panel studies) not only to provide solid evidence of causation but also to examine developing rather than established relationships.

Second, because our data were collected only in Taiwan, one may question whether our findings can be generalised to other cultural contexts. Although various social skills affect performance ratings, our results show that the personal-life inclusion of s–s g matters more than various impression management tactics in achieving performance ratings. Therefore, it is possible that different results may be found in other nations.

Third, we use a survey questionnaire to test the relationships, and the shape of our sampling distribution approximates the normal distribution, which is needed in organisational behaviour or human management fields [47,51]. Therefore, under such a normal distribution, the majority of our data occupy the “average performance ratings” cluster, but the minority occupy the “high performance ratings” cluster and the “low performance ratings” cluster. Limiting the number of clusters, we only predict decision rules of the “at least 2” class and the “at most 2” class. Furthermore, we also add 55 supervisor–subordinate dyads of new sample data to the hit test to assess the feasibility of the decision rule in this study. The results in Table 4 show that the hit rate reaches 90.91% (also over 90%). It is acceptable that new objects fit among the decision classes for applying to forecast in new samples. Recently, various extended DRSA models appear in real-life applications. For example, Chen et al. [12] propose the principle of dynamically updating approximations while attributes coarsening or refining in the incomplete ordered decision systems and algorithms for incrementally updating approximations of an upward union and downward union of classes. Chai and Liu [9] propose dominance-based rule induction for multicriteria ranking which provides a possible complement or alternative for Decision Maker (DM) in conducting MCDA. In the future, scholars shall take advantages of these extended DRSA hybrid flow network graphs to obtain a more detailed decision recommendation.

7. Conclusions

In spite of the limitations of our research, our findings provide new insights into the relationships between impression management tactics, s–s g and performance ratings. We illustrate the usage of the DRSA as operational tools that also can be used for predicting employee behavioural decisions in organisations. Furthermore, the network flow graph is used to explore and discover the path dependences of decision rules, which can help managers more easily understand how employees cultivate social skills to influence performance appraisals in work settings in today's highly competitive contexts. The findings offer practical implications for employee behaviours in the workplace as well as enriching the extant literature on impression management tactics and s–s g.

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