

The Importance and Satisfaction of Location Decision Factors of Manufacturing and Services SMMES in Johannesburg

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Abstract

The aim of this study is to assess the gaps between the importance and satisfaction of location decision factors of manufacturing and service SMMES located in Johannesburg (South Africa). The current study implemented a quantitative approach by using paired sample t-test to examine and compare responses of importance and satisfaction of location decisions. The study revealed that ten out of twelve factors present a significant gap between the importance and satisfaction of location decision. Factors such as cost, employment creation, rental rate, and green building present a negative significant gap between the two groups of comparison. Nevertheless, basic need present moderate gap. Factors including safe environment, social climate, proximity to supplier, proximity to competitors, proximity to customers however recorded positive mean difference on the two groups of comparison. This research contribute to knowledge of Operations Management, particularly in the arear of location decision. Future study should identify why the gap exist between the importance and satisfaction of facility location decision based on the selected factors.

Keywords

Smmes, Paired Sample T Test, Location Decision, Gap Analysis

1. Introduction

Location decision, often referred as facility location decision is a significant and strategic decision one make to either maximise profit or minimise cost (Dubé, 2016; Farahani, and Hekmatfar, 2009). Heizer et al., (2016) stated that “location decision is one of the ten major decision areas of operations management”. Theories of location decision intend to elaborate the reason a business selects a specific location and not another (Dubé, 2016). The perfect location decision is without hesitation choosing the best potential location among a given set of options and restrictions (Dubé, 2016).

The location decision is of such significance because it can affect the growth, success as well as failure of a business (Lumbwe, Nwobodo-Anyadiegwu, Mbohwa, 2018; Mbugua, 2011). In order to achieve an ideal location decision, it is imperative to identify, investigate, and assess the critical location factors that are most important to the success of business (Heizer et al, 2016; Lumbwe et al., 2018; Mbugua, 2011; Yang and Lee, 1997). Furthermore, it is a decision any business make at some stage (Mbugua, 2011). Usually, such decision has long-term consequences, can be extremely costly, and difficult to reverse (Lumbwe et al., 2018; Aswathappa and Bhat, 2010).

Small, Micro and Medium Enterprises (SMMES), all over the world, have been identified as key drivers of the economic growth, and socio-economic stability of a country (Lumbwe et al., 2018; Mbonyane, 2006; Barnard et al., 2016; Fatoki, 2014; Jili et al, 2016; Bushe, 2019. Govuzela and Mafini, 2019; Rahman and Kabir, 2019). They contribute significantly to the alleviation of poverty and decrease the unemployment rate. In addition, they stimulate economic growth, and create job opportunities (Makakane, 2014; Cant and Rabie, 2018). In addition, they generate income within poor and disadvantaged communities in developing countries (Lekhanya, 2015, Lekhanya et al., 2017). When it comes to South Africa, SMMES contribute meaningfully to the economy (Reynolds et al., 2019). The South African government has encouraged SMMES in the sense that, in 2014, they created a Ministry of Small Business Development to acknowledge the importance of SMMES in the economic growth, innovation, and unemployment rate reduction (BER, 2016). According to the Provincial Investment Portfolios of 2017, SMMES are essential for South Africa’s economic development (Bushe, 2019; Govuzela and Mafini, 2019).

The purpose of this study is to present a gap analysis of the importance and satisfaction of location decision factors. Therefore, the research question and objective are presented as follow; what is the gap between the importance and satisfaction of location decision factors? The objective of this study is to identify the gap between the importance and level satisfaction of location decision factors.

1.1. Importance of the study

The current research contributes to the theory and practice of operations management research, specifically in the field of location decision strategies. It also present a gap between importance and satisfaction of location which can be filled in future study.

2. Literature review

Location decision has a long and extensive history (Thumawongchai and Huang, 2011). As this area of study has evolved, challenges and the various location factors increased due to the continuous changing trends and criteria on location decisions. The world economy, technology and environment issues impacted the existing models used in location decision (Thumawongchai and Huang, 2011).

Very often, businesses find themselves in the different situation of making location decision, such as allowing a continuous increased of production capacity, venturing a new market, introducing a new product/services or relocating a business (Bruch et al., 2014). Location decision alternatives involves (1) increasing the size of an existing facility instead of relocating; Expanding business in an existing facility or to a new location to cater to increased demand can be a part of expansion strategy. (2) Preserving the existing location yet adding another facility in a different location, or (3) shutting down the current facility and locating to another site (Heizer et al., 2016).

2.1. Location decision factors and sub-factors

There are standardised solutions that can be applied in every situation even though each location decision problem is unique (Kalantari, 2013). The importance of each of location decision factors vary according to numerous parameters that include the type and size of an enterprise, business nationality, culture and ownership (national or international) (Chatzoglou et al., 2018).

There are some important and main factors that need to be considered in most of the location decision problems (Kalantari, 2013). They are presented as follow:

2.1.1. Cost

Research have shown that cost (of all kind) are unquestionably the most essential location decision factors when selecting a facility location (Hoffman and Schniederjans, 1994; Lumbwe et al., 2018; Kalantari, 2013; Jungthirapanich, and Benjamin, 1995; Badri, 1999; Atthirawong and MacCarthy, 2001; Badri, 1996; Dixit et al., 2019). When MacCarthy and Atthirawong conducted a Delphi study technique on the main factors that impact the international location decision process, the results revealed that cost was the first factor on the list (MacCarthy and Atthirawong, 2003). “Cost” is practically identified in all the location decision factors lists that have been established by diverse researchers (Lumbwe et al., 2018; Bruch, 2016; Park, 2002; MacCarthy and Atthirawong, 2003; Barnard et al., 2011; Cappello, 2011; Sambidi, 2003; Bjelkemyr et al., 2013; Rajkumar, 2013; Rikalovic et al., 2014; John et al., 2015; Cifranič, 2016; Mkwanzazi and Mbohwa, 2016b; Phelps and Wood, 2017; Fusková et al., 2018).

There are two types of location cost: tangible and intangible cost (Heizer et al., 2016). Tangible costs are cost that can already be identified and precisely measured. These cost include labour, material or resources, utilities, transportation and other costs that accountant and managers can identified. Intangible costs however are difficult to quantify. They include items such as “quality of education”, “public transportation facilities”, “quality attitude of prospective employees”, and “quality of life” (Heizer et al., 2016).

2.1.2. Workforce in place

Workforce in place included sub-factors such as “quality of labour force”, “availability of workers”, and “motivation of workers in the area”.

An empirical study revealed that “quality of the labour” is an essential location decision factor because it has an impact on productivity, product quality, etc. (Atthirawong and MacCarthy, 2001). Labour availability is also considered as one the most important factor of location decision because it is continuously taken into consideration when selecting a location (Billington, 1999; Friedman et al., 1992). Lastly, the motivation of labour play an important role as it pushes enterprises to strive achieving their aims. It is also a fundamental requirement for continuous improvement (Kalantari, 2013).

2.1.3. Employment creation

Employment creation contained sub-factors such as turnover and absenteeism rates of employee, lack of job opportunities for people in the area, and jobs creation for people in the area.

These sub-factors relate unemployment rate in the area, region, or country. These sub-factors can result in either positive or negative effect on a business in the sense that high unemployment rate can be deduced as accessibility to labour force, and thus be regarded as a favorable sub-factor. On the other hand, this factor can be considered as a poor economic condition of the area and can lead to a negative interpretation for the business (Kalantari, 2013).

2.1.4. Labour qualification

Labour qualification comprised availability of non-qualified labour force and availability of temporary labour force. Although, some companies need highly trained labour that are trained who are able to execute precise jobs, others are content with unskilled and low cost labour (Kalantari, 2013).

2.1.5. Safe environment

Safe environment includes the following sub-factors: crime rate, attitude of locals to foreign-owned business, behavior of locals to foreign-owned business, and history of xenophobic attacks in the area. A business can be interrupted if the overall attitude and behavior of the inhabitants of a selected area are against the existence of a particular facility or business, (Kalantari, 2013; Lumbwe, 2018).

2.1.6. Basic needs

Basic needs in this context refer recreational opportunities and Access to schools, hospitals, churches. The standard of living in a selected location should be satisfactory (Kalantari, 2013). In addition, locating near a healthcare system is another obligation of certain businesses. This is mostly significant for hazardous businesses that use risky materials and machineries. Nevertheless, it does not entail that this factor should not be considered by other businesses. Healthcare system is required for any business with any sort of activities (Kalantari, 2013).

A well-designed education system in a particular area can also improve the location's quality of life in a significant way. Moreover, religious differences can create various challenges for a businesses if they are not taken into account in the location decision process (Kalantari, 2013).

2.1.7. Social climate

Social climate includes quality of environment, community attitude toward business, and standard of living in the area. It is crucial for a business to ensure that the location of their business conform to safety, welfare, and healthy regulations (Fassoulis and Alexopoulos, 2015). It is the responsibility of the business owner or manager to make sure that employees feel comfortable and safe in their working environment because a workplace can influence employees' attitudes, therefore impact on productivity and job satisfaction (Fassoulis and Alexopoulos, 2015).

2.1.8. Proximity to supplier

Some business prefer to locate where their resources or suppliers are close in order to reduce transportation costs, material costs, availability, quality, as well as a products' perishability (Heizer et al., 2016). In addition, some business choose a location near to their providers when a specific resource is essential and is of high cost to transport in its raw state (Banard et al., 2016). Locating near suppliers can decrease the lead time, reduce shipping cost, and maintains the flow of resources in the supply chain (Kalantari, 2013).

2.1.9. Proximity to competitors

Certain businesses find it strategic to locate near competitors (Heizer et al., 2016; Lumbwe et al., 2018). When it comes to business performance, competition play two roles which is attracting market of a specific product or service and competing with other similar business to improve on competitive advantage. In addition, for service businesses close to competitors, their ability to capture spillover demand is constant (Porter, 2000).

Finding good suppliers constitute a competition because if the demand is high, supplier will gain contracts. And if the competition is high, the entire supply chain can be affected (Thumawongchai and Huang, 2011).

2.1.10. Proximity to customers

This factor involve the market's size, responsiveness and delivery time to market, proximity to demand, and accessibility of market (MacCarthy and Atthirawong, 2003). Locating near customers stimulate customer satisfaction and enterprise's responsiveness. This factor enables businesses to recognize a trend and amend their policies to attract their customers, and also enable them make required modifications to benefit from future trends (Kalantari, 2013).

Before locating, a business need to detect the possible markets that it can serve. According to this factor, The best location is where the company can serve the largest market (Kalantari, 2013).

2.1.11. Rental rate

Rental rates refer to the cost paid by a business that occupy a particular space or facility (Holmbom, 2013). Property offers different rental rate depending on the demand in the property market. (Ball et al., 2001). Rental rate involve factors such as lease period of rental agreement, rental range of a specific area, variety of rental premises within a specific location, service of specific estate agency, and service of a particular estate agent regardless of the estate agency (Mkwanzazi and Mbohwa, 2016a). Barnard et al., (2011) stated that even though rental costs are not significant,

“they should still be considered when locating a property, and more specifically, when deciding whether to purchase or lease a property”.

2.1.12. Green building

Green buildings refers to the structure and process that are environmentally friendly. Such premises operate by effectively using inputs such as energy, water, and resources (Mungoshi, 2008). It is also recommended to business owners or managers to consider the implementation of green building principles in the facility they are occupying (Banard et al., 2011).

3. Methodology

3.1. Research design

This study is a quantitative research. A cross-sectional survey method was employed to examine the difference between the importance and satisfaction of locations decision factors. The design of this study is appropriate because the researchers aimed to identify the differences between the two groups of comparison with data collected on the same variable from respondents at a particular point in time.

3.2. Sampling techniques

The sample was drawn from manufacturing and services SMMEs owners or managers operating within Johannesburg, in South Africa. This study used a purposive sampling technique to collect data. 211 respondents were sampled.

3.3. Research instrument

A structured five-point Likert scale questionnaire was used to answer the formulated research question. This allowed data collection from a considerable number of respondents. The questionnaire covered of four sections:

Section A - general demographic information of respondents.

Section B - demographical data of respondents' businesses.

Section C - location factors considered when making a location decision in terms of important then satisfaction level.

And, Section - D business performance measurement.

3.4. Data collection

The questionnaires were administered using the hand delivery method, which refers to giving out questionnaires personally to the respondents. Questionnaire were also sent via email. Clear guidelines explaining how to fill in the questionnaire were provided to enable understanding and accuracy of data collected. Respondents were aware that the current study was totally voluntary.

4. Data analysis

4.1. Demographic information

4.1.1. Gender of respondents

The data associated with the demographic of respondents in terms of their gender is indicated in Figure 1 as follows:

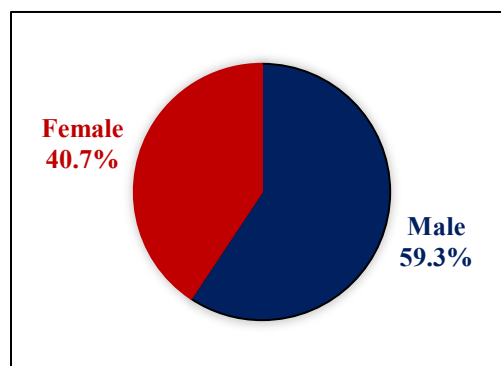


Figure 1. Gender of respondents

Source: (Statistical calculation from SPSS analysis: 2019)

An analysis of gender representation of the respondents revealed in figure 1 shows that most respondents were male. 59.3% of the respondents were male while 40.7% of the respondents were female. It could be adduced from the results of this study as well as the findings of Barnard et al. (2011) and Lumbwe et al. (2018) that the domain of SMMEs is a slightly male-dominated sector in Johannesburg.

4.1.2. Age of respondents

Table 1 presents demographics of SMMEs owners/managers in terms of age.

Table 1. Frequency results - Age respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<20	2	0.9	1.0	1.0
	21-29	10	4.7	4.8	5.8
	30-39	26	12.3	12.5	18.3
	40-49	80	37.9	38.5	56.7
	50-59	83	39.3	39.9	96.6
	60+	7	3.3	3.4	100.0
	Total	208	98.6	100.0	
Missing	System	3	1.4		
Total		211	100.0		

Source: (Statistical calculation from SPSS analysis: 2019)

The data gathered from respondents was consolidated into a frequency distribution table in terms of the age distribution of the respondents. The results that are considered in this study are valid percentages. As presented in Table 1, the results show that 1% of SMMEs owners/ managers who participated in this study are less 20 years old. 4.8% of the respondents fall between the age group of 21-29 years old. 12.5% of the respondents fall between the age group of 30-39 years old. 38.5% of the respondents fall between the age group 40-49 years old, while 39.9% of the respondents fall between the age group 50-59 years old. Lastly, 3.4% of the respondents are older than 60 years. From a general perspective, this study gives a satisfactory overview of the respondents' age.

4.1.3. Ethnic background

This section presents the ethnical group of respondents. As presented in the Table 2, 7.6% of the sample are Asian. Both black and coloured SMMEs owners/managers within the sample respectively scored the same number of responses, which is 31.4% each. 18.1% of the respondent falls in the white group. 10.5% of the respondents falls in other types of ethnic groups. Lastly 1% were not willing to select the ethnical group they fall in.

Table 2. Frequency results - Ethnical group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Asian	16	7.6	7.6	7.6
	Black	66	31.3	31.4	39.0
	Coloured	66	31.3	31.4	70.5
	White	38	18.0	18.1	88.6
	Other	22	10.4	10.5	99.0
	Not willing to say	2	0.9	1.0	100.0
	Total	210	99.5	100.0	
Missing	System	1	0.5		
Total		211	100.0		

Source: (Statistical calculation from SPSS analysis: 2019)

4.1.4. Occupational status

Table 3 presents demographics of respondents in terms of their occupational level within the businesses they are running. Respondents' position in business was distributed between owner, manager, and both manager and owner.

Table 3. Frequency results – Occupational level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manager	77	36.5	36.8	36.8
	Owner	63	29.9	30.1	67.0
	Both manager and owner	69	32.7	33.0	100.0

	Total	209	99.1	100.0	
Missing	System	2	0.9		
Total		211	100.0		

Source: (Statistical calculation from SPSS analysis: 2019)

The results in terms of occupational status shows that 36.8% of the sample are managers, 30.1% are owners of the enterprise, and 33% are both owner and manager of the enterprise.

4.1.5. Respondents' working experience

Table 4 presents demographics of respondents in terms of their working experience within the businesses they are running.

Table 4. Respondent's working experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-3 years	8	3.8	3.8	3.8
	4-6 years	31	14.7	14.8	18.6
	7-10 years	117	55.5	55.7	74.3
	11-20 years	45	21.3	21.4	95.7
	21+ years	9	4.3	4.3	100.0
	Total	210	99.5	100.0	
Missing	System	1	0.5		
Total		211	100.0		

Source: (Statistical calculation from SPSS analysis: 2019)

The data presented in Table 4 reflect the number of years the respondents have been running their businesses. The outcomes of this section shows that 3.8% have spent less than three years. 14.8% of the respondents have been working for 4 to 6 years. 55.7% of the respondents spent 7 to 10 years running their enterprises. 21.4% have been working for 11 to 20 years. Lastly, 4.3% of the respondents have spent more than 21 years in their enterprises.

4.2. Demographical data of respondents' businesses

This section describes the descriptive analysis of the demographical data of respondents' businesses. The section includes business operating time, ownership status, business' sector, and number of employees.

4.2.1. Operating time of the business

Table 5 presents demographics of the businesses' operating time.

Table 5. Operating time of the business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-3 years	5	2.4	2.4	2.4
	4-6 years	17	8.1	8.1	10.4
	7-10 years	61	28.9	28.9	39.3
	11-20 years	91	43.1	43.1	82.5
	21+ years	37	17.5	17.5	100.0
	Total	211	100.0	100.0	

Source: (Statistical calculation from SPSS analysis: 2019)

Table 5 shows that 2.4% of the businesses falls in the range of 0 to 3 years. 8.1% have been operational for 4 to 6 years. 28.9% of the businesses have been operating from 7 to 10 years. Most of the businesses owners/managers from the sample have been operating their enterprises from 11 to 20 years. Finally, 17.5% of the enterprises have been running for more than 21 years.

4.2.2. Enterprises' ownership status

The demographics of respondents in terms of owner status are presented in Figure 2 followed by explanation of the results.

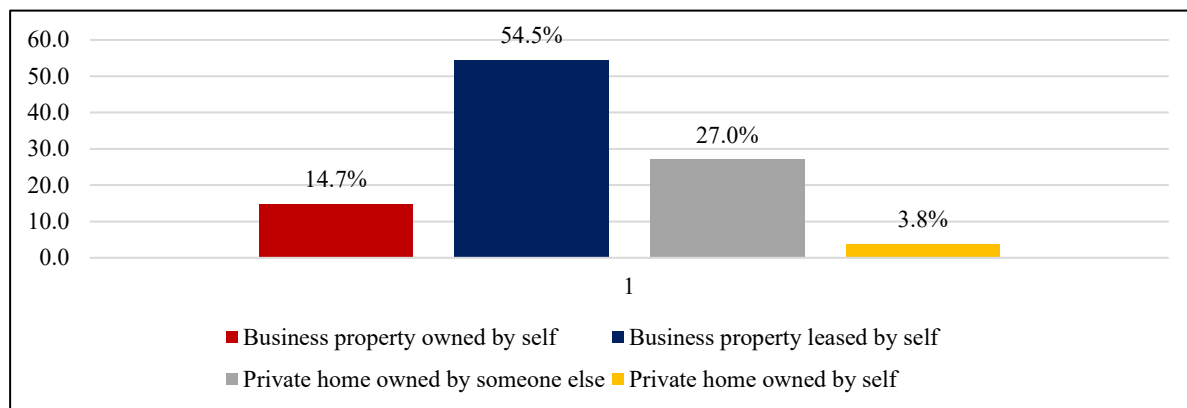


Figure 2. Enterprises ownership status
Source: (Statistical calculation from SPSS analysis: 2019)

Through the findings on demographic data in terms of ownership status, it can be adduced that SMMEs prefer to lease a business property for their business. 54.5% of the respondents are leasing a business property, and 27% of the respondents are using a private home owned by someone else, which refer to leasing the property. On the other hand, 14.7% of the respondents are located in business properties owned by themselves, and 3.8% of the respondents' business are private homes owned by themselves.

Donaldson and Smit (2011) stated that the homebased property is a challenge to most businesses because this type of property involves various activities at their family residences, which means that it should be a peaceful environment for family members. This explain why most respondents are leasing business properties.

The following section presents the two different type of business sector under which SMMEs operate. These sectors include service and manufacturing as discussed in the literature review.

4.2.3. Respondents' business sector

Table 6 presents Respondents' business sector they are operating.

Table 6. Respondents' business sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Industrial/ manufacturing	115	54.5	56.1	56.1
	Service	90	42.7	43.9	100.0
	Total	205	97.2	100.0	
Missing	System	6	2.8		
Total		211	100.0		

Source: (Statistical calculation from SPSS analysis: 2019)

The results show that 56.1% of SMMEs who participated in this study fall within the industrial/manufacturing sector. On the other hand, 43.9% fall in service sector.

4.2.4. Size of enterprises

The demographics in terms of the size of the enterprises are presented in Figure 3. Throughout the literature, it was defined that any enterprise that has 1 to 5 employees in a business is considered as micro business. If an enterprise employs 6 to 50 employees, it is considered as a small business. Lastly, a group of 51 to 200 employees in a business are considered as medium enterprises.

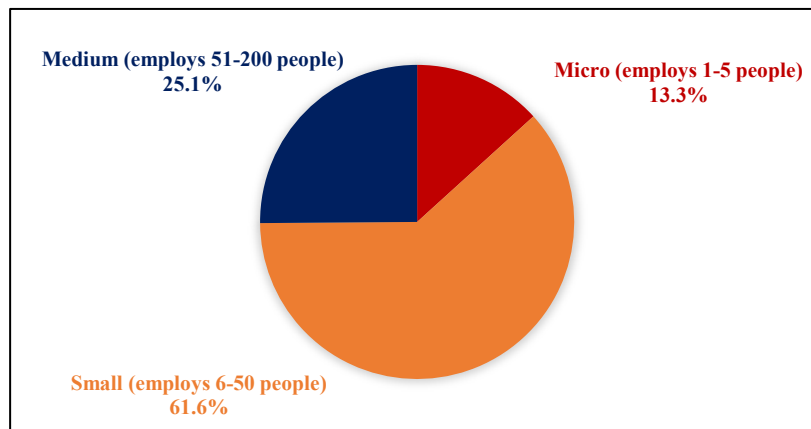


Figure 3. Number of employees within enterprises
Source: (Statistical calculation from SPSS analysis: 2019)

Most SMMEs that participated in this study are small businesses, with a percentage of 61.6%. 25.1% of the businesses fall in the group of medium enterprises, and 13.3% in the group micro enterprises.

The next section present the descriptive results of this study on the key items of the research items. As discussed, the research instrument comprised of six sections namely cost, labour characteristics, quality of life, market, rental rate, and green building.

4.3. Reliability

Cronbach’s alpha (α), is defined as “examining the internal consistency or reliability of summated rating scales” (Cronbach, 1951). The statistic generally ranges from 0.00 to 1.00. Although researchers have questioned what defines a satisfactory size for Cronbach’s alpha (Vaske et al., 2017), “values closer to 1 indicate a higher internal consistency; values closer to 0 show a lower internal consistency”. Nevertheless, items with α less than 0.70 should be cautiously used (McMillan and Schumacher, 2001). The following Table 7 present the internal consistency evaluated by the Cronbach’s Alpha for variables based on the importance and satisfaction of location decision factors. The reliability of the variables are greater than 0.70. This implies that the reliability of the questionnaire is considerably satisfactory and consistent.

Table 7. Cronbach’s alpha of variables

<i>Factors</i>	<i>Importance α</i>	<i>No of items</i>	<i>Satisfaction α</i>	<i>No of items</i>
Cost	0.849	5	0.890	5
Workforce in place	0.878	3	0.862	3
Employment creation	0.780	3	0.822	3
Labour qualification	0.837	2	0.715	2
Safe environment	0.765	4	0.843	4
Basic needs	0.814	2	0.790	2
Social climate	0.689	3	0.851	3
Proximity to supplier	0.822	5	0.873	5
Proximity to competitors	0.759	3	0.780	3
Proximity to customers	0.867	3	0.840	3
Rental rate	0.909	5	0.909	5
Green building	0.932	8	0.941	8

4.4. Dependent sample t test

Dependent sample t test is also referred as paired sample t test. It is used when observing two populations of interest collected in pairs in this case, the importance and satisfaction of location decision factors (Douglas and George, 2003). Two samples are dependent when the members of one sample can be used to determine the members of the other sample. Therefore, According to Kim (2015) and Gerald (2018) “dependent sample t test is used to compare two groups of scores and their means in which the participants in one group are somehow meaningfully related to the participants in the other group”.

Table 8 presents the paired sampled statistics which includes the mean and standard deviation of each location decision factors for both group of comparison.

Table 8. Paired samples statistics

<i>(A) Important</i>		<i>Mean</i>	<i>Std. Deviation</i>		<i>Mean</i>	<i>Std. Deviation</i>
<i>(B) Satisfaction</i>						
Pair 1	Costs A	2.9405	0.84461	Pair 7	Social climate A	4.0222
	Costs B	3.3498	0.71417		Social climate B	3.6659
Pair 2	Workforce in place A	3.4300	0.92741	Pair 8	Proximity to supplier A	4.1623
	Workforce in place B	3.4936	0.64672		Proximity to supplier B	3.7014
Pair 3	Employment creation A	2.8136	0.90150	Pair 9	Proximity to competitors A	3.6603
	Employment creation B	3.2401	0.69560		Proximity to competitors B	3.4534
Pair 4	Labour qualification A	3.3502	0.87122	Pair 10	Proximity to customers A	4.0600
	Labour qualification B	3.4058	0.60705		Proximity to customers B	3.6825
Pair 5	Safe environment A	4.2024	0.52747	Pair 11	Rental rate A	3.0351
	Safe environment B	3.4817	0.68257		Rental rate B	3.2962
Pair 6	Basic needs A	3.0381	1.08864	Pair 12	Green building A	2.8583
	Basic needs B	3.2071	0.87834		Green building B	3.1296

The objective of this study is to draw a comparison between location decision factors in terms of importance and satisfaction. Therefore, Table 9 computed a paired samples t test for each factors. The analysis revealed that there is a significant gap between the following location decision factors in terms of importance and satisfaction: Cost, Employment creation, Safe environment, Basic needs, Social climate, Proximity to supplier, Proximity to competitors, Proximity to customers, Rental rate, and Green building. On the other hand, factors such as Workforce in place and Labour qualification did not present a significant gap between the two groups of comparison because their p-value is greater than 0.05.

C_Cost	SE_Safe environment	PO_Proximity to competitors
WP_Workforce in place	BN_Basic needs	PC_Proximity to customers
EC_Employment creation	SC_Social climate	RR_Rental rate
LQ_Labour qualification	PS_Proximity to supplier	GB_Green building

Table 9. Paired sampled statistics

		<i>Paired Differences</i>					<i>t</i>	<i>df</i>	<i>Sig.</i> <i>(2-tailed)</i> <i>p < 0.05</i>
		<i>Mean</i>	<i>Std. Deviation</i>	<i>Std. Error Mean</i>	<i>95% Confidence Interval of the Difference</i>				
					<i>Lower</i>	<i>Upper</i>			
Pair 1	C (A) – C (B)	-0.40924	0.91202	0.06279	-0.53301	-0.28547	-6.518	210	0.000
Pair 2	WP (A) – WP (B)	-0.06361	0.95325	0.06626	-0.19423	0.06702	-0.960	206	0.338
Pair 3	EC (A) – EC (B)	-0.42654	0.93109	0.06410	-0.55290	-0.30018	-6.654	210	0.000
Pair 4	LQ (A) – LQ (B)	-0.05556	0.94794	0.06589	-0.18545	0.07434	-0.843	206	0.400
Pair 5	SE (A) – SE (B)	0.72063	0.91181	0.06292	0.59659	0.84468	11.453	209	0.000
Pair 6	BN (A) – BN (B)	-0.16905	1.07883	0.07445	-0.31581	-0.02229	-2.271	209	0.024
Pair 7	SC (A) – SC (B)	0.35635	0.70475	0.04863	0.26048	0.45222	7.327	209	0.000
Pair 8	PS (A) – PS (B)	0.46090	0.63606	0.04379	0.37458	0.54722	10.526	210	0.000
Pair 9	PO (A) – PO (A)	0.20695	0.82156	0.05656	0.09546	0.31845	3.659	210	0.000
Pair 10	PC (A) – PC (B)	0.37757	0.69552	0.04788	0.28318	0.47196	7.885	210	0.000
Pair 11	RR (A) – RR (B)	-0.26114	0.77993	0.05369	-0.36698	-0.15529	-4.864	210	0.000
Pair 12	GB (A) – GB (B)	-0.27124	0.93821	0.06459	-0.39857	-0.14392	-4.200	210	0.000

4.4.1. Cost

There is a significant gap between the importance of this location factor (M=2.9405, SD= 0.84461) and the satisfaction of this factor (M= 3.3498, SD= 0.71417), $t(210) = -6.518$, $p < 5 \text{ E-}10$ (two-tailed). The difference of mean between the two group of comparison is -0.40924 with 95% confidence interval ranging from -0.53301 to -0.28547. This implies that the mean of the level of importance of this factor is lower than the mean of the level of satisfaction.

4.4.2. Workforce in place

There is no gap between the importance of this location factor ($M=3.4300$, $SD= 0.92741$) and the satisfaction of this factor ($M= 3.4936$, $SD= 0.64672$), $t(206) = -0.960$, $p < 0.338$ (two-tailed). The difference of mean between the two group of comparison is -0.06361 with 95% confidence interval ranging from -0.19423 to 0.06702 . This implies that the level of importance and satisfaction's means have approximately similar mean scores.

4.4.3. Employment creation

There is a significant gap between the importance of this location factor ($M=2.8136$, $SD= 0.90150$) and the satisfaction of this factor ($M= 3.2401$, $SD= 0.69560$), $t(210) = -6.654$, $p < 2 \text{ E-}10$ (two-tailed). The difference of mean between the two group of comparison is -0.42654 with 95% confidence interval ranging from -0.55290 to -0.30018 . This implies that the level of importance's mean of this factor is lower than the level of satisfaction' mean.

4.4.4. Labour qualification

There is no gap between the importance of this location factor ($M= 3.3502$, $SD= 0.87122$) and the satisfaction of this factor ($M= 3.4058$, $SD= 0.60705$), $t(206) = -0.843$, $p < 0.400$ (two-tailed). The difference of mean between the two group of comparison is -0.05556 with 95% confidence interval ranging from -0.18545 to 0.07434 . This implies that the level of importance and satisfaction's means have approximately similar mean scores.

4.4.5. Safe environment

There is a significant gap between the importance of this location factor ($M= 4.2024$, $SD= 0.52747$) and the satisfaction of this factor ($M= 3.4817$, $SD= 0.68257$), $t(209) = 11.453$, $p < 6 \text{ E-}24$ (two-tailed). The difference of mean between the two groups of comparison is 0.72063 with 95% confidence interval ranging from 0.59659 to 0.84468 . This implies that the level of importance of this factor is higher than the level of satisfaction.

4.4.6. Basic needs

There is a significant gap between the importance of this location factor ($M= 3.0381$, $SD= 1.08864$) and the satisfaction of this factor ($M= 3.2071$, $SD= 0.87834$), $t(209) = -2.271$, $p < 0.024$ (two-tailed). The difference of mean between the two group of comparison is -0.16905 with 95% confidence interval ranging from -0.31581 to -0.02229 . This means that the level of importance of this factor is lower than the level of satisfaction.

4.4.7. Social climate

There is a significant gap between the importance of this location factor ($M= 4.0222$, $SD= 0.63105$) and the satisfaction of this factor ($M= 3.6659$, $SD= 0.62563$), $t(209) = 7.327$, $p < 5 \text{ E-}12$ (two-tailed). The difference of mean between the two groups of comparison is 0.35635 with 95% confidence interval ranging from 0.26048 to 0.45222 . This implies that the level of importance's mean of this factor is higher than the level of satisfaction.

4.4.8. Proximity to supplier

There is a significant gap between the importance of this location factor ($M= 4.1623$, $SD= 0.52817$) and the satisfaction of this factor ($M= 3.6659$, $SD= 0.58655$), $t(210) = 10.526$, $p < 4 \text{ E-}21$ (two-tailed). The difference of mean between the two groups of comparison is 0.46090 with 95% confidence interval ranging from 0.37458 to 0.54722 . This implies that the level of importance's mean of this factor is higher than the level of satisfaction.

4.4.9. Proximity to competitors

There is a significant gap between the importance of this location factor ($M= 3.6603$, $SD= 0.82485$) and the satisfaction of this factor ($M= 3.4534$, $SD= 0.68877$), $t(210) = 3.659$, $p < 0.0003$ (two-tailed). The difference of mean between the two groups of comparison is 0.20695 with 95% confidence interval ranging from 0.09546 to 0.31845 . This implies that the level of importance's mean of this factor is higher than the level of satisfaction.

4.4.10. Proximity to customers

There is a significant gap between the importance of this location factor ($M= 4.0600$, $SD= 0.71164$) and the satisfaction of this factor ($M= 3.6825$, $SD= 0.58893$), $t(210) = 7.885$, $p < 1 \text{ E-}13$ (two-tailed). The difference of mean between the two groups of comparison is 0.37757 with 95% confidence interval ranging from 0.28318 to 0.47196 . This implies that the level of importance's mean of this factor is higher than the level of satisfaction.

4.4.11. Rental rate

There is a significant gap between the importance of this location factor ($M= 3.0351$, $SD= 0.87641$) and the satisfaction of this factor ($M= 3.2962$, $SD= 0.72314$), $t(210) = -4.864$, $p < 2 \text{ E-}6$ (two-tailed). The difference of mean between the two groups of comparison is -0.26114 with 95% confidence interval ranging from -0.36698 to -0.15529 . This implies that the level of importance's mean of this factor is lower than the level of satisfaction.

4.4.12. Green building

There is a significant gap between the importance of this location factor ($M= 2.8583$, $SD= 1.07710$) and the satisfaction of this factor ($M= 3.1296$, $SD= 0.83501$), $t(210) = -4.200$, $p < 3 \text{ E-}5$ (two-tailed). The difference of mean between the

two groups of comparison is -0.27124 with 95% confidence interval ranging from -0.39857 to -0.14392. This implies that the level of importance's mean of this factor is lower than the level of satisfaction.

In general, out of twelve factors tested for the paired sampled t-test, ten factors which included Cost, employment creation, safe environment, basic needs, social climate, proximity to supplier, proximity to competitors, proximity to customers, rental rate, and green building revealed a gap between the importance and satisfaction of location decision.

5. Conclusion and recommendation

This research aim to conduct a gap analysis of the importance and satisfaction of manufacturing and service SMMEs location decision in Johannesburg (South Africa) using paired sample t test. The findings show that there is significant gap between the importance and satisfaction of location decision factors.

Future research should conduct a similar study on other type of SMMEs in order to verify whether similarities and differences exist. Another future study could investigate the causes of the significant gap between the importance and satisfaction of location decision factors.

Declaration

This study was extracted from the author's masters dissertation entitled "Assessment of the relationship between location decision factors and performance of SMMEs in Johannesburg" from the University of Johannesburg.

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