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AN ASSESSMENT OF POSITIONS, PERCEPTIONS AND VALUED LEADERSHIP COMPETENCIES OF PHARMACISTS THAT WORK IN MANUFACTURING PHARMACEUTICAL COMPANIES (MPCS) IN SOUTH AFRICA

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Abstract: *Pharmacists are custodians of medicines and play a significant role in the healthcare system as the profession responsible for managing medicines. A self-administered online questionnaire was distributed to pharmacists who are members of the South African Association for Pharmacists in Industry (SAAPI). A majority (66%) of responses received was from females, 87.9% identified experience as the attribute necessary for pharmacists to enter positions of strategic leadership as opposed to availability of opportunities (69.7%) and having an additional business-related qualification (60.6%). Pharmacists that work in the manufacturing sector of the industry were mostly working at technical levels. They were in positions such as responsible pharmacist (RP) (24,1%, n=66), regulatory affairs (18,5%, n=66), quality assurance (16,7%, n=66) production (11,1%, n=66) pharmacists. The pharmacists felt that experience was the key attribute required for entry into strategic leadership positions of manufacturing pharmaceutical companies (MPCs), the attribute for possessing business-related qualifications followed this. The need for a quota system that makes provision for a pharmacist to be present in certain strategic leadership positions of an MPC, was supported by respondents (58%, n=66), 91% of the respondents deemed it necessary for all MPCs to have a pharmacist in the strategic leadership of MPCs. The presence of pharmacists in the strategic leadership of MPCs was limited. The pharmacists who participated in the study felt that their presence could add value as strategic leaders of MPCs.*

Keywords: pharmacists, manufacturing, leadership, competency.

JEL Classification: I11, L65, P46.

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Introduction

The World Health Organisation (WHO) identifies pharmacists as custodians of medicines and furthermore describes the role played by pharmacists in the healthcare system in seven (7) dimensions, commonly known as the 7-star pharmacist (Sam and Parasuraman, 2015). These dimensions are inclusive of a pharmacist as a caregiver, decisionmaker, communicator, manager, life-long-learner, teacher and leader (Hallit *et al.*, 2019; Sam and Parasuraman, 2015; Thamby and Subramani, 2014). Furthermore, pharmacists are described as patient-oriented medicines experts by the International Pharmaceutical Federation (FIP), which is the organisation that represents pharmacists and pharmaceutical scientists globally.

In 2012, the FIP developed the FIP Global Competency Framework (GbCF). The framework consisted of a behavioural competency that was directed towards facilitating the growth and development of early-career pharmacists. The competencies in the GbCF are thought to be applicable to the pharmacy workforce globally (FIP, 2020; Bajis *et al*., 2023). The GbCF has been validated and tested in multiple countries that are represented in the FIP. It has been found to be a functional tool that can be used by individuals to enhance their performance and progress towards the advanced practice of pharmacy (Al-Haqan et al., 2021; Bajis et al., 2023). In 2016, the FIP developed a second version of the GbCF. The clusters of the competencies in the framework include pharmaceutical public health, pharmaceutical care, organisation and leadership. All the competencies are meant to ensure that pharmacy graduates are patient-oriented medicines experts (Al-Haqan et al., 2021; Bajis et al., 2023).

The roles of pharmacists at the technical level of a manufacturing pharmaceutical organisation have been established. These include production, quality control, quality assurance, regulatory affairs and leading operations, amongst other roles (Atkinson et al., 2014; Nouri et al., 2020; Ubohov et al., 2021). All organisations that are involved with manufacturing medicines are generally recognised and licenced as pharmacies. The European Union (EU) requires that all holders of manufacturing or importation licenses for pharmaceuticals, must have the continuous presence of one of one or more Qualified Persons (QPs) (Pisani, Vella Brincat and Farrugia, 2009; Yermagambetov, 2017). The responsibilities of the qualified person in an MPC involve ensuring that medicinal products produced in the European Union adhere to national laws and Marketing Authorisation (MA) requirements. Additionally, any pharmaceuticals imported from a non-EU country must undergo a comprehensive qualitative analysis of all active ingredients, and other necessary tests to confirm compliance with the MA (Atkinson, 2016). The QP is legally required to certify in a register or similar document that all the requirements as mentioned earlier have been met before the batch is made available for sale or distribution (Pisani, Vella Brincat and Farrugia, 2009; Yermagambetov, 2017).

In most countries the qualified person is a pharmacist. Such is the case for what is referred to as a responsible pharmacist (RP), in South Africa (SAPC, 1974). The role of a responsible pharmacist includes overseeing the pharmacy continuously, possessing the appropriate qualifications and experience necessary for the services provided by the pharmacy, ensuring that employees who provide pharmacist-related services in the pharmacy are registered with the South African Pharmacy Council (SAPC), taking corrective measures to address any deficiencies, establish policies and procedures for pharmacy employees, ensuring the safe and effective storage of medicines and maintaining accurate and effective records amongst other roles (SAPC, 1974; SAHPRA, 2022). In a nutshell, the RP is the person held accountable by the regulators for the facility and also medicines in general, to ensure that all legislation related to the medicines are adhered to (Khan, 2020; SAPC, 1974). Furthermore, pharmacists need to provide the professional guide that ensures the availability of safe and effective medicines that are of good quality at all levels of care.

The pharmacist, in their roles at a technical level fulfil the leader dimension of the seven-star pharmacist, as they lead various teams in the operations of MPCs such as production, quality assurance and regulatory affairs. However, it is necessary to determine if the leadership dimension extends to the strategic level of MPCs. The research described in this manuscript forms part of a four-phased study that aimed to determine the presence of pharmacists in the strategic leadership of MPCs with operations in South Africa. The research described in this paper aimed to assess the positions, perceptions and valued leadership competencies of pharmacists who work in manufacturing pharmaceutical companies (MPCs) in the Republic of South Africa.

Methods

Study population

The study population included pharmacists who were members of the South African Association of Pharmacists in Industry (SAAPI) which is a sector of the Pharmaceutical Society of South Africa (PSSA). The PSSA is the main professional association for pharmacists in South Africa. At the period of data collection, SAAPI reported to have 567 members who were practising pharmacists in South Africa. The study excluded members of SAAPI who were not pharmacists.

Sample size

While the sample population was 567, it was understood that the population was made up of professionals who would not necessarily opt to participate in the study. The finite sample size was calculated based on the population of the members of SAAPI who were the identified sample. The equation that was used for sample size calculation was (Naing et al., 2006):

$$n' = \frac{n}{1+\frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2 N}} \quad (1)$$

The computed sample size was 54. This translated to a requirement of 54 or more respondents that were needed to have a confidence level of 95% that the real value is within ±5% of the measured value. The margin of error computed was 3.88%. This means, in this case, there is a 95% chance that the real value is within ±3.88% of the measured value.

Data collection methods and study tool

A thorough search was done in literature, to find an existing, validated questionnaire that would serve to provide answers to meet the objectives of the study. Such a questionnaire could not be found. As a solution, a self-administered online questionnaire was developed. The questionnaire was tested in a 2-phased pilot study that sought to assess the clarity of the questions and also confirm the comprehensibility of the questionnaire. The questionnaire that was developed aimed to (a) Determine the demographics of the pharmacist completing the form (2) Describe the experience of the pharmacist through the roles they have occupied in MPCs (3) Establish the years of experience of the pharmacist (4) Determine the perceptions of pharmacists relating to strategic leadership within their companies and also in the South African pharmaceutical industry (5) Determine if the pharmacists have a desire to lead at the strategic levels of their companies. The items in the questionnaire included Likert scales, dichotomous, multiple choice and multi-select questions. The form was disseminated to the members of SAAPI via email over two cycles.

Ethical aspects

Prior to conducting this study, ethical clearance was obtained from the University of Witwatersrand Human Research Ethics Committee (non-medical). The approval to disseminate the questionnaire, via an online link, was obtained from SAAPI. The was a concern raised regarding the Protection of Personal Information (POPI) of the members of SAAPI, hence the questionnaire was disseminated by the use of a link attached to an email.

Statistical analysis

The data was analysed using STATA® version 17. The inter-rater agreement was calculated using Cohen's Kappa coefficient, while the differences between the expected and observed values for the Likert scales were tested using Chi-square according to the number of respondents and were found to be statistically significant for all the rated statements ($p < 0.05$).

Results

Response rate

The sample size population was 567 as the online questionnaires were administered to members of SAAPI. After disseminating the questionnaire twice, responses were received from 89 participants (15%). On the 89, only 66 (11.6%) responses were complete and therefore formed the sample for the study.

Pharmacist's demographical information

The participants were requested to indicate the racial group they identified with. The racial distribution of the participants is indicated in Table 1. The racial group with the largest representation was the White race group at 47.0% (31, n=66), followed by the African race which was 31.8% (21, n=66). The Asian group was the least represented at 1.5% (1, n=66).

Table 1. Participant demographical information

Racial group		
African	21	31.8%
White	31	47.0%
Indian	10	15.2%
Asian	1	1.5%
Mixed	3	4.5%
Gender		
Male	26	39.4%
Female	40	60.6%
Years of experience in Pharmacy		
1-2 years	5	7.6%
3-6 years	10	15.2%
7- 10 Years	4	6.1%
11-15 years	14	21.2%
>16 years	33	50.0%
Years of experience in the manufacturing sector of pharmacy		
Mean	21,5	
Std. Dev.	14,1	
Min	1	
Max	61	

Source: developed by authors.

The majority (66%) of respondents in the study were female (40, n=66) and males were 39% (26, n=66) of the respondents. The respondents were requested to indicate the number of years of experience they have in the pharmaceutical industry. The number of years that the respondents have in the pharmaceutical industry are indicated in Table 1. Respondents with more than 16 years of experience made up 50% of the sample (33, n=66). This was followed by pharmacists who had between 11 and 15 years of experience in the industry, who were 21% (14, n=66) of the sample population. The least represented were pharmacists who had 7-10 years of experience as they were 6.1% of the sample population. The median year of qualification as a pharmacist was the year 2004. The earliest qualification was observed in 1963 and the latest was 2022. Most qualifications were received between 1994 and 2012.

The respondents indicated the roles that they had occupied within the industry. The position that was most common amongst the respondents was the role of a production pharmacist as 43.9% (29, n=66) of the respondents selected this option (see Figure 1). This was followed by the role of a regulatory affairs pharmacist with was selected by 36.3% (24, n=66) of the respondents. Only one (1) of the 66 respondents (1.5%) indicated that they had been a chief financial officer of a company. This was the role which the respondents had the least experience in. One (1) respondent indicated that they had experience in a role as a Project and Human Resources manager, which was not included in the options provided.

The role of a responsible pharmacist was the one most selected as 17.7% (13, n=66) of the respondents indicated that they had occupied this role as the latest role in their career. This was followed by the regulatory affairs pharmacist role which was selected by 15.2% (10, n=66) of the respondents. None of the respondents indicated that they were a warehouse/ distribution Pharmacist, Chief Financial Officer (CFO) or Country/Regional director in their latest positions, in their most recent positions. However, two (3.0%) respondents indicated that they had been managing directors and another two (3.0%) were Chief Operating Officers recently.

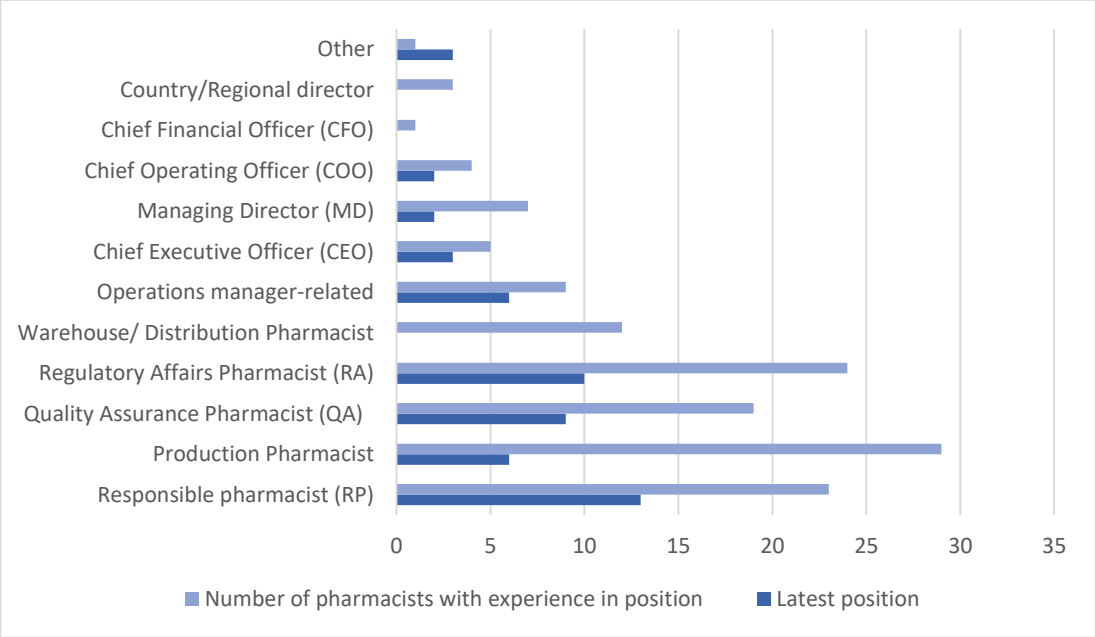

Figure 1. Respondents' positions of experience and latest positions in the manufacturing sector of the pharmaceutical industry

Source: developed by authors.

Perceived necessary attributes for strategic leadership

The respondents were requested to indicate, by rating, the attribute (s) that they felt were necessary for them to be appointed at strategic levels of the MPCs they work for.

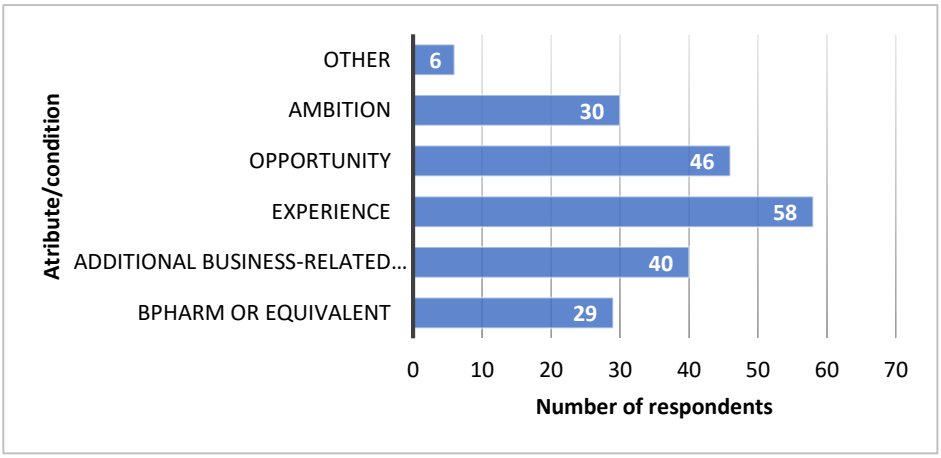

Figure 2. Perceived necessary attributes for entry into positions of leadership

Source: developed by authors.

Experience in the pharmaceutical industry was perceived to be the attribute necessary for pharmacists to occupy positions of strategic leadership by 87.9% (58, n= 66) of the respondents (see Figure 2). The availability of opportunities for entry into strategic leadership was perceived as necessary by 69.7% of the respondents (46, n=66) and additional business-related qualifications by 60.6% (40, n=66) of the respondents. Having ambition for leadership was perceived to be necessary by 45.5% (n=30) and a Bachelor of Pharmacy (BPharm) qualification was perceived to be necessary by 43.9% (29, n=66) of the respondents. Having a BPharm qualification was the attribute that was selected the least.

Six respondents indicated answers that were not available as options. The respondents indicated that one needs to be willing, work hard, be adaptable and have good people skills in order to enter into positions of strategic leadership. It was further highlighted that pharmacists should have the willingness to care, dream, risk and expect more than others in order to enter into these positions. A respondent added that how connected (the networks a person has with people in positions of influence) a person is, contributes to the requirement for entry into positions of strategic leadership. It was noted by two respondents that one needs to build a track record of manufacturing capability, innovative thinking and tangible successes in order to increase the chances of pharmacists entering into strategic positions.

Leadership competencies of pharmacists in strategic leadership

The respondents were provided with five (5) leadership competency domains, that were sourced from the American College of Healthcare Executives (ACHE) leadership competency assessment tool (ACHE,2021; Mohammadi *et al.*, 2020). The respondents were requested to rate the competencies according to the level of importance for pharmacists, as healthcare professionals, in strategic leadership of an MPC. The respondents were requested to indicate whether the competency was very important, important, somewhat important, low importance or least Important. Each competency could only be matched with one rating option i.e. only one competency could be very important.

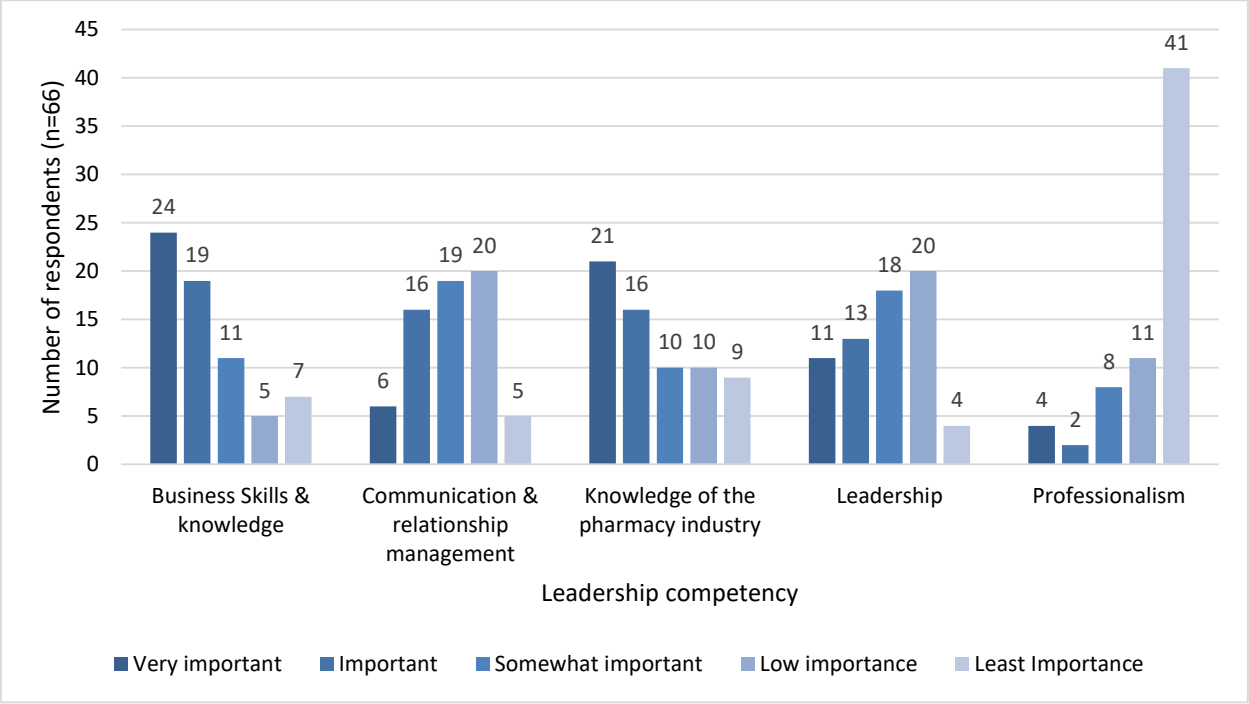

Figure 3. Rating for the importance of leadership competencies of pharmacists in strategic leadership

Source: developed by authors.

The competency for business skills and knowledge was found to be very important by 36.4% (24, n=66) of the respondents. This competency was the one with the highest rating of being very important among all the competencies. The competency was found to be least important and have low importance by 10.6% (5, n=66) and 10.6% (7, n=66) of the respondents, respectively.

The Communication and relationship management competency was described as having low importance by 30.3% (20, n=66) of the respondents. Close to the 30.3% was 28.8% (19, n=66) of the respondents rating this competency as somewhat important. The Knowledge of the pharmaceutical industry competency related to the understanding and knowledge of the pharmaceutical industry by the respondents. 31.8% (21, n=66) of the respondents indicated that this competency was very important. Knowledge of the pharmaceutical industry was found to be important by 24.2% (n=16) of the respondents. 15.2% (10, n=66) of the respondents found this competency to be somewhat important and have low importance. Only 13.6% (9, n=66) indicated this competency to be the least important of the five (5) competencies. The Leadership competency was rated to be of low importance as it was selected by 30.3% of the respondents (20, n=66). This was followed by 27.3% (18, n=66) of the respondents indicating this competency to be somewhat important. Only 19.7% (13, n=66) and 16.7% (11, n=66) of the respondents found this competency to be important and very important, respectively. Professionalism as a competency was considered to have the least importance by 62.1% (41, n=66) of the respondents. 16.7% (11, n=66) indicated that this competency had low importance. 12.1% (8, n=8) indicated that professionalism was somewhat important for strategic leadership in the industry. 6.1% (4, n=66) and 3.0% (2, n=66) indicated that professionalism was very important and important.

The inter-rater reliability was determined using Cohen's Kappa coefficient. The number of observed agreements were 111 (33.6% of the observations). The expected number of agreements by chance were 66.0 (20.0% of the observations). The value of *Kappa*= 0.170 with a standard error of *Kappa* of 0.033 (95% CI: 0.107 to 0.234). There was therefore a slight agreement between the participants.

Character-related leadership competencies

The respondents were requested to rate the importance of five (5) character-related leadership competencies, according to Hargett *et al.*, (2017) leadership competencies for effective leadership in healthcare. These character-related competencies include integrity, teamwork, critical thinking, emotional intelligence and selfless service. The respondents were to indicate whether the character-related competency was very important, important, somewhat important, low importance or least Important.

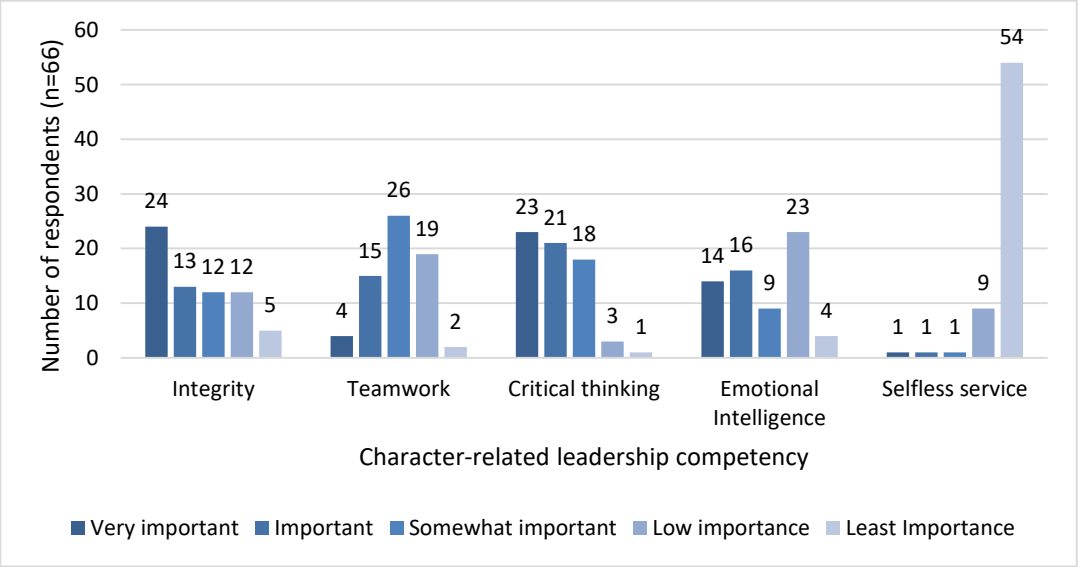

Figure 0. Rating for the importance of character-related leadership competencies of pharmacists in strategic leadership

Source: developed by authors.

The respondents were required to rate the importance of integrity as a character-related competency for being in a position of strategic leadership. 36.4% of the respondents rated integrity to be very important (24, n=66). 19.7% (13, n=66) of the respondents rated this character-related competency to be important. The character-related competency was rated to be somewhat important and of low importance by 18.2% (12, n=66) of the respondents. 7.6% (5, n=66) of the respondents indicated integrity to be a character-related competency that is of least Importance.

Having the ability to work in teams is a characteristic of leadership. 39.4% (26, n=66) of the respondents found the character-related competency for teamwork to be somewhat important. Low importance was the option that had the second highest ratings from 28.8% (19, n=66) of the respondents. 22.7% (15, n=66) of the respondents indicated that this character-related competency is important. The rating options that were selected the least were very important and Least Importance at 6.1% (4, n=66) and 3.0% (2, n=66).

Very important was the rating option selected the most by 34.8% (23, n=66) of the respondents for the critical thinking character-related competency. This was followed by 31.8% (21, n=66) of the respondents considering this competency to be important. 27.3% (18, n=66) of the respondents indicated that the competency was somewhat important. 4.5% (3, n=66) and 1.5% (1, n=66) of the respondents considered critical thinking to be of low importance and least Importance, respectively.

For the Emotional Intelligence competency, 34.8% (23, n=66) of the respondents considered emotional intelligence to be of low importance for being able to lead in a MPC. 24.2% (16, n=66), rated emotional intelligence as important. 21.2% (14, n=66), considered this competency to be very important. While 13.6% (9, n=66) of the respondents rated this competency as somewhat important, the remaining 6.1% (4, n=66) indicated that the competency was of least Importance

Almost all of the respondents indicated that selfless service as a competency was of least Importance at 81.8% (54, n=66). 13.6% (9, n=66) rated this competency to be of low importance. Only 1.5% 91, n=66) of the respondents indicated that this competency is very important, important and somewhat important.

Cohen's Kappa was determined and found a fair agreement between the participants. The number of observed agreements were 134 (40.61%) as opposed to those expected by chance: 66.0 (20.00%). The value of Kappa was 0.258 with a standard error of 0.034 (95% CI: 0.191 to 0.324).

Presence of pharmacists in positions of strategic leadership

The respondents were provided with statements for which they had to indicate their level of agreement with the statements through the use of Likert scales that ranged from strongly agree, agree, neutral, disagree to strongly disagree. In this section of the questionnaire, the respondents selected their responses based on their perceptions.

The respondents were requested to indicate their level of agreement with the statement for pharmacists' presence in their company's strategic leadership. 37.9% (25, n=66) of the respondents agreed that pharmacists are in the strategic leadership of their company. 28.8% (19, n=66) strongly disagreed with this statement. 15.2% (10, n=66) of the respondents were neutral about the statement. 12.1% (8, n=66) of the respondents disagreed with the statement, while 6.1% (4, n=66), strongly agreed. The association between the observed and expected values was statistically significant for this statement (P=0.0002; Chi-Square test).

Table 2. Respondents perceptions about leadership by pharmacists in their MPCs and the manufacturing sector

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
There is a presence of pharmacists in the strategic leadership of your company	4	25	10	8	19
There is a presence of pharmacists in the strategic leadership of manufacturing pharmaceutical companies in South Africa	15	14	10	6	21

Table 2 (cont.). Respondents perceptions about leadership by pharmacists in their MPCs and the manufacturing sector

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Pharmacists require additional qualifications to be in strategic leadership	18	21	13	12	2
Pharmacists are interested to pursue positions in strategic leadership	33	16	11	5	1
You are interested to pursue strategic leadership positions in your company	37	11	7	10	1
You possess the necessary leadership competencies to be in a position of strategic leadership of your company	31	20	8	7	0
Manufacturing pharmaceutical companies require a quota for the number pharmacists that should be in strategic leadership	26	12	14	8	6
It is necessary for a manufacturing pharmaceutical company to have pharmacists at strategic level of decision-making	46	14	5	0	1
Your company considers your inputs as expert opinion when making pharmaceutical-related decisions for the company	23	23	7	4	9

Source: developed by authors.

It was observed that 37.9% (25, n=66) of the respondents agreed that there was a presence of pharmacists in the strategic leadership of their respective organisations. 28.8% (19, n=66) strongly disagreed with this statement. There was 15.2% of the respondents that were neutral (10, n=66) about this statement. While 12.1% (8, n=66) disagreed and only 6.1% (4, n=66) strongly agreed with the statement. The Chi-Square test was performed to determine the association between the observed values and those expected for all the statements. In this case, the association was statistically significant (p=0.0476).

The respondents that agreed that pharmacists required additional qualifications to be able to enter positions of strategic leadership were 31.8% (21, n=66). 27.3% (18, n=66) of the respondents strongly agreed with this statement while 19.7% (13, n=66) were neutral and 18.2% disagreed (12, n=66). The remaining 3.0% (2, n=66) strongly disagreed (p=0.0031). Half (33, n=66) of the respondents strongly agreed that pharmacists indeed had an interest in pursuing positions of strategic leadership in the manufacturing pharmaceutical industry. 24.2% (16, n=66) agreed with this statement. 16.7% (11, n=66) were neutral. The respondents that disagreed with this statement were 7.6% (5, n=66) and 1.5% (1, n=66) strongly disagreed (p<0.0001).

More than half of the respondents indicated that they strongly agreed that pharmacists are interested in pursuing positions of strategic leadership in MPCs, at 56.1% (37, n=66), as they had a personal interest in pursuing positions of strategic leadership in their respective organisations within the industry. The association of the observed and expected values was statistically significant. The respondents that agreed that they had an interest to pursue these positions were 16.7% (11, n=66) of the respondents. 15.2% (10, n=66) of the respondents disagreed with the statement. The rest of the respondents were either neutral at 10.6% (7, n=66) or strongly disagreed at 1.5% (1, n=66). There was a significant association between the observed and expected values (p<0.0001).

It was observed that 47.0% (31, n=66) of the respondents strongly agreed that they possessed the necessary leadership competencies to be in a position of strategic leadership of an MPC. 30.3% of the respondents were in agreement with this statement (20, n=66). 12.1% (8, n=66) were neutral with this statement while 10.6% (7, n=66) agreed. None of the respondents strongly disagreed with the statement (p<0.0001).

The respondents were asked if they felt that there was a need to have a quota system for pharmacists in pharmaceutical companies' strategic leadership. 39.4% (26, n=66) of the respondents strongly agreed, 21.2% (14, n=66) were neutral. The respondents that agreed were 18.2% (12, n=66) while those that disagreed were 12.1% (8, n=66). Only 9.1% (6, n=66) strongly disagreed (p=0.0010).

The respondents were asked if there was a necessity for the presence of pharmacists in positions of strategic leadership of MPCs. A notable majority of 69.7% (46, n=66) of the respondents strongly agreed with this

statement. While 21.2% (14, n=66) agreed. 7.6% (5, n=66) and 1.5% (1,) were neutral or strongly disagreed. None of the respondents disagreed with the statement ($p<0.0001$).

The respondents were asked to indicate if they felt that their opinions were valued and considered as expert opinion by the leadership of their respective organisations. 34.8% (23, n=66) strongly agreed and agreed with this statement and 13.6% (9, n=66) respondents strongly disagreed while 10.6% (7, n=66) were neutral and the remaining 6.1% (4, n=66) disagreed ($p< 0.0001$).

Positions that ought to be reserved for pharmacists

The respondents were provided with a list of typical key positions in a MPC. They were requested to indicate if there were positions that they feel should be reserved for a pharmacist. This is considering the training and expertise they have as pharmacists.

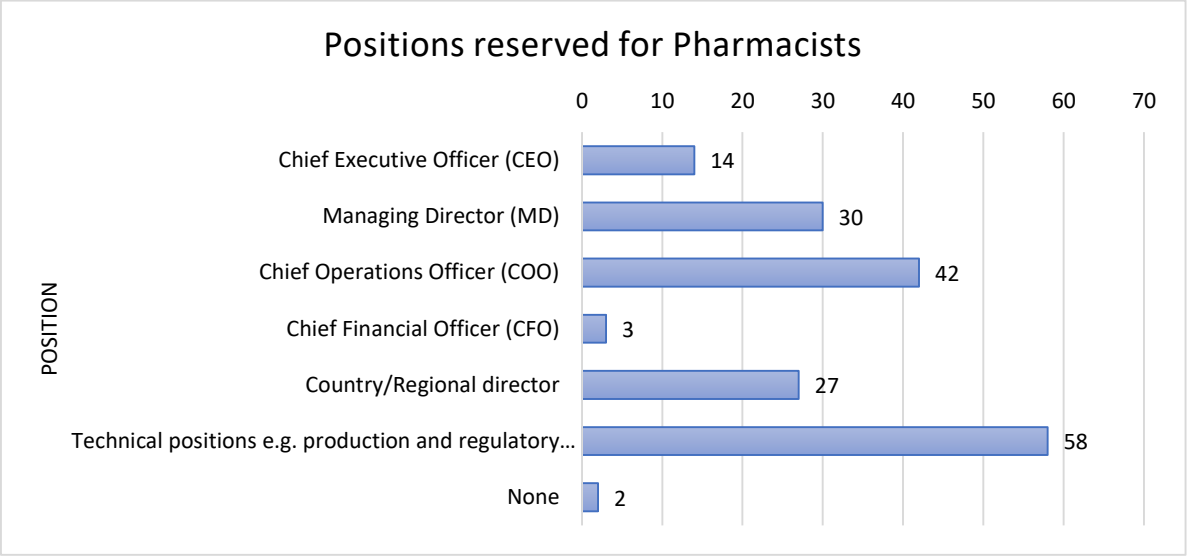

Figure 5. Positions to be reserved for pharmacists

Source: developed by authors.

The position rated the highest was the technical positions e.g. production and regulatory affairs. 87.9% (58, n=66), of the respondents felt that these positions must be reserved for a pharmacist. This was followed by the position of chief operating officer 63.6% (42, n=66) and managing director at 45.5% (30, n=66). While 40.9% (27, n=66) of the respondents felt that the position of a country/regional director of a MPC must be reserved for pharmacists.

In terms of the chief executive officer position, 21.2% (14, n=66) of the respondents felt that this position should be reserved for pharmacists. A chief financial officer is the person responsible for the finances of the company. It was found that 4.5% (3, n=66) of the respondents felt that this position should be reserved for pharmacists.

Discussion

The response rate to the questionnaire was low (11.6%) when compared to the recommended rate of approximately 39% for a study with a population of 600 (Draugalis and Plaza, 2009; Kotrlik and Higgins, 2001). Stedman et al. (2019) conducted a longitudinal study where they observed a decline of 0.76% per year in mean response rates of survey conducted between the years 1971 and 2017. Furthermore, Hendra and Hill (2019) describe how new evidence shows little relationship between survey response rates and non-response bias (Hendra and Hill, 2019; Stedman et al., 2019).

Most of the respondents identified themselves as females and being of the white race. The respondents mostly indicated that they had extensive experience in the pharmaceutical industry. This is in line with the statistics of pharmacists on the SAPC register (SAPC, 2023). The register indicated that there were more females (11455)

than males (6028). There were more white (7635) pharmacists on the SAPC register than any other race (African= 5496) (SAPC, 2023). While the sample size for this phase of this study was low, it was clear that the respondent population is representative of the pharmacy population group, although the study was only done in the manufacturing sector of the industry.

A few of the respondents indicated that they had experience working at the strategic level of any company. The low positive response is confirmed by the fact that many of the respondents mostly identified with experience working at the organisations' technical level. They worked in roles such as responsible pharmacists, regulatory affairs and quality assurance.

The respondents' most valued necessary attribute for strategic leadership was experience, followed by the availability of opportunity. This meant that the respondents felt that experience was the most necessary attribute, and the availability of leadership opportunities was also a determining factor. Fitzsimmons and Callan (2016) describe how a track record is necessary for the selection of a company Chief Executive Officer (CEO) for organisations (Fitzsimmons and Callan, 2016). The position of a CEO is key for the function of an organisation as it is the one that drives the strategy of the company.

The respondents indicated that the leadership competency that is important for them to lead is business skills and knowledge, followed by the knowledge of the pharmaceutical industry. Heinen *et al.*, (2019) explained that the leadership competencies in the healthcare sector are shifting from direct patient care for nurses as they now have to apply their leadership competencies to the strategic level. Nurses need to influence the strategic level of leaders. Which requires the nurses to have an in-depth understanding of the healthcare system in order for them to generate and contribute to their organisation's vision and mission on quality improvement (Heinen *et al.*, 2019). Similarly, the respondents in this study are of the opinion that their knowledge of the pharmaceutical industry is more necessary than other skills such as leadership, communication and relationship management, in order for them to be able to lead at a strategic level.

The valued character-related leadership competency amongst the respondents was integrity, followed by critical thinking. Pharmacists in South Africa are guided by the code of conduct (SAPC, 2008). The chosen option for integrity to be rated as the highest above other competencies such as teamwork and emotional intelligence can be linked with the institutional logic of pharmacists. Haumschild and Weber (2014) describe the importance of the integrity of a pharmacist in leading operations within their organisations. They describe how, in a hospital environment, a pharmacist must use integrity to influence other healthcare team members such as nurses and doctors to act in the best interest of patients when dealing with medicines (Haumschild and Weber, 2014).

Some of the respondents disagreed with the notion that pharmacists are present in the strategic leadership of MPCs in their respective organisations in South Africa. Similar findings were reported by Dockrat (2017), indicating that most responsible pharmacists felt that their leaders had them as responsible pharmacists for tokenism gains.

The respondents felt they needed additional business-related qualifications to enter strategic leadership positions of MPCs. However, while a business-related qualification may be beneficial, it is not an absolute requirement. This sentiment is shared by Hlobo, Moloi and Marx (2022), who indicate that an undergraduate degree with relevant experience and financial literacy is sufficient for entry into positions of strategic leadership (Hlobo, Moloi and Marx, 2022). Mayimele, Demana and Keele (2023) conducted a qualitative study that aimed to determine the perceptions of board members of MPCs in South Africa on the presence of pharmacists in the strategic leadership of MPCs. It was found that the role of a pharmacist extends beyond technical functions and should be beneficial for MPCs. However, pharmacists were considered not to be present in positions of strategic leadership due to having a limited diversity of skills required to lead MPCs at a strategic level (Mayimele, Demana and Keele, 2023).

The respondents expressed interest in the pursuit of positions of strategic leadership and further felt that they had the necessary leadership qualities to enter into these positions. There was agreement by the respondents that MPCs need a quota system to ensure that certain strategic positions are reserved for pharmacists, such as the previous position of a managing director now known as a responsible pharmacist, in South Africa. This position was reserved for registered pharmacists only in the South African context. The positions that the respondents felt

needed to be reserved for pharmacists include the chief operations officer and managing director. The respondents confirmed this indicating the necessity for the presence of a pharmacist in the strategic level of every MPC. Kor and Misangyi (2008) support the balance between in-industry experts and business-minded leaders in organisations' strategic leadership (Kor and Misangyi, 2008).

A number of limitations were identified for this study. The sample population was inclusive of members of a professional association for which membership is optional. That means that the sample is not representative of all the pharmacists in the manufacturing sector of pharmacy in South Africa. The low response rate limits the generalisability of the study and introduces non-respondent bias. The fact that this questionnaire was self-administered, means that responses may not necessarily reflect actual attitudes and behaviours of the pharmacists. While the limitations are identified, this type of study is unique, and provides insights to the profession which adds value to the existing literature.

Conclusions

The results drawn from this study indicate that the pharmacists who participated in this study had experience in the technical roles of a MPC, and not necessarily roles at strategic levels within the pharmaceutical industry. The respondents value experience, the availability of opportunities and having additional business-related qualifications as determinants for entry into positions of strategic leadership. The respondents mainly identified the competencies for business skills and knowledge and also knowledge of the pharmaceutical industry, as very important for a pharmacist to function at a strategic level. Leadership and professionalism on the other hand were mainly rated to be of low importance. Integrity and critical thinking ability are the competencies identified as very important for pharmacists in strategic leadership. Pharmacists do express a desire to lead at a strategic level and feel that it is necessary for MPCs to have pharmacists in the strategic level of leadership in positions such as COO or MD. The pharmacists felt that their presence could add value in the MPCs they work for. The findings of this study were able to provide insight on the positions and valued competencies of the pharmacists for MPCs.

Availability of data and materials

The data that was collected for establishing the findings of this study can be obtained from the corresponding author, on request. The data is not made publicly available due to information that could threaten the confidentiality and anonymity of the research participants, as the information shared is of a sensitive nature.

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