University of South Africa

Master of Business Leadership

Title:

Mobile Technology Impacting the Hospitality Industry Small, Micro and Medium Enterprises (SMMEs) in South Africa.

By:

Pakamile Kayalethu Pongwana

(Student Number: 7167-011-4)

A Research Report submitted in partial fulfilment of the Master of Business Leadership (MBL) degree programme (School of Business Leadership- University of South Africa)

Research Study Leader: Mr Erick Dube

2010

Acknowledgement

My sincere gratitude goes to my study leader Mr Erick Dube for providing valuable guidance and support during the construction of this research report.

My appreciation goes to my mentor and statistician Thuloane Ntene and his family, for the support and time commitment towards the successful completion of this MBL programme.

Special and heartfelt thanks go to my family – Palesa and the children, for always believing in me and for being the most reliable pillar to lean on. Your unwavering support and love is so priceless and I will forever cherish it. I love you all so dearly.

I would like to thank the members of my MBL study group MID0208A for the hard work and commitment to the group assignments and their willingness to share their knowledge and expertise.

I would also like to thank my employers, Vodacom SA (PTY) LTD for allowing me the time to pursue my dreams, my personal assistants (at different times) Sephoko Nwanma and Buhle Nhlangulela, for their unwavering support, help and love during my studies.

Above all I owe it to my Creator, The Most Loving Father and My Lord Jesus Christ, for the wisdom that comes from above, without which I would be nothing.

Declaration

I, Pakamile Kayalethu Pongwana, herewith declare that the content of this research report is purely my own work and where I have used someone's citation, reference has been made, to the best of my knowledge.

ABSTRACT

Mobile technologies are increasingly being used for work purposes in several domains, such as tourism, banking, sales and marketing (Sheng, Nah & Siau, 2005). Vic Pynn, executive vice president of Amadeus Americas, emphasizes the technology aspect (which is core to this research study) with an observation for hotel business (a major portion of the study population):

> *"Hotel brands gearing up for growth will face significant obstacles without integrated technology that can help them keep up with their guests' needs and the marketplace overall…The future belongs to hotel brands that develop competitive advantages using technology to drive operational efficiency, time-to-market speed and higher guest satisfaction."*

The benefits of technology are not uniform or always positive for all business operations, even within one industrial sector. Technology is the firm's resource base – ICT and people (as well as their networks internal and/or external to the organization) – determine the impact within a given environment and organizational context (Hu & Quan, 2009). People and their networks are relevant in this study because not only are resources a challenge for the hospitality SMME (small, micro and medium enterprise) sector but resources also impact on the sum-total of the business environment (e.g. political, economic, social and technology issues) they operate in. Regarding challenges, increased competition due to globalisation resulted in the downsizing and concentration among SMMEs, particularly for developing countries like South Africa that is characterised by the ever-growing digital divide between the rich and the poor.

The opportunities and challenges faced by the SMME can be met with different types of action, including the recommendations of this study.

This research study investigated the impact of mobile technology on operational success (operations, supply chain and production) of the hospitality industry SMMEs in South Africa, under the prevailing socio-economic conditions.

The impact of mobile technology was investigated by studying perceived **usability** of mobile technology, perceived fit for mobile **working context** and perceived impact on the firm's **work productivity** (Vuolle et al; 2009), as measures of **organisational performance**; the **status and use** of key ICT technologies and applications, and major factors constraining the SMME's business success. The results suggest that, although extensive mobile penetration may be high and so is the belief that it enhances organisational performance, the net impact is not yet substantial, owing to challenges such as lack of access to essential technologies and applications, as well as several constraining factors such as cost of equipment, availability of technical support, infrastructure and skills.

Key Words

SMME, hospitality industry, mobile technologies, cell phone, organisational performance, technology barriers, mobile usability, mobile working context, and productivity.

TABLE OF CONTENTS **PAGE**

Chapter 1: Nature and Scope of Research Study……...1
1.1 Introduction……1
1.2 Research Background……2
1.3 Problem Statement……3
1.4 Research Objectives……5
1.5 Definition of Terms……6
1.6 Assumptions and Limitations……7
1.7 Layout of the Study……8
1.8 Summary……...9

Chapter 2: Literature Review……9
2.1 Introduction……..9
2.2 The hospitality industry in SA……10
2.3 State of the SMME……..13
2.4 ICT for Business Development ……..15
2.5 Mobile Technology Driving Performance……16
2.6 Measurement Dimensions……18
2.6.1 Usability……..20
2.6.2 Working Context……..20
2.6.3 Productivity……...21
2.7 Summary……..21

Chapter 3: Research Methodology……..21
3.1 Introduction…….....21
3.2 Research Design……22
3.3 Sampling……...23
3.4 Data Analysis.....24
3.5 Ethical Considerations……..24
3.6 Limitations……...24
3.7 Delimitations 25
3.8 Summary…….....25

Chapter 4: Results and Analysis……..26
4.1 Introduction……..26
4.2 Total Sample……26
4.2.1 Basic Information……26
4.2.2. Technology Status and Application……..29
4.2.2.1 Basic Technologies..……...29
4.2.2.2 Applications……...32
4.2.3 Technologies/Applications Enablers and Inhibitors……..35
4.2.3.1 Technologies/Applications Enablers……..35
4.2.3.2 Technologies/ Applications Inhibitors……....37
4.2.3.3 Enablers and Inhibitors.....38
4.2.4 Investments and Constraints……....40
4.2.5 Organisational Performance ……....42
4.2.5.1 Overall Organisational Performance.....42
4.2.5.2 Usability……..45
4.2.5.3 Working Context……..48
4.2.5.4 Productivity……...48
4.2.6 Additional Comments……..48
4.3 Provinces……49
4.4 Firm Size……..52
4.4.1 Performance by Firm Size.....……52
4.4.2 Performance by Firm Size (Sub sections).....55
4.5 Summary 57

Chapter 5: Conclusions and Recommendations……..57
5.1 Introduction……..57
5.2 Review of the Research Process……....58
5.3 Conclusions based on Research Results ……...59
5.3.1 Total Sample……..59
5.3.1.1 Basic Information……..59
5.3.1.2 Basic Technologies……60
5.3.1.3 Applications……61
5.3.1.4Technologies/Applications Enablers and Inhibitors…62
5.3.1.5 Investments and Constraints……62

5.3.1.6 Usabilty.....63
5.3.1.7 Working Context.....63
5.3.1.8 *Productivity*.....64
5.3.1.9 Organisational Performance *64*
5.3.1.10 Additional Comments.....64
5.4 Provinces.....65
5.5 Firm Size.....65
5.6 Recommendations.....66
5.7 Areas for Future Research.....67
5.8 Summary.....67

BIBLIOGRAPHY.....69
APPENDICES.....73
Appendix A 73
Appendix B 81

FIGURES IN REPORT

Figure 1: Layout of the Study.....8
Figure 2: Respondent Sector Distribution by Percentage.....27
Figure 3: PC Use by the SMME.....30
Figure 4: Sample distribution of Basic Technology Use.....31
Figure 5: Sample distribution of Application Use.....34
Figure 6: Business growth enablers and inhibitors.....39
Figure 7: Box Plot for total Sample & Dimensions.....47
Figure 8: Performance by Firm Size 53

TABLES IN REPORT

Table1: Basic Terms Defined……..6
Table 2: Dimensions for the success of mobile business service……..19
Table 3: Responses according to provinces…….26
Table 4: Respondent Sector Distribution……..27
Table 5: Responses according to firm size.....28
Table 6: Status of Technology.....29
Table 7: Status of Technology Application……33
Table 8: Technologies/ Applications Enablers……..36
Table 9: Technologies/ Applications Inhibitors…….37
Table 10: Barriers……..41
Table 11: Dimensions for Performance……..43
Table 12: Performance favourability 44
Table 13: Performance Favourability by dimension……...45
Table 14: Usability Dimension Distribution…….....46
Table 15: Additional Respondent Input…….....49
Table 16: Barrier Comparison by Province…….....50
Table 17: Provinces Descriptive Statistics.....51
Table 18: Firm Size Statistics.....54
Table 19: Paired Samples Tests 55
Table 20: Firm Size Stats (Sub-sections).....55

CHAPTER 1

NATURE AND SCOPE OF THE RESEARCH STUDY

1.1 Introduction

Data and Information have always been critical factors to the success of a business firm. For this reason, a firm must realize the importance of information management, primarily through information and communication technology (ICT), and how this will blend with its business strategies and techniques (*QMX Support Services*) in order to remain sustainable and survive competition. The value of ICT to business firms has been clearly established in literature, resulting in various theories and models explaining how and why ICT and ICT investments impact performance and productivity of organizations (Hu & Quan, 2009 citing Soh and Markus, 1995; McKeen and Smith, 1993; Powell and Dent-Micallef, 1997). The advances in technology and the fast modernization of the world in general, opened new and very promising avenues of business across the globe. The question, according to this study, is whether the hospitality industry SMME is benefiting from these advances in technology, and mobile technology in particular.

This first chapter of the research report provides the nature and scope of the research study undertaken. Chapter one's key contents include:

- the background of the research environment in terms of its conceptual framework
- The development of the research question and the supporting investigative hypotheses
- Presentation of the objectives.
- The research Process: methodology, the process followed in acquiring data, and the boundaries and limitations of the research project.
- A roadmap of the intended research study, with reference to its write-up and activity schedule.

1.2 Research Background

SMMEs in South Africa are developing to be the major employer, and hence contributor, to GDP growth. Mobile ICT is an enabler that reduces the cost of doing business and eliminates limitations of locations (fixed) for businesses (Abrahamse, 2008).
This study is designed to encourage the use of ICT (mobile), or leveraging its capabilities, in the e-commerce arena.

The researcher will assert that the focus needs to be more on mobile centric development. People would talk of m-government instead of e-government or focus on m-commerce, where possibly every phone will be a smart phone in the near future and relevant software sold, will be in the mobile applications environment. This environment will be the most ideal for SMMEs and would encourage more adoption and use of mobile centric ICT – especially if all stake-holders play their role.

The driving force behind the research emanates from the limitation or lack of full research on analysis of the contribution of mobile communications technology to the growth of SMMEs, whilst economy wide research is known from GDP growth statistics of countries.

The fixed infrastructure in South Africa has never shown growth since early 2000 and has been surpassed by mobile phone growth, a trend that has been predominant in the developing world. It is also well known research that SMMEs are the growth engine of countries. These factors indicated that there is a need to assess this contribution of mobile technologies (both existing and emergent) for the success of SMMEs. While improvement of the existing macroeconomic policies might produce additional growth, it is increasingly obvious that such efforts need to be complemented with measures to address structural constraints to investment and employment creation through innovative interventions, such as the ICTs as seen in countries like South Korea, Finland, etc where companies believed that mobile technology would become synonymous with life style, based on generations of continuous investment and commitment up to state level (parliament) (http://en.wikipedia.org/w/index.php?tittle=mobile-commerce&action=edit&section=15).

Structural constraints are characteristic of factors including the prominence of the SMME firm tier, inter-industry linkages, spatial location of markets, shortages of skilled labour, access to capital, insufficient infrastructure, and technological deficiencies (availability/access, skill, use etc).

From this research study, one would hopefully understand the structural factors that promote (or constrain) growth, job creation, and hence poverty reduction at the level of the South African SMME firm. Such understanding could help in many respects including, but not limited to, peer learning, optimal planning and investment for improved performance and informed government intervention (policy, infrastructure, operational/financial support through grants, loans and exemptions under programmes such as BBBEE, etc.) for significantly increased socioeconomic impact. This help will add value to most research that has focussed on the usability of mobile technologies or use thereof, and not on contribution to success/growth (Inman, 2004; Drotsky, 2008; Gumede, 2004; and Featonby, 2006).

1.3 Problem Statement

Mobile technology business (or m-commerce in general) adoption represents a complex process that draws in variables external to the firm, such as the environment in which the business operates and government involvement, as well as variables internal to the company such as its business strategy and its organizational culture. In the last 15 years or so (i.e. beyond democratisation of South Africa), mobile electronic technologies experienced phenomenal growth, both in space and technological capabilities, resulting in rising firm productivity, creating jobs, and increasing incomes around the globe. The resulting trends in the business climate, along with actions taken or not taken by national governments, will influence the likelihood of success for companies pursuing m-commerce(Stoica, Miller & Stotlar; 2005).

South Africa has differentiated infrastructure in terms of network rollout and availability, especially depending on type of performance required. Whereas voice is pervasive, data and data speeds are vastly different in different areas of the country. SMME activity is however widespread throughout the country, depending on the type of industry. Growth prospects are vastly differentiated depending on the geographic location; availability of infrastructure; access to working capital; human resource capacity in terms of availability, skills level and cost; technology in terms of access, affordability and capacity for effective use; the market (communication, ease of access to products/services offered, service quality, customer care and customer profitability/value) (Berry et al., 2002:14); etc.

The research problem is thus stated as follows:

> ***Determining the impact of mobile technology on the hospitality industry SMME and how such impact can be accelerated for the benefit of the SMME and the South African economy in general.***

In investigating prospects of SMME success in this industry, one would have to first identify factors critical to this success(or failure); then establish the role of mobile technology for factor enhancement as an opportunity gain (or loss); and finally determine how stakeholders with significant influence to the business environment contribute to positively improve the SMME success pattern. The performance dimensions investigated in this study, as motivated in the literature review (chapter 2 below), are perceived **usability** of mobile technology, perceived fit for **working context** and perceived impact on the firm's **work productivity.**

The resultant hypotheses are as follows:

Hypotheses

1) ***Mobile technology is the preferred majority platform for the hospitality industry SMME business***
2) ***There are factors constraining ICT use for operational success of the hospitality industry SMME of South Africa***
3) ***Mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms of usability.***

4) ***Mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms of working context.***
5) ***Mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms of work productivity.***
6) ***Mobile technology impact on the SMME in the hospitality industry of South Africa is differentiated according to business size (small, medium or micro) on the aspect of constraining factors.***
7) ***Mobile technology impact on the SMME in the hospitality industry of South Africa is differentiated according to Province, on the aspect of performance.***

1.4 Research Objectives

The primary objective of the study is to assess the prospects of economic success for the hospitality industry SMME through the contribution of mobile technology amongst other contributors. This assessment takes the form of both empirical research and a literature review which guides the empirical effort. In support of the empirical research, the following are the specific *objectives of the study:*

1) ***To investigate whether mobile technology is the preferred majority platform for the hospitality industry SMME business in South Africa***
2) ***To investigate whether there are factors constraining ICT use for operational success of the hospitality industry SMME of South Africa.***
3) ***To investigate whether mobile technology impacts the SMME in the hospitality industry of South Africa in terms of usability.***
4) ***To investigate whether mobile technology impacts the SMME in the hospitality industry of South Africa in terms of working context.***
5) ***To investigate whether mobile technology impacts the SMME in the hospitality industry of South Africa in terms of work productivity.***
6) ***To investigate whether mobile technology impact on the SMME in the hospitality industry of South Africa is differentiated according to business size (small, medium or micro) on the aspect of constraining factors.***
7) ***To investigate whether mobile technology impact on the SMME in the hospitality industry of South Africa is differentiated according to location (urban, rural, Province, etc.) on the aspect of performance.***

1.5 Definition of Terms

The main terms dominating discussions in this study are; mobile technology, SMME, hospitality industry and organisational performance. These terms will be discussed in chapter 2. However, there are other terms considered important for this study and not so obvious in meaning. Table 1 covers a few of these terms.

Table 1: Basic Terms Defined

LAN (Local Area Network): A LAN links computers within a building
WAN (Wide Area Network): A WAN links computers between different sites, typically over a network of leased lines.
VPN (Virtual Private Network): A VPN links computers over a network using private Internet channels.
EDI (Electronic Data Interchange): A set of protocols that enables firms to exchange data in standard formats (e.g., invoices, delivery notes)
E-mail: A quick and cost-effective way of sending and receiving messages and electroni files via the Internet
Intranet: A service within a company which uses the Internet and World Wide Web standards to distribute and display information
Extranet: Refers to those parts of the Intranet that are extended to customers and suppliers – it therefore provides access to only certain parts of the company's Intranet. It may include such elements as the staff contact
CD-ROM: Compact Disc / Read/only memory. A high-density storage medium on which electronic data are etched and read by a laser beam

Source: Miller, Esselaar and Associate (2002). ICT Diffusion and ICT Application in Usage Sectors.

1.6 Assumptions

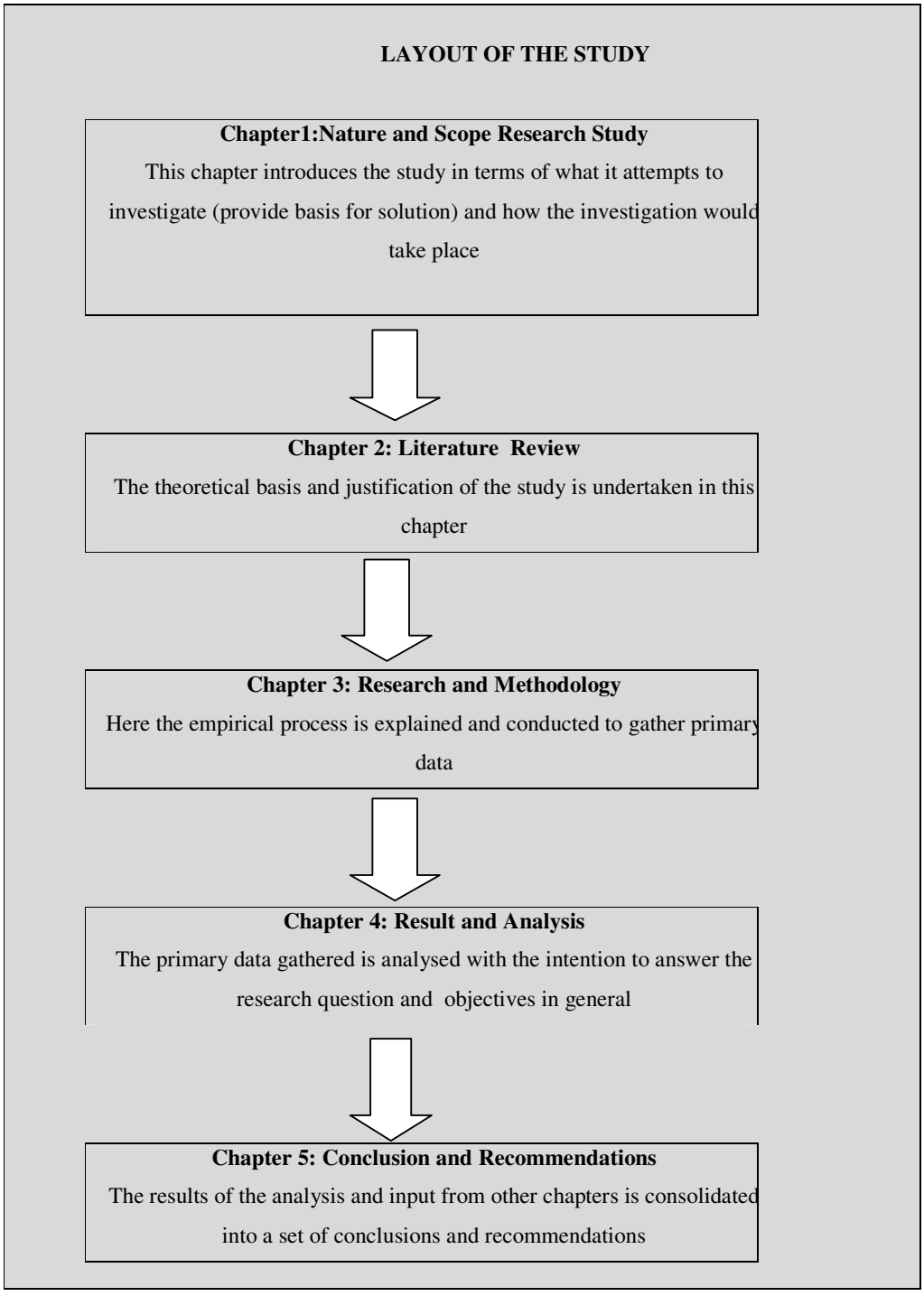
ICT use is beneficial, on its own desirable and hence the individual is deficient in non-use of ICT. This assumption works on the basis of efficient and effective use, otherwise such use may lack business justification resulting in undesirable consequences that may impact the firm negatively – e.g. a continuously open internet line with infrequent use.
Vuolle et al (2009) researched the usability of mobile technology devices as a relevant factor in evaluating performance of mobile electronic communications (cellular) technologies' contribution, and found that device issues like browsers, applications, small screen/ resolution and cumbersome input mechanisms are constraints. This research assumes that these device issues still exist even in the advent of the radically improved smartphones like iPhones and blackberry, which remain inaccessible to the SMME due to cost and a lack of technical knowledge. However, focusing on the key customer needs of m-commerce rather than the technology, it is possible to do m-commerce without turning a cell phone into a web browser, or needing any special devices (http://www.cellular-news.com/story/10950.php).

The collective behaviour of firms in an industry should reflect ,the behaviour of the majority of the individual firms. With firm size within the SMME landscape, type of operation/business within the highly differentiated hospitality industry, etc. equal, it is reasonable to assume that, at the economy level, each individual industry has its own value chain activities and strategies, just like individual firms, that represent the collective behaviour and characteristics of the firms in the industry. These value chain activities and strategies allow for generalisation of behaviour and a feasible way-forward, applicable to each firm and the sector.

1.7 Layout of the Study

The layout of this study is captured in figure 1.

Figure 1: Layout of the Study



1.8 Summary

The scope and nature of the study has been covered in this chapter. The roadmap for the research has thus been established by identifying the research objectives, and the research process through to addressing information that will be gathered, in order to make conclusions and recommendations around the research question.

The next chapter looks at the theoretical aspect of the research, by investigating historical data pertinent to the current research study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Having completed Chapter 1 (**Nature and Scope of Research Study),** the next challeng is to develop the theoretical framework (literature review) forming the basis for th empirical component of the research study. The literature review will attempt to establis whether ICT can be used to re-engineer business processes and policies/legislation f improved firm performance, resulting in economic growth and eventually impactir positively on the South African economy in terms of poverty alleviation, improved quality life, etc. This impact would then create a need for ICTs adoption and optimal use as critic technologies and applications for supporting and complementing the competitiv strategies.

In chapter two the researcher establishes what to investigate (**justification of th research question and the associated hypotheses**), how to investigate (identi relevant **measurement instruments**), what the environment dynamics (**populatio** comprise and what to reasonably expect from the empirical investigation

(**scope/feasibility and outcome scenarios**). An example reasonable expectation is see with the optimism in the hospitality and tourism industry ahead of the 2010 Soccer Wor cup. The hospitality and tourism industry (reasonably?) expected that a flood of touris would pour into South Africa translating into a cash injection (Olsen, K. 2009 a). Howeve that injection was neither that huge nor wholesale, as many of the industry SMME emerged worse off when the event did not cover their investments on quality and capaci improvements. The contribution of chapter two is covered in four sub-topics: Th hospitality industry in SA, ICT for business development, State of the SMME, Mobi technology enhancing performance, and Measurement Dimensions.

2.2 The Hospitality Industry in SA

The hospitality industry covers a wide range of organizations offering food (including beverages), leisure and accommodation services. The hospitality industry is divided into sectors according to the skill-sets required for the work involved. Sectors include accommodation, food and beverage, meeting and events, gaming, entertainment and recreation, tourism services, and visitor information.

A hospitality unit such as a restaurant, hotel, or even an amusement park, consists of multiple groups such as facility maintenance, direct operations (servers, housekeepers, porters, kitchen workers, bartenders, etc.), management, marketing, and human resources, each of which deriving different efficiencies through the use of ICT (http://en.wikipedia.org/wiki/Transportation).

The hospitality industry is part of the broader service industry, thriving on the sale of its services. Usage rate is therefore a dominant variable for its success- owners of restaurants, hotels, and theme parks seek to maximize the number of customers they process
(http://en.wikipedia.org/wiki). The industry is cyclical, dictated to by the fluctuations that occur within an economy every year - like the June 2010 FIFA World Cup in South Africa, according to Maumbe and Van Wyk (2008).

"The hospitality industry in South Africa is dominated by small businesses, to the extent that an audit commissioned by the Department of Environmental Affairs and Tourism in 2007 found that 97% of hospitality establishments in South Africa are Small and Medium Enterprises (SMME's). Typically these do not belong to a chain, and many are owner managed (Theta, 2007)."

There are severe skill shortages at all levels within the hospitality industry. At ownership level, this is ascribed to the low barriers to entry in the industry. Most hospitality decision makers have not had formal ICT training (Borsenik cited by Law & Jogaratnam, 2005). The collective impact of these factors is that most hospitality decision makers are poorly positioned to make quality business decisions integrated with ICT resources and strategies.

Previous studies have shown that the average worker at a South African hospitality establishment is poorly skilled and poorly compensated (Maumbe & Van Wyk, 2008). The combination of long working hours and poor compensation in the hospitality industry has translated into a high staff turnover rate, consequently adding injury to the challenge of long-term staff development, which is a costly investment in itself.

With South Africa being predominantly a reseller country, technology suppliers determine the price and payment terms related to any innovation. These aspects of an innovation are important to small independent hospitality establishments, since they traditionally experience severe resource constraints. The technology supplier not only has expert knowledge regarding the technology itself, but is also experienced in the contextual factors that influence the success of its implementation. Thus the technology supplier is ideally positioned to fill the knowledge gap of the hospitality decision maker as well as the worker, thereby cushioning the negative impacts of the lack of hospitality and ICT knowledge prevalent in the firm.

The relatively low barriers to entry by newcomers and general competition between current players are very important determinants of success or failure, particularly as the market is at leisure to make intelligent choices because of easily accessible information. Even worse a challenge for the SMME, is the reality of having to compete for the same customer with the bigger corporate – e.g. an overseas tourist (probably with plenty to spend) has to

choose between a B&B (Bed and Breakfast) in Soweto and a five-star hotel in Sandton, among the many available alternatives.

Among other things, hospitality industry players find advantage in old classics (location), initial and ongoing investment support (reflected in the material upkeep of facilities and the luxuries located therein), and particular themes adopted by the marketing arm of the firm. The characteristics of the personnel working in direct contact with the customers, in terms of their authenticity, professionalism, and actual concern for the happiness and well-being of the customers, is also very important.

Many role players and stakeholders exist in the SMME **hospitality** industry environment , including the industry itself at different levels of economic strength (from very small firms operating as SMMEs to large corporations like multinationals and the competitive rivalry therein), government (as part of the value chain and a custodian to the economy and means of wealth creation), all other industries embracing the economy, labour (as input resource and beneficiary), consumer/customer, community, etc. All these role-players and stakeholders comprise the **working context** impacting operational success of the SMME (see section 6.5 below).

Several literature sources, both local and international (Stoica, Miller, and Stotlar ; 2005 citing several authors - see table 1 below), support the notion of SMMEs as major players in addressing the unemployment challenge. Against this background the South African government initiated several SMME related policy changes. The first significant policy change regarding SMMEs was the Growth, Employment and Reconstruction Strategy (GEAR). Through GEAR the South African government identified the SMME sector as an opportunity for addressing several challenges facing the South African economy (Berry et al., 2002:34).

The growth of mobile telephony is significant because most researchers agree that widespread acceptance of mobile ICT is a precursor to a region's ability to conduct mobile e-commerce (m-commerce), commonly defined as the use of wireless ICT, such as mobile phones and personal data assistants, for buying and selling goods and services, or the use of wireless ICTs for transactional and business-related communications among individuals and companies

Given that there is no clear single measure for mobile ICTs, mobile phones are used as a surrogate for mobile ICT. Researchers have found that the adoption of mobile phones is a good surrogate of ICT adoption in general (Mbarika et al., 2002). In the same vein, in this research, the researcher assumes that mobile-phone use is a good surrogate for measuring mobile ICT use. The researcher therefore, uses the results obtained from observing and measuring mobile-phone use, to draw inferences on the nature of mobile ICT use in sub-Saharan Africa.

The researcher chose to study sub-Saharan Africa for several reasons. First, there is a dearth of research on information systems (IS) and ICT in this region. After searching four journals dedicated to IS research – MIS Quarterly, Information Systems Research, Journal of MIS (JMIS) and Journal of the AIS – using guidelines on IS journal rankings (Mylonopoulos & Theoharakis, 2001), (Whitman et al., 1999) this researcher found only one article in JMIS related to sub-Saharan Africa (De Vreede et al., 1998). Second, the region has witnessed meteoric growth in mobile ICT density in the past three to five years and is credited with having the fastest teledensity growth in the world (ITU, 2002; UNCTAD, 2002).

2.3 State of the SMME

Most entities have been able to leverage fixed telecommunications infrastructure for accessing information enhancing operations and improvement relation in the Internet, especially where networks have been pervasive. These network effects had the ability to enable growth and success of these entities. The aim of the research is not to repeat these efforts but rather to look at the existing mobile technology models contribution in relation to SMME growth and operational success. Literature on the existing and emergent mobile technologies contribution will be explored and constraints identified, to map out the growth path for SMMEs in South Africa on the basis of results from SA economic data. This study notes that SMMEs are not uniform and depend on the type of industry. The peculiarities of the hospitality industry will be considered in so far as performances of existing and emergent mobile technologies are concerned.

There is a significant digital divide within the small, micro and medium sized enterprises (SMME) sector in South Africa, with just under 40% of businesses still operating without a computer (UCT Centre for Innovation and Entrepreneurship (CIE) based at the UCT Graduate School of Business: 2009). The same source (UCT…) identifies three key characteristics that determine ICT usage amongst SMMEs, namely business size, the business location (urban or rural based), and the educational levels of the owner/managers.

This UCT study found that "in terms of computer usage, for example, smaller businesses were more likely not to have and use a computer, with 36% of micro, 27% of very small and 14% of small businesses indicating that they had neither a business computer nor any access to the internet". The proposed study will test these observations for the research population of the hospitality industry SMME independently.

Theories and models explaining how and why IT and IT investments contribute to the performance and productivity of organizations have been developed and tested (Hu & Quan, 2009 citing Soh & Markus, 1995; McKeen & Smith, 1993; Powell & Dent-Micallef, 1997; etc). These models/theories include the process theory; the resources based model, information intensity matrix, and the circular relationship model between IT investments and firm performance. From which it can be concluded that IT investments by-and-large "create positive impact on the performance and productivity of a firm through enhancing existing business processes, enabling new business processes, and creating new business capabilities" depending on the information characteristics of business processes and products/services of the firm – e.g. these characteristics are higher for a bank than a construction firm, implying more impact in the former (bank) than the latter, which is more emphatic on the building technology than on information flow about the construction.

The resource based view, according to Hu and Quan, acknowledges the organizational context in terms of resources – IT and people (as well as their networks internal and/or external to the organization) – in determining the impact. This resource aspect is investigated in this study. One of the benefits of SMMEs, from an economic perspective, is that SMMEs are also consumers with purchasing power and demand for industrial or consumer goods. This characteristic implies a dual economic impact,: stimulating the

activity of their suppliers just as their own activity is equally stimulated by the demand of their clients (Berry et al, 2002:4-5).

2.4 ICT for Business Development

The (false) notion of ICT not featuring at the bottom of the Maslow hierarchy of needs remains a challenge to many a decision-maker. The lower the knowledge about ICT capacity for enhancing decision-making and business operations in general, the lower is the perceived value of ICTs. To complicate matters more, the fact that the actual impact of ICT on business success has no direct measurement makes it difficult, even for up-to-date managers/business leaders, to justify larger ICT investments. That ICT has not been implemented effectively in the hospitality industry is therefore not a mystery.

Several articles from the literature studied, suggest that the ICT sector remains a key growth area for the continued development of the South African economy – e.g. the infrastructure spending in preparation for the World Cup has positively affected the country's communication capabilities including the Internet, social networking and telecoms (http://www.it-online.co.za/content/view/2314628/142/).

The factors that enable businesses to thrive are critical to this study, and those factors that inhibit business success are equally important–e.g. skills shortage remains a challenge limiting capacity to respond to opportunity. A case in point would be the demand and a drive to improve international bandwidth capacity through increased Internet connectivity; and the fact that South Africa is still controlled by larger players as entry to the market is limited by the large capital input costs unaffordable to the SMME (http://www.it-online.co.za/content/view/2314628/142).The outcome of a study on ICT adoption in Sydney hotels investigated the following factors (the strength of association is indicated in brackets):

- **Security** concerns are diminishing as sites have become safer (**strong**)
- **Web advertising strategies** that incorporated marketing on the web (**strong**)
- **Hotel managers are not knowledgeable** about ICT and the Internet (**strong**)
- **Education and training** of hotel manager (**weak**)

The study on ICT adoption found that there was no association between ICT adoption and the size of hotel chain affiliation status, age of manager and the management status (i.e professionally managed)

The same study, on ICT adoption, also followed up factors inhibiting ICT use in Sydney hotels, major factors included:

- Limited management and staff time
- Little understanding regarding benefits of ICT
- Lack of technical expertise and training

Factors that played no part were the age of senior management, the size of the firm, its chain affiliation status and limited financial resources. Mixed results were obtained with .respect .to the lack of a strategic marketing plan incorporating the use of ICT channels and also the lack of commitment from top management. The question is how much of this behaviour manifests itself in the population of this study? Miller, Esselaar and Associates (2002) also carried such an investigation across several industries in South Africa – their questionnaire is used in this study

2.5 Mobile Technology Driving Performance

The increased access to high-speed Internet connectivity and the widespread adoption of mobile phones are stimulating entrepreneurial innovation by digitising core business operations and creating new business models. These factors are said to be providing small and medium-sized businesses (SMEs) with a competitive edge in local and global markets **(http://africa.bizcommunity.com/196/459.html).**

Studies on drivers for diffusion of digital mobile telephony through use of the Gompertz Model (allows for simple inclusion of socio economic explanatory variables) allege that developing countries like South Africa have faster diffusion due to being late adopters – benefit from earlier global critical mass and resolved standards and document features of devices or technology. However network effects also play a more important role (Rauvinen, 2005).

“At the beginning of the South African e-business revolution a decade ago, the debate was whether business should add ‘clicks' to their ‘mortar' or become a ‘pure play' Internet business selling products online” **(http://africa.bizcommunity.com/196/459.html).** Back then there was a major constraint - limited access to cheap broadband connectivity; and for the SMME this problem still persists. Coupled to this, cell phone adoption was only starting to gain momentum and phones had little of the functionality as seen with modern phones today (Streicher, P. MD at BulkSMS.com).

Besides Internet access and the use of email, many businesses, including few SMMEs, have their own websites, purchase or sell online, or are using the Internet along with SMS messaging to improve operational efficiencies. Some of these virtual business activities (Pieter Streicher, MD at BulkSMS.com) include:

- Search engines on the Internet that are used to access information, seek out new ideas and business opportunities.
- Internet and mobile marketing campaigns are used to promote products and services to customers locally, nationally or globally.
- The Internet offers a means to provide supplier and customer support via multiple communications channels, including: email, instant messaging, SMS or VOIP.
- The Internet is used for making tax payments and for banking. The latter uses SMS to send one-time passwords to authenticate a user's identity.
- Staff is more mobile and is able to work from home using both the Internet and cell phone to stay connected to the office.
- The Internet and mobile web expands business networks through social networking services.

Jonab (2007) alludes to a contradiction on conventional ICT policy making in Jamaica, with ethnographic findings saying that “the assumptions concerning internet use held by the government as well as international NGOs diverge hugely from the realities”. The background to his study was that, while the cell phone is very popular in Jamaica (with an average of 3 phones per household), the internet is not so (only 3% of the population were online in 2004); and the integration of the two (cell phone and Internet) is even more sparse, as is the case in any developing country, South Africa being no exception. Jonab

juxtaposes some of the ICT policies in Jamaica with Miller's and Horst's recommendations, as follows:

- Instead of more computers in secondary schools, invest in post-educational training for young adults
- Instead of investing into expensive high-end computers, invest in low-price computers without gaming facilities
- Instead of investing in new educational content, create trustworthy portals
- Instead of investing in community computers, offer Internet access via individual mobile phones.

2.6 Measurement Dimensions

The aim of this researcher is to find measures used for evaluating the usability of informatic systems and those used for evaluating the level of the productivity of a firm, in an attempt measure impact in the mobile business context, where both mobility and work-context pos specific demands for the mobile business services (Vuolle et al, 2009). Vuolle et al (2009) sugge that "the existing measures rarely consider the great contextual variation caused by the mobility the services and the demands this poses on usability; which, in turn, affects productivity". Th research proposes a list of dimensions and items addressing both usability and productivi aspects that work as the basis for a multidisciplinary measurement tool.

The tool proposed by Vuolle et al is used in this study. Table 2 below captures the dimensions a stated in this study's questionnaire. The aspect of the success of mobile business services further discussed in subsequent sections and grouped under usability, working context ar productivity.

Table 2: The dimensions for the success of mobile business services

Dimensions	Examples of statements	
Installation	The mobile service was easy to assemble, install, and/or setup into the mobile device	
Learnability	It was easy to learn to use the mobile service	
	Experience with other mobile services (or products) made it easier to operate this service	
Ease of use	It is easy to move from one part of a task to the next with the mobile service	
Efficiency	I can complete my work tasks quickly by using the service with a mobile device	
	The mobile service responds quickly to my actions	
Effectiveness	The work task sometimes fails because of the mobile service	
	The mobile service enables quick, effective and economical performance of work tasks	
User satisfaction	I would recommend the mobile service also for others doing the same work	
	Using the mobile service in performing the work tasks is pleasing	
Factors related to Mobile work contex	The battery capacity of the mobile device is sufficient for the use of the service for work tasks	
	The screen size of the mobile device is adequate for using the service for work tasks	
	Inputting information to the mobile device is easy	
	Sometimes, the environment (such as coldness, sunshine, darkness) makes the use of the service difficult	
	The mobile device suits well for performing my work tasks while on the move	
	Exchanging and transmission of data between the mobile service and other products (e.g., computer, other mobile devices) is easy	
	Switching between the different applications (e.g., calls and work task) in the mobile device is easy	
Safety	The use of the mobile service has caused me safety risks while on the move	
	I sometimes have to fully concentrate on using the mobile service and	

	cannot observe the environment	
	It is easy to perform work tasks in a hurry with the mobile service	
Support	I always know who to ask for help if I have problems performing work tasks with the mobile service	
	The help information given by the mobile service is useful	
Impacts on Mobile work productivity	Using the mobile service in my job reduces travelling from and to the office during the work day	
	The mobile service helps me complete my work tasks quickly	
	Using the mobile service in my job increases my productivity	
	Using the mobile service in my job increases my work motivation	

2.6.1 Usability

Usability is one of the essential success factors of mobile business services but usability itself not a guarantee for success. A mobile business service needs to be effective, efficient, pleasar and easy to use, free of severe errors, easy to learn and adaptable to users' needs for it to b acceptable for daily work. Thus, the questionnaire to be developed should include statemen based on attributes for usability of mobile applications such as: learnability, efficienc memorability, errors, user satisfaction, effectiveness, simplicity (complexity), comprehensibili (readability) and learning performance.

2.6.2 Working Context

The context envisaged here consists of:"users, tasks, equipment, and the physical and soci environments in which a product is used" (Vuolle et al2009) citing ISO 9241-11). Mobile busines can be done with different devices, such as "mobile phones or fixed in-car systems, and th context measures need to take into account the appropriateness of the device for the users' tas For example, the nature of knowledge work or transportation is different and imposes differe requirements for the device but also for the service. Work tasks may also be routine or no routine"

(Vuolle et al, 2009). The mobile service within a working environment –e.g. home or in a taxi, where issues of connectivity kick become important.

2.6.3 Productivity

Productivity improvement is the most important measurement of success and can be affecte positively or negatively through the use of a given technology. Unfortunately, it is seldom possib to measure productivity changes resulting directly from the application. Partial measurements lik employee productivity and customer satisfaction are often used –e.g. employee productivi calculated by dividing the quantities of outputs by the quantities of inputs used.

2.7 Summary

The literature review revealed key aspects to consider in addressing the research question and related objectives. The review also highlighted the kind of measurements relevant to achieve the desired goals of the study. Chapter 3 addresses the methodology adopted for conducting the empirical aspect of the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

As stated in Chapter 2, few empirical studies have investigated mobile technology's impact on SMME livelihood in general and within the hospitality industry in particular. This accentuated the need for this study. This chapter comprises the research methodology and reports on how the constructs in the research questions have been operationalised in the present research.

Research methodology refers to the overall approach to the research process, spanning from the theoretical foundation (chapter 2) to the strategies that are used in the collection and analysis of empirical data (Hussey & Hussey, 1997:54). Ghosh (2003:185) defines research as a careful, critical enquiry or examination in seeking facts or principles around a well–demarcated environment and its clearly identifiable subjects. The environment, for

this study is the South African hospitality industry business activity, with particular interest in how the hospitality industry is influenced by mobile technology. The subjects of this study are the MMEs in the industry. Key aspects of the methodology are discussed below.

3.2 Research Design

Blumberg et al. (2005:127) cite other authors when defining research design as a plan and structure of investigation conceived to obtain answers to research questions. According to Hair, Bush and Ortinau (2000:36) research design serves as a master plan of the methods and procedures that should be used to collect and analyze the data needed by the decision maker. There are three types of research designs (Polonsky & Waller, 2004:84). These are: experiential research design, descriptive research design and causal research design. In this study a descriptive design is used to make snapshot of the environment (or a survey) to determine the landscape in terms of opportunities and challenges.

In the survey, the mail questionnaire, consisting of structured questions, will be used. Above gathering SMME demographic data, the Likert type questions will be used in the questionnaire. The respondents will be required to rate their perception through choosing level of agreement or disagreement ("strongly agree", "agree", "undecided", "disagree" or "strongly disagree"), for most questions. Each questionnaire will be accompanied by a covering letter explaining the purpose of the survey.
To facilitate a speedy and cost effective data collection process, electronic administration of the questionnaire will apply to those with access to such facilities; otherwise telephone or letter correspondence will be used. To try and enhance response, follow-up will happen when need arises.

Perceptions of the SMME on three key dimensions, representing elements of mobile business service experience, namely: usability, mobile working context and mobile work productivity, are collected as primary data in the study.The aim is to understand the nature of mobile technology impact and how mobile business services could support the SMME in this context, by interrogating these dimensions.

3.3 Sampling

The total population of SMME is rather high and would be costly to investigate in its entirety. A sample will therefore be used instead. According to Schiffman and Kanuk (2004: 42) the sampling plan addressed three critical questions:

- who to survey (this is the sampling unit of the hospitality industry SMMEs)
- how many to survey (this is the sample size of 600 firms)
- how to select the participants (this is sampling procedure catering for the diverse population consisting of Food & Beverages, leisure tours and Accommodation; SMMEs. in a random sample from the nine provinces in South Africa – some of which can be easily seen as rural e.g. Northern Cape, Eastern Cape and Limpopo) but others not.

Some effort is needed to balance (proportional representation) representation. Consideration of the Small, Micro and medium businesses independently might be useful - particularly as growth patterns in these sectors are not always the same, similarly, technology uptake may not necessarily be uniform throughout the segments.

Because the findings derive from aggregation, the higher the response rate, the higher will be the accuracy of the findings; and this implies increased need for motivation for each and every firm to participate. This may come in the form of a well designed questionnaire (clear and objective questions, reasonable length - implying reasonable completion time, clarity of purpose/objective, logical sequence of questions - starting with more straightforward questions and ending up with more challenging but relevant questions etc.) and a budget (at least with respect to time), for follow-up.

The sampling procedure followed was probability sampling. This is recommended because probability sampling gives every SMME a chance to be selected within the categories. Categories differentiated in terms of firm size, sector within the hospitality industry, geographic location, etc.

3.4 Data Analysis

When completed questionnaires are received, data will be coded for easy analysis. According to Zikmund (2003:459) there are two basic rules for code construction namely:

- categories must be mutually exclusive and independent
- categories must be exhaustive

Picciano (2004:30) recommends the use of the Statistical Package for the Social Sciences (SPSS), which was used in this study. Descriptive Statistics was also part of the presentation and discussion of the data and results.

3.5 Ethical Considerations

In conducting this research, the information gathered from the respondents will be strictly used for the purpose of this research. Response rate was encouraged by allowing the respondents to respond anonymously. Questions considered personal had been avoided at all costs.

3.6 Limitations

Limitations are potential weaknesses in a research study. The limitations of this research would be:

- This research is a cross sectional design that precludes a longitudinal study that may have determined causality between the technology and impact on business operations – particularly when it is a known fact that the variables measured do not have a direct relationship (mobile considered a surrogate measure of productivity/performance); and
- Measurements rely on the perceptions of the respondents and not their actions, implying a more subjective investigation ruled by emotion and wishful thinking, instead of facts on the ground.

- The very nature of the impact of ICT makes matters worse because it is seldom directly measurable – e.g. one measures travelling cost reduction and turnaround time instead of the actual benefit of a cell phone when performing a remote transaction.

3.7 Delimitations

The following delimitations (deliberate choices improving the feasibility of the research environment and efficiency to complete the research) are identified:

- The study will consider only formal SMME because of difficulty in identifying non-formal firms as there is no formal database of such and the country is too big to allow for physical visits to all localities where they might exist.

- Only Leisure travel, Accommodation, and Food and Beverages sectors have been selected in the broad hospitality industry. This decision was taken on the basis of majority and potential for economic growth.

3.8 Summary

This chapter covered the approach to the empirical study, to investigate the impact of mobile technology on SMME business operation in the hospitality industry of South Africa. Important elements of this chapter included the research design, sampling and the questionnaire development, as well as feedback on the process of data collection. The next chapter deals with the analysis of the collected data.

CHAPTER 4

RESULTS AND ANALYSIS

4.1 Introduction

Moving from the work done in chapters two and three, in terms of collecting primary and secondary data, this chapter sets out to analyse the data, to investigate possible patterns and behaviours of the population with respect to the research objectives stated in chapter one. The analysis follows the sequence of the research objectives as complemented by the survey questionnaire.

4.2 Total Sample

4.2.1 Basic Information

The total number of responses is 135 SMMEs, from the three randomly chosen provinces, see table 3 below.

Table3: Responses according to provinces

Provinces	Frequency	Percent
Gauteng	81	60
Free State	36	26.67
Eastern Cape	18	13.33
Total	135	100

Gauteng has the largest proportion of respondents (60%) followed by Free State (26,67%) and last is the Eastern Cape (18%), while the proportion may be justifiable by the actual statistics of hospitality SMME, in these provinces, the outcome is pure chance as an equal number of questionnaires (200 in number) were distributed in each of the provinces. (It is also possible that the data collector influence may have played a role, due to familiarity of some places) The sample size (135) is significant and so are the frequencies for each

province, allowing for a comparative analysis of behaviour between the provinces **(Hypothesis 7**).

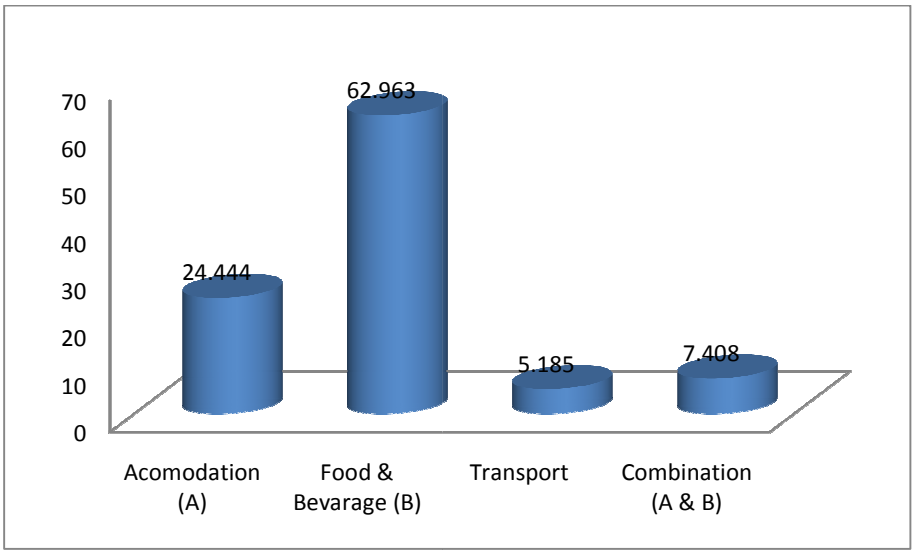
Question 4 requested respondents to identify their type of operation or business sector within the hospitality industry. It was stated as follows: "**Hospitality Industry Business Sector (e.g. accommodation) _____** ". The purpose of this question was to ensure that the data gathered is from the target population and excludes any entity that is not an SMME in the South African hospitality industry. The responses are summarised in table 4.

Table 4: Respondent Sector Distribution

Sector	Frequency	Percent
Accommodation (A)	33	24.444
Food & Beverage (B)	85	62.963
Transport	7	5.185
Combination (A & B)	10	7.408
Total	135	100

This distribution is displayed in figure 2, to emphasis domination by 'Food & Beverage'

Figure 2: Respondent Sector Distribution by Percentage



The majority of respondents are in the "Food & Beverages' category at 64.4 % followed by accommodation at 24.4% and last is a combination (those who responded operating in accommodation as well as food and beverages) at 11.1%, 135 respondents come from the hospitality industry.

This situation is also true for firm size (**hypothesis 6),** across the entire population of respondents but not within provinces where samples become too small, which may compromise the validity of the funding - e.g. for the Eastern Cape, the distribution is 11 Micro, 5 Small and only 2 medium sized firms. Even more risk on validity is that some respondents skipped some questions in the questionnaire. The results according to firm size are given in table 5.

Table 5: Responses according to firm size

Firm size	Frequency	Percent
Micro	62	45.93
Small	45	33.33
Medium	28	20.74
Total	135	100

Once more, like the actual representation in the national (and provincial and local) the majority is micro, followed by small and last is medium sized firms for the hospitality industry.

Question 6 ["**Number of employees using mobile technology e.g. Cell-phone) for work**"] is left out of the analysis. This is basically for two reasons:

1. Many respondents indicated relatively high numbers of users, giving rise to two questions: Does this number include manual labourers who are less likely to use the technology for work but rather use the phone for their own personal need (e.g. being contacted on shift arrangements, absenteeism, etc); and does the number include casual staff?

2. The purpose of the question was achieved in that every firm has confirmed that employees use the technology for work (at least two of each firm's employees use mobile technology for work purposes). Therefore the benefit of the technology has the potential to be exploited fully with the support/recognition of the firm.

4.2.2. Technology Status and Application

4.2.2.1 Basic Technologies

The status of the technologies, in terms of existence and use within and by the hospitality SMMEs, is displayed in table 6

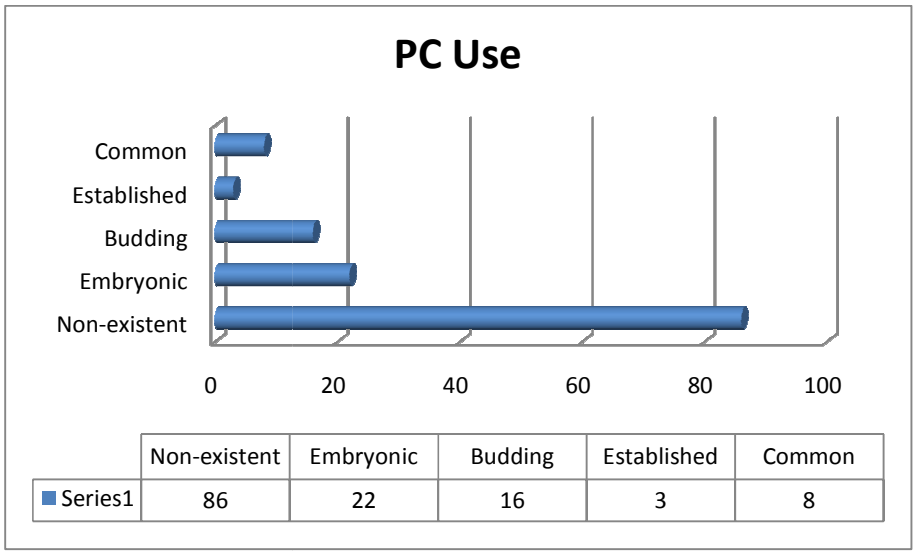
Table 6: Status of the Technology

Basic Technologies		**1**	**2**	**3**	**4**	**5**	**Total**	**rank**
ICT Hardware	A	86	22	16	3	8	135	**4**(108)
	B	128	2	0	3	0	133	**10**(130)
ICT Networks	C	128	2	0	3	0	133	**10**(130)
	D	127	3	1	2	0	133	**10**(130)
	E	127	2	1	2	0	132	**9**(129)
	F	131	2	0	2	0	135	**11**(133)
	G	120	2	5	5	3	135	**5**(122)
Communications	H	0	2	15	23	95	135	**1** (2)
	I	20	32	51	17	15	135	**2** (52)
	J	55	12	29	18	19	133	**3** (67)
	K	107	15	3	3	5	133	**6**(122)
	L	121	3	4	3	2	133	**7**(124)
	M	128	1	2	2	0	133	**8**(129)

NB 1=non-existent, 2=embryonic, 3=budding, 4=established, 5=common, A= PCs, B=Servers/mainframes, C= Servers/mainframes D= Wide Area Networks, E= Virtual Private Networks, F=Intranets and Extranets, G= The Internet, H= Mobile phones/ pagers I=Landlines, J= E-mail, K =Electronic Data Interchange, L= Teleconferencing, M=Videoconferencing

Starting with the PC, it is observed that the distribution is 86 respondents (63.7%) do not use a personal computer; 22 (16.3%) are in the embryonic stage of use, 16 (11.9%) are budding, 3 (22.2%) are well established and only 8 (5.9%) have PCs for common use. Figure 3 illustrates this situation pictorially.

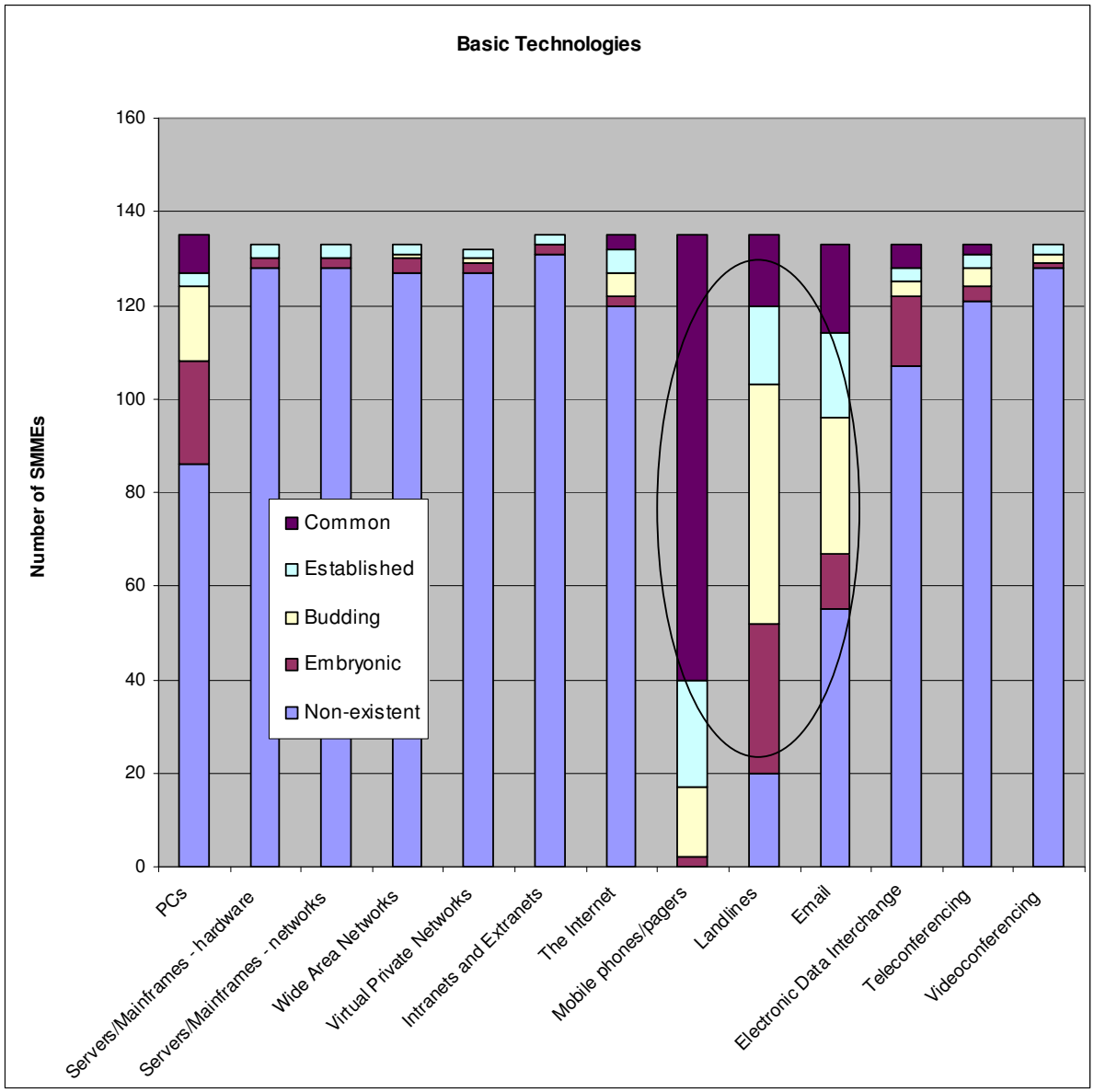
Figure 3: PC Use by the SMME



Aggregating budding through to common, which would imply substantial (significant) use, the total is 20% (16+3+8 out of 135). This proportion is too low to take full advantage of the PC technology for the sector. One can then conclude, on the basis of majority, that SMMEs do not use PCs.

A similar trend is observed for servers/mainframes, with an even lower proportion of significant use at only 2.2%. This situation of **very limited use** also holds true for the majority of the other basic technologies mentioned in the survey questionnaire, as indicated by higher scores of non-existent and embryonic use compared to other levels of use (see Table 6). The overall sample distribution for the ICT technologies is shown in figure 4:

Figure 4: Sample distribution of Basic Technology Use



The ICT technologies can be ranked in terms of the extent of use – from the most popular mobile phones/pagers with ranked first (rank = 1) as shown in table 6 (also illustrated by the longest maroon bar in figure 4) down to the lowest popular represented by 'Intranets and Extranets' (rank =11). [The ranking is done by adding the frequencies of the first two columns (non-existent and embryonic) which represent lowest popularity, divided by their respective totals, and the one with the largest ratio is the least popular].

Besides the two communication techniques, mobile and telephone is favourable, as well as email where use and non-use are virtually the same, the unfavourable use of the rest is

extreme – ranging from 80% (PCs at 108 out of 135 responses) to 98.5% (intranets and extranets at 135 out of 135 responses).

This negative skew in favour of non-existence or non-use of these technologies is observed in virtually all the listed technologies, except for the mobile phone/pager and telephone (land line). The mobile phone (excluding pagers as pagers have virtually disappeared from the market) demonstrates the opposite trend in terms of use – absolute demonstration of significant use (budding, established and common together) at 98.5%. This finding augurs well for the current study because the mobile phone is not only the most popular technology device used in developing economies but virtually the only device affordable to the majority of SMMEs in South Africa.

However, while the platform is almost 100% available/accessible to the SMMEs, just like the actual cell phone penetration, the crucial issue is the level of use that could enhance firm productivity and general well-being of the SMME- this discussion is taken up later in section 4.5.Telephone usage is average among SMMEs i.e. symmetrical around the midpoint of 'budding'. It is important to note that the majority of these telephones are in urban areas, where the supporting infrastructure exists. For reasons, such as cost of maintenance, flexibility of use at any time or place, the market of telephones is overtaken by cell phones - even though their value remains significantly lower, most firms have both modes of communication.

The discussion on basic ICT technologies has proven the first (hypothesis 1): ***Mobile technology is the preferred majority platform for the hospitality industry SMME business.*** *This was done by establishing the unprecedented dominance of mobile over other technologies.*

4.2.2.2 Applications

The use of ICT applications is unfavourable (more non-use than use or rank higher than half of the total) throughout the listed applications. The distribution of this unfavourable non-use is, however, more widely spread than for basic technologies (section 4.2.2.1 above), with internet (74%), 'stock and inventory control' (58.3%), 'distribution/warehouse management' (59%), and 'delivery planning and control' (67.4%) taking a rather moderate

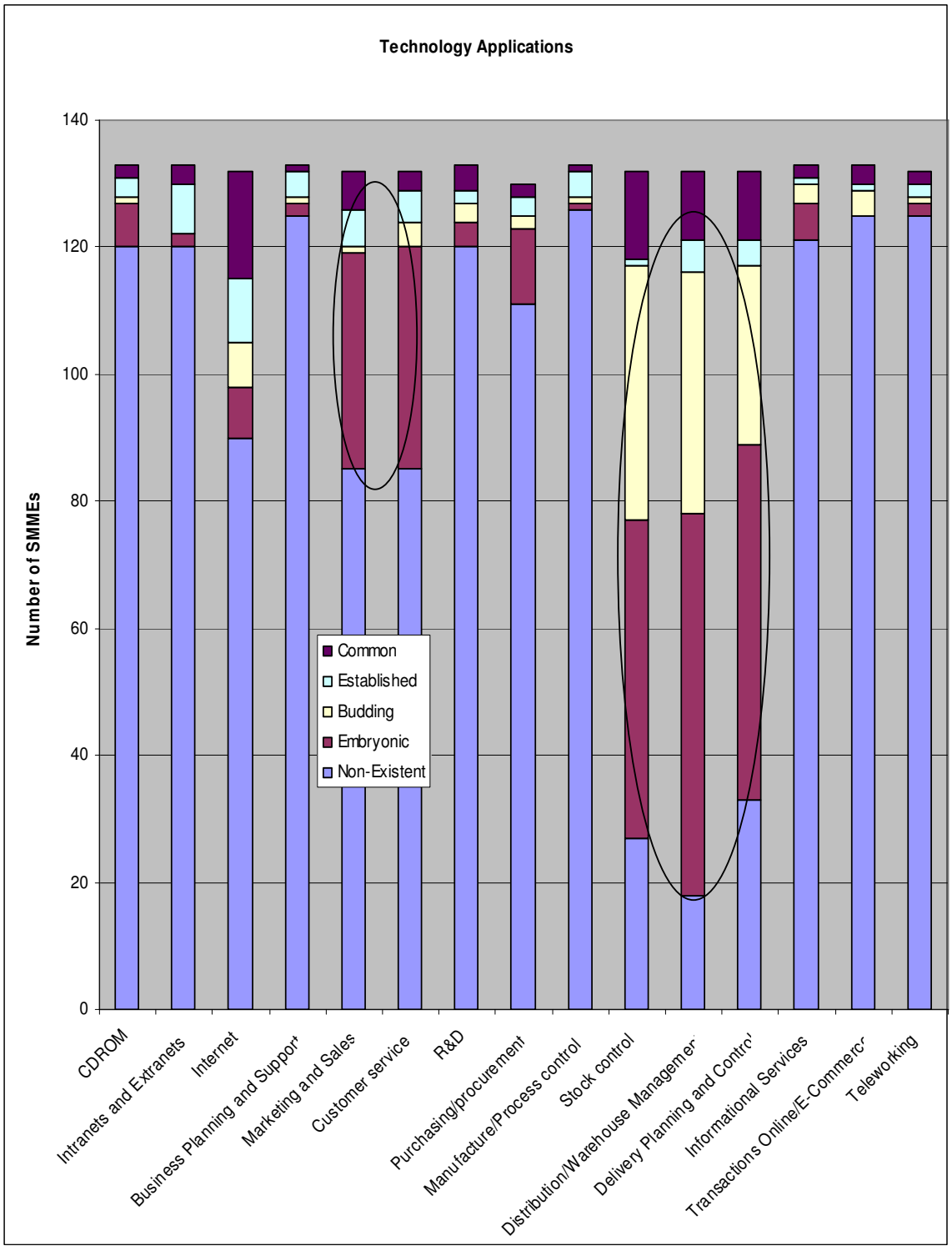
position, while the rest of the technologies maintain the extreme limited use status. Responses on the applications are summarised in table 7.

Table 7: Status of Technology Application

Applications		1	2	3	4	5	Total	Rank
Information Acquisition and Management	A	120	7	1	3	2	133	**11**(127)
	B	120	2	0	8	3	133	**7**(122)
	C	90	8	7	10	17	132	**4**(98)
Streamlining Business Process	D	125	2	1	4	1	133	**1**(127)
	E	85	34	1	6	6	132	**5**(119)
	F	85	35	4	5	3	132	**6**(120)
	G	120	4	3	2	4	133	**9**(124)
	H	111	12	2	3	2	132	**8**(123)
	I	126	1	1	4	1	133	**11**(127)
	J	27	50	40	1	14	132	**1**(77)
	K	18	60	38	5	11	132	**2**(78)
	L	33	56	28	4	11	132	**3**(89)
TBP	M	121	6	3	1	2	133	**11**(127)
	N	125	0	4	1	3	133	**10**(125)
	O	125	2	1	2	2	132	**12** (127)

NB 1=non-existent, 2=embryonic, 3=budding, 4=established, 5=common, A= Using CD-ROM sources, B=Via Intranets and Extranets, C=Via the Internet, D=Business Planning and Support Activities, E= Marketing and sales electronic, F=Customer service, G=Research, development, design and production, H=Purchasing/procurement, I=Manufacture/process control, J=Stock and inventory control, K=Distribution /warehouse management, L= Delivery planning and control, M= Informational services, N= Transactions on line/e-commerce, O= Teleworking

Figure 5: Sample distribution of Application Use



The trend with technology applications is like that of the majority of the technologies -i.e. predominantly 'non-existent' or embryonic among SMMEs. While the majority applications

are in the ‘non-existent” use stage, as indicated by the blue portion of bars in figure 5, some are not, as indicated by an elliptic drawing.

Applications that are not in the non-existent” use stage are ‘Stock and inventory control’, ‘Distribution /warehouse management’ and ‘Delivery planning and control’, where use stage domination is shared by ‘embryonic’ and ‘budding’. ‘Embryonic’ use is also substantial with ‘Marketing and sales electronic’ and ‘Customer service’.

The researcher can then infer that **the benefits of these ICT applications cannot be realised by SMMEs irrespective of the technologies at their disposal**. This problem is exacerbated by the absence, or at least non-use, of the requisite technologies (section 4.2.2.1).

4.2.3 Technologies/Applications Enablers and Inhibitors

4.2.3.1 Technologies/Applications Enablers

Question 8 - “Which of the above technologies and application areas do you believe need the most emphasis for growth of your firm?” - has been answered according to table 8 .

Table 8: Technologies/ Applications Enablers

ITEM No	INPUT	FREQUENCY	PERCENT
1	All	13	9.63
2	Internet & Extranet	13	9.63
3	Personal Computers	11	8.148
4	Landline	7	5.185
5	Intranet & Extranet	11	8.148
6	WAN	6	4.444
7	E-mail	5	3.704
8	EDI	2	1.481
9	Business Plan & Control	5	3.704
10	Support	3	2.222
11	Mobile Phone	10	7.407
12	Mainframes/Servers	8	5.926
13	Transaction Business Process	14	10.37
14	Transaction on line	4	2.963
15	Information of Services	7	5.185
16	Delivery Planning and Control	4	2.963
17	Communication	1	0.741
18	Information Acquisition & Management	1	0.741

Respondent interest is highest for 'All' at 13 which is a mere 9.6% of the total sample (135 SMMEs that responded excluding rejected forms). This means that less than 10% of the firms believe that all the listed technologies and applications are important for their growth. The situation deteriorates quickly as one considers individual technologies and applications – highest being 'intranet & extranet' at 9.6% down to a shared final spot of 0.7% occupied by 'Communication' and 'Information Acquisition & Management'.

It is important to note that half of the parameters' frequencies are too low (> 5 % of sample) to warrant reliable conclusions about the behaviour of the sample/population.

4.2.3.2 Technologies/ Applications Inhibitors

Question 9 - "Which of the above technologies and application areas do you believe are the major inhibitors to achieving your business/organisational goals?" - has been answered according to table 9.

Table 9: Technologies/ Applications Inhibitors

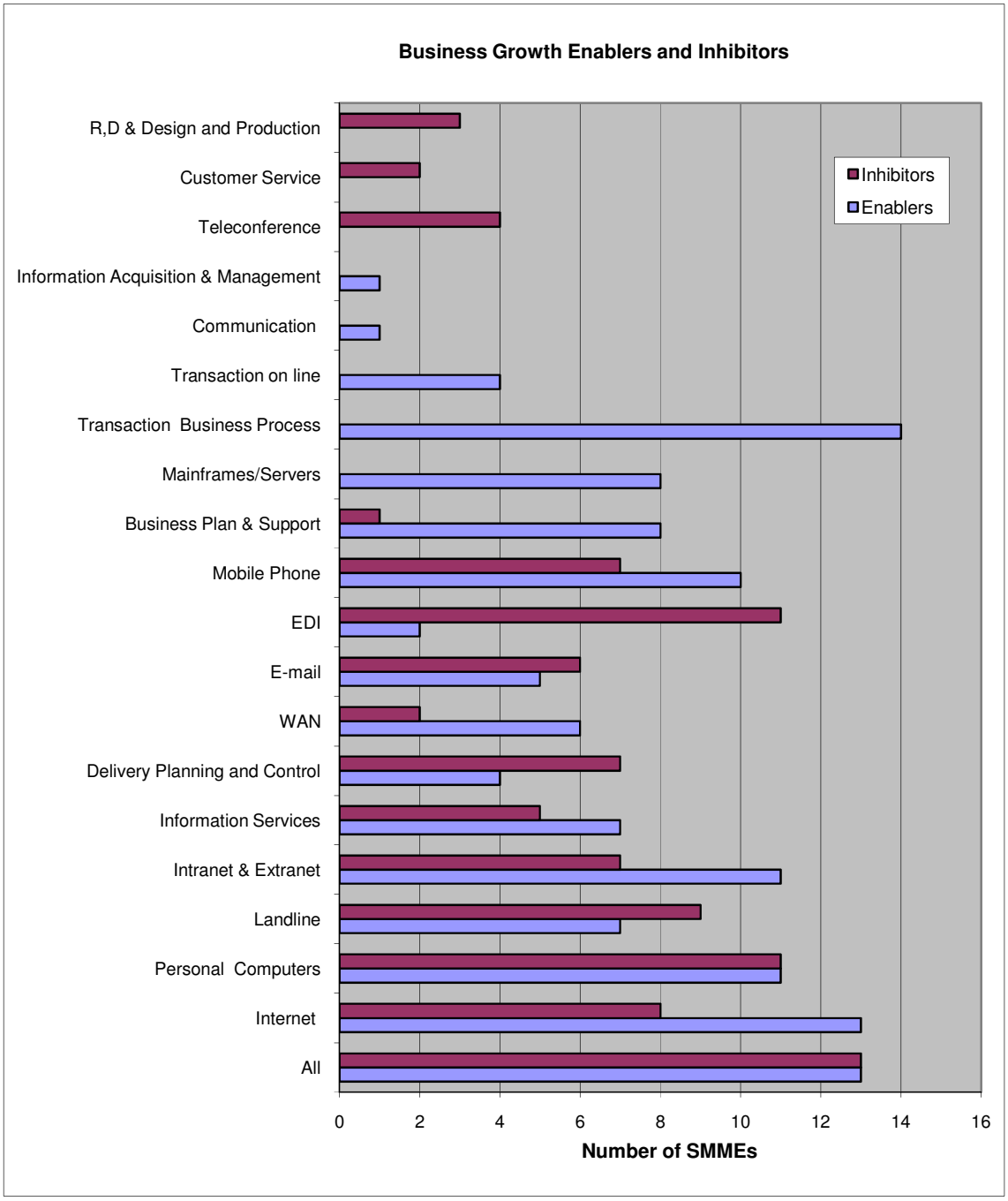
ITEM No	INPUT	FREQUENCY	PERCENTAGE
1	All of the above	13	9.629
2	Internet	8	5.926
3	Personal Computers	11	8.148
4	Landline	9	6.667
5	Teleconference	4	2.963
6	WAN	2	1.481
7	E-mail	6	4.444
8	EDI	11	8.148
9	Business Plan & Support	1	0.741
10	SMS	1	0.741
11	Mobile Phone	7	5.185
12	Customer Service	2	1.481
13	VPN	2	1.481
14	Extranet	7	5.185
15	Information Server	5	3.704
16	Delivery Planning and Control	7	5.185
17	R,D & Design and Production	3	2.222

Significance (5% or more SMMEs), once more, is observed with a few (7) parameters namely; 'All', internet, PCs, Landline, EDI, mobile phone, 'intranet & extranet', and 'Delivery Planning and Control'. The rest of the parameters remain insignificant.

4.2.3.3 Enablers and Inhibitors

Figure 6 shows a comparative display of the data in tables 8 and 9. The researcher attempts to compare enablers and inhibitors to determine if there are any patterns discernible. The first three ('R, D & Design and Production', 'Customer Service' and 'Teleconferencing') show inhibitors only. This means that the few firms that responded on these categories do not feel their growth can be enhanced through these technologies/applications. The next five ('Information Acquisition & Management'..., 'Mainframes/Servers') exclusively represent business growth enablers. The rest ('Business Plan & Control' through to 'All') represent differing degrees of enablement and inhibition.
A question that comes to mind is: what distinguishes enabler from inhibitor with respect to these technologies/applications, to justify such variation? Another pertinent question is whether these insignificant (less than 5%) interests on enablement and inhibition could shed light on how to assist the SMME in the industry.

Figure 6: Business growth enablers and inhibitors



Because of the predominantly 'non-existent' or 'embryonic' stage, as opposed to 'established' or 'common', of the technologies and applications, the responses shown in tables 5 and 6 bear little significance in terms of intervention – e.g. the majority of SMMEs indicated that they are not using PCs (section 4.2.2.1 above). To assist the SMMEs to get to the level of effective use requires not just providing the hardware but also a whole bouquet of supporting resources (software, power, etc) and activities (training,). The low proportion of participation among respondents could also suggest insufficient understanding about their needs, that may be addressed though these technological interventions.

4.2.4 Investments and Constraints

A collective analysis of the stated factors for barrier status is undertaken in this section. Of importance will be whether SMME regard a given factor a barrier or not. The last two columns of table 10 independently and sufficiently define a position for each factor. For example, in the case of 'Cost of equipment', the score is 3.86 which is very close to 4 representing 'Agee' on the Likert Scale – i.e. the surveyed SMMEs agree that 'cost of equipment' is a barrier. Using the last column, the same result is found as it is observed that a 70.68 % majority of the surveyed SMMEs agree that 'cost of equipment' is a barrier.

Table 10: Barriers

Barriers	1	2	3	4	5	Score	% Favou
Cost of equipment	5	25	9	39	55	3.85714286	70.67669
Availability of technical support	4	11	26	28	63	4.02272727	68.93939
Reliable power supply	17	1	18	40	56	3.88636364	72.72727
Access to telephone network	10	3	18	45	56	4.01515152	76.51515
Internet access providers	3	25	7	49	48	3.86363636	73.48485
Telecommunications bandwidth	2	23	17	30	60	3.93181818	68.18182
Staff knowledge of equipment	5	31	6	35	56	3.79699248	68.42105
Staff understanding	4	19	26	28	56	3.84962406	63.15789
Availability of online resource	3	15	21	49	45	3.88721805	70.67669
Cost of telecommunications	3	30	11	29	60	3.84962406	66.91729
Cost of international telecom	3	36	7	15	71	3.87121212	65.15152
Lack of air-conditioned office	15	17	6	39	55	3.77272727	71.21212
Government support	2	23	16	53	39	3.78195489	69.17293
Infrastructure	2	34	7	29	60	3.84090909	67.42424
Promotion of wireless networking	2	26	15	35	55	3.86466165	67.66917
Mentoring	12	13	8	50	50	3.84962406	75.18797
Skills/Training	7	29	10	28	58	3.76515152	65.15152
Device limitations	2	11	25	20	72	4.14615385	70.76923
Labour	10	17	50	26	29	3.35606061	41.66667
Other (please specify)	-	-	-	-	-	-	-

From table 10 it is clear that, except for **labour**, all the factors are barriers. As for labour, the SMMEs are on average uncertain (score = 3.36) but more in the direction of favour as respondents in favour (26 + 29) are more than those against (10 + 7).

This implies that the hospitality industry SMMEs are struggling to succeed due to business activity constraints/barriers such as those listed in table 7 above. That the respondents did not add any barriers of their own in the last row indicated by 'other (please specify)', suggests that this set of barriers is sufficiently exhaustive.

The above discussion on barriers has proven hypothesis 2 (***There are factors constraining ICT use for operational success of the hospitality industry SMME of SA).*** This was achieved by establishing that all the listed factors are, to varying degrees of importance, barriers for business success in the sector.

4.2.5 Organisational Performance

In this section, the analysis will consider organisational performance. The details of what was requested from the respondents are stated in section D of the questionnaire. The participants were asked to indicate their level of agreement with statements related to specific dimensions. As an example, SMMEs had to indicate their level of agreement on the dimension of '**installation**' through the statement "**The mobile service was easy to assemble, install, and/or set up into the mobile device**" by selecting one of the following options **1=strongly, disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.** To cover both the overall outlook of the population and to address specific objectives of the study, the analysis is divided into four sub-sections, namely: overall, usability (**objective 3**), working context (**objective 4**) and productivity (**objective 5**).

4.2.5.1 Overall Organisational Performance

Table 11 captures the perceptions of the SMMEs on organisational performance, interpreted through the stated dimensions (and the corresponding examples) in columns 1 and 2 respectively. It is important to note that the statement on safety, suggesting caution on using the mobile while in motion, is just as positive as the other statements because it guides for good practice and cost saving from an eventuality that may occur.

Table 11: Dimensions for Performance

Dimensions	E.g. of statements	1	2	3	4	5	Total	score
Installation	A	50	6	7	52	18	133	2.86466165
Learnability	B	9	45	10	39	29	132	3.25757576
	C	6	3	22	66	36	133	3.92481203
Ease of use	D	4	5	14	45	65	133	4.21804511
Efficiency	E	10	12	15	44	51	132	3.86363636
	F	2	7	18	39	66	132	4.21212121
Effectiveness	G	8	32	20	26	46	132	3.53030303
	H	8	13	42	34	35	132	3.56818182
User satisfaction	I	5	14	18	41	54	132	3.9469697
	J	5	31	34	22	39	131	3.45038168
Factors related to Mobile work context	K	7	21	21	50	32	131	3.60305344
	L	2	21	22	26	60	131	3.92366412
	M	7	12	8	36	69	132	4.12121212
	N	23	12	21	48	27	131	3.33587786
	O	4	11	24	51	41	131	3.87022901
	P	12	24	15	30	50	131	3.6259542
	Q	17	22	29	32	31	131	3.29007634
Safety	R	19	14	28	31	40	132	3.4469697
	S	23	12	28	48	21	132	3.24242424
	T	14	23	35	39	21	132	3.22727273
Support	U	12	18	15	47	40	132	3.64393939
	V	3	15	8	61	45	132	3.98484848
Impacts on Mobile work productivity	W	3	8	20	52	49	132	4.03030303
	X	5	10	18	49	51	133	3.98496241
	Y	4	5	20	58	45	132	4.02272727
	Z	4	4	15	47	62	132	4.20454545
	AB	2	15	20	54	42	133	3.89473684

NB: 1=strongly, disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree A= Easy to assemble, B= It was easy to learn,C= Experience, D= Easy to move, E= Complete work tasks quickly, F= Responds quickly to my actions, G= Work task sometimes fails, H= Enables quick, effective and economical performance, I= Recommend, J= Performance, K= Battery capacity, L= Screen size,

M=Iinformation input, N=Environment , O= Suits well for performance, P=Data Exchange and transmission, Q= Switching applications, R= Safety risks, S= Concentration ,T= easy to perform work tasks, U= Ask for help. V= Information given, W= Reduces travelling, X= Complete tasks quickly, Y= Productivity, Z= Work motivation, AB= Customer satisfaction

The scores lie in the 'neutral' to 'agree' range – i.e. between 2.5 (lowest possible score for neutral domination) and 4.5 (highest score for 'agree' domination). It will be important to determine the overall position of the SMMEs on performance in terms of whether it is favourable or not, so that a decision-maker can be better informed.
If the overall performance were to be favourable, the average score would have to be less than 3.5. Applying a t-Test on the scores, with 3.5 used as the expected mean for the test, returns the following output:

Table 12: Performance Favourability

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Erro Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	score - expected	0.21443	0.36191	0.06965	0.07126	0.35759	3.079	26	0.005

The outcome of the test is that the overall mean score (3.7144) is significantly different from the lowest margin of favour (the null hypothesis is rejected). The difference for the two-tailed test is positive therefore it is concluded that the dimensions statements are favourable.[A two-tailed test is more accommodative to the null hypothesis than the one-tailed test because of the rejection area that gets divided by two, to cater for the two tails) (Wegner, 2005:213-238; Weiers, 2008:311-353). This result implies that the overall perceived mobile impact on performance for SMME is favourable – i.e. **Mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms of performance.**

Once again, the value of mobile technology stands out when compared to other ICT measurements discussed above, as they were not used and therefore could not influence

firm performance. The next challenge is to test the performance measurement according to usability, working context and productivity (hypothesis 3 to 5). Analysing similarly to the total sample, the results for the three dimensions are shown in table 13.

Table 13: Performance Favourability by Dimension

Paired Samples Test

NB: Each pair combines dimension and expected		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Usability	-.18367	.43054	.13615	-.49166	.12432	-1.349	9	.210
Pair 2	W Context	.10963	.30970	.08940	-.08715	.30640	1.226	11	.246
Pair 3	Productivity	-.52746	.11271	.05040	-.66740	-.38751	-10.465	4	.000

4.2.5.2 Usability

H3: Mobile technology positively impacts the SMME in the hospitality industry of SA in terms of usability.

Before one tests for favourability, a normality test of the data is assumed undertaken. Low sample size is one of the limiting factors in meeting this condition. In this study, the normality condition is met in that the null hypothesis cannot be rejected for all the tests done on the data (see table 14). It is important to note that Normality is an essential sample requirement which, if not met, may render results unreliable in a quantitative study; and has thus been conducted throughout the entire data analysis in this study.

Table 14: Usability Dimension Distribution

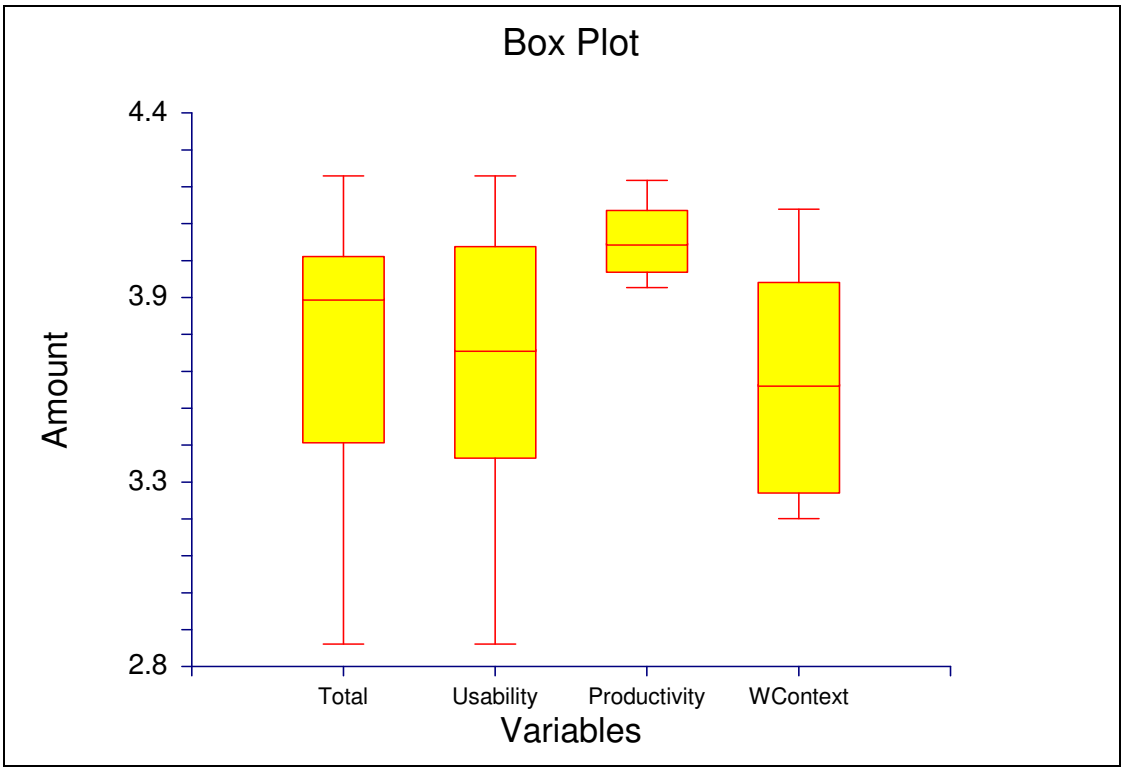
Quartile Section of Usability						
	10th	25th	50th	75th	90th	
Parameter	Percentile	Percentile	Percentile	Percentile	Percentile	
Value	2.90395	3.4021	3.71590	4.01325	4.21745	
95% LCL			3.25757			
95% UCL			4.21212			
Normality Test Section of Usability						
	Test	Prob	10% Critical	5% Critica	Decision	
Test Name	Value	Level	Value	Value	-5%	
Shapiro-Wilk W	0.947409	0.637959			Can't reject normality	
Anderson-Darling	0.268851	0.681653			Can't reject normality	
Martinez-Iglewicz	1.020611		1.430911	1.961897	Can't reject normality	
Kolmogorov-Smirnov	0.107271		0.241	0.262	Can't reject normality	
D'Agostino Skewness	-0.798424	0.424624	1.645	1.96	Can't reject normality	
D'Agostino Kurtosis	0.0551	0.956028	1.645	1.96	Can't reject normality	
D'Agostino Omnibus	0.6405	0.725959	4.605	5.991	Can't reject normality	

Looking at table 13, the finding is that usability is not significantly favourable as the significant. value (.210) is greater than 0.05 (significance level used in the study). This means that **mobile technology does not positively impact the SMME in the hospitality industry of South Africa in terms of usability.** This is contrary to the result of the total sample (section 4.2.5.1).

This contradiction implies a large variation in the population (e.g. perceptions on installation are very different to those of effectiveness or safety) and/or the population can be partitioned into distinct clusters.

While the former (high variation) may be true, it will be illogical to even contemplate homogeneity on firm perceptions for the different dimensions - comparing issues of safety with those of customer satisfaction is almost like, as the saying goes, 'comparing apples to oranges'. Figure 7 shows the actual distributions around the mean (labelled 'amount' in the figure). The partition approach is not obvious except perhaps for productivity that is generally above others, but even then there is significant overlap with usability.

Figure 7: Box Plot for total Sample and Dimensions



4.2.5.3 Working Context

H4: Mobile technology positively impacts the SMME in the hospitality industry of SA in terms of working context.

Looking at table 13, the finding is that working context is not significantly favourable as the significant value (0.246) is greater than 0.05 (significant level used in the study).
This means that **mobile technology does not positively impact the SMME in the hospitality industry of South Africa in terms of working context.** This finding is contrary to the result of the total sample. The reasoning for Usability in section 4.2.5.1 applies.

4.2.5.4 Productivity

H5: Mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms of work productivity.
Looking at table 13, the finding is that **work productivity** is significantly favourable as the significant. value (0.000) is less than 0.05 (sig level used in the study). This means that **mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms *of work productivity*.** This finding is in line with the result of the total sample. Its strength of favour (p-value = 0.000) has pulled the other unfavourable dimensions (usability and working context) to a state of favour in the overall sample. The question of difference between productivity and the other dimensions is left to interpretation in chapter 5.

4.2.5 Additional Comments

The last question was**: "**Please state any further input you believe might help improve performance through mobile technology."
Only a handful (8) of participants responded/commented. The responses are listed below in no order of priority or frequency (most of them appear once and at most three times).

Table 15: Additional Respondent Input

Respondent Input	Comment/s
Help people communicate at far distance	Appears under basic technologies i section B of questionnaire
PC's	Same as above
TV Adverts	Possibly for marketing the SMME; an maybe extend the facility to mobile TV
E-mail for communication at far distance	Appears under basic technologies i section B of questionnaire
Internet for communication	See section B (Networks)
Safety	See section D (working context)
User satisfaction	See section D (usability)
Access to the technology	Big problem for the SMME
Learning sector should be available	Increased access to subsidised training?
Server to be increased to improve productivity	Section B (networking)

Most of the inputs are some versions of what already appears in the questionnaire, as reflected in the comments section of table 15. New ideas are TV adverts where this researcher estimates intention being to afford the SMME a wider market through TV which avenue is already available (at cost of course); and learning provision, which could imply more providers readily available at affordable price.

4.3 Provinces

The empirical data on operational barriers for the three sampled provinces – namely **Eastern Cape, Free State and Gauteng -** is discussed below, using tables 16 and 17 which display the average score per factor (or barrier) and the statistical output of the original data (see appendix B) respectively.

Table 16: Barriers Comparison by Province

Barrier	Eastern Cape	Gauteng	Free State
Cost of equipment	3.8333	3.7848	4.0278
Availability of technical	3.9412	4.0506	4
Reliable power supply	3.4118	3.9241	4.0278
Access to telephone network	3.8824	4.0253	4.0556
Internet access providers	3.8125	3.7375	4.1667
Telecommunications bandwidth	4.4375	3.9625	3.6389
Staff knowledge of equipment	4.2353	3.7	3.8056
Staff understanding	3.7647	3.9	3.7778
Availability of online resource	3.9412	3.8375	3.9722
Cost of telecommunications	3.5882	3.875	3.9167
Cost of international telecom	3.5294	4.0125	3.7143
Lack of air-conditioned office	3.8824	3.7625	3.7429
Government support	3.4118	3.775	3.9722
Infrastructure	3.1111	3.8608	4.1714
Promotion of wireless networkin	3.8889	3.962	3.6389
Mentoring	3.2353	3.975	3.8611
Skills/Training	3.6111	3.8101	3.7429
Device limitations	3.8	4.3418	3.8611
Labour	3.375	3.3875	3.2778

Table 17: Provinces Descriptive Statistics

ANOVA

		Sum of Square	df	Mean Square	F	Sig.
EC	Between Groups	1.394	13	.107	.931	.581
	Within Groups	.576	5	.115		
	Total	1.970	18			
GP	Between Groups	.562	13	.043	2.700	.140
	Within Groups	.080	5	.016		
	Total	.642	18			

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EC	3.7207	19	.33078	.07589
	GP	3.8781	19	.18887	.04333
Pair 2	EC	3.7207	19	.33078	.07589
	FS	3.8617	19	.21456	.04922
Pair 3	GP	3.8781	19	.18887	.04333
	FS	3.8617	19	.21456	.04922

Paired Samples Correlations

		N	Correlation	Sig..
Pair 1	EC & GP	19	.146	.550
Pair 2	EC & FS	19	-.121	.622
Pair 3	GP & FS	19	.328	.171

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	EC - GP	-.15744	.35613	.08170	-.32909	.01421	-1.927	18	.070
Pair 2	EC - FS	-.14098	.41544	.09531	-.34121	.05926	-1.479	18	.156
Pair 3	GP - FS	.01646	.23484	.05388	-.09673	.12965	.306	18	.763

The analysis starts with the descriptive statistics. The mean score ranges between 3.72 for the Eastern Cape and 3.88 for Gauteng Province with the Free State lying in between.

The standard error is low (below 10%) implying high reliability of the mean. There is no correlation between the provinces (sig. > 0.05). Similarly the means (averages) cannot be differentiated by location (province) as the p-value, indicated as significant (2-tailed), takes on values greater than the chosen test significant level of 5%. It should be noted that the t-test and ANOVA have confirmed non-rejection of the null hypothesis.

This observation disproves hypothesis 7 by showing that the SMMEs are not impacted differently according to the province they operate in - i.e. the null hypothesis (no significant difference) is not rejected. [It is important to note that, for a higher significant level, say 10 %, the Eastern Cape and Gauteng Province pair, would be interpreted as different (0.07 < 0.1)]. It can also be observed that the scores of labour are virtually the same at around 3.33 (see table 16).

4.4 Firm Size

4.4.1 Performance by Firm Size (totals)

The empirical data on firm performance for the three tiers of the SMME – namely **small, medium** and **micro** – is discussed below.

Figure 8: Performance by Firm Size

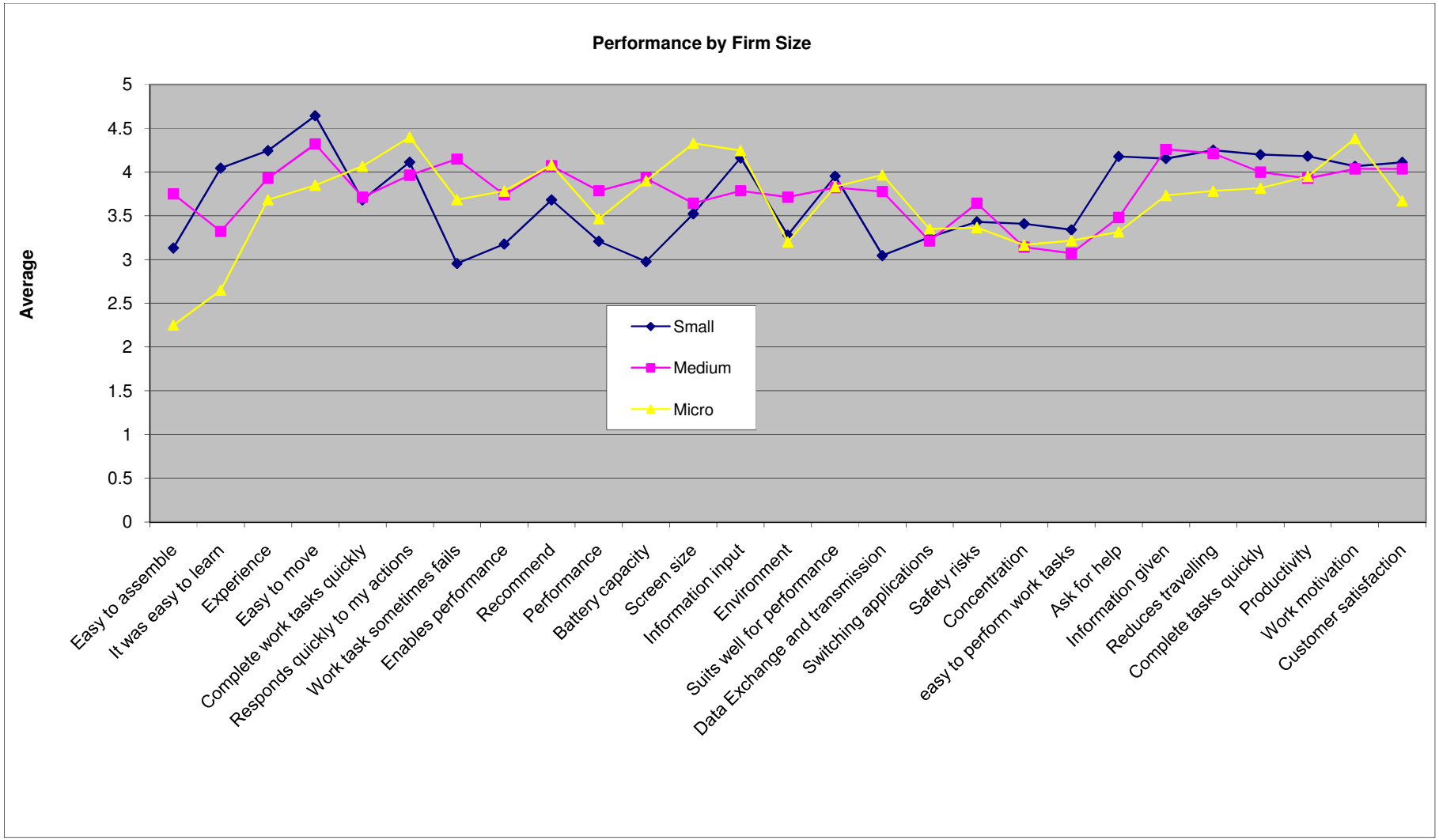


Table 18: Firm Size Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Small	27	2.96	4.64	3.7189	.49233
Medium	27	3.07	4.32	3.7943	.32728
Micro	27	2.25	4.40	3.6721	.50236
Valid N (listwise)	27				

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Small	3.7189	27	.49233	.09475
	Medium	3.7943	27	.32728	.06299
Pair 2	Small	3.7189	27	.49233	.09475
	Micro	3.6721	27	.50236	.09668
Pair 3	Medium	3.7943	27	.32728	.06299
	Micro	3.6721	27	.50236	.09668

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Small & Medium	27	.392	.043
Pair 2	Small & Micro	27	.296	.134
Pair 3	Medium & Micro	27	.498	.008

There is correlation between small and medium business size, as well as medium and micro business size as indicated by significant levels less than 0.05. While correlation does not imply causality, it is probable that causal factors are similar for a correlated pair. The fact that medium business size is correlated to both small and micro size may imply ripple effect on the other two, by addressing medium performance concerns. Other than that there is no significant difference between firm sizes, as shown by the test output.

Table 19: Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Dev	Std. Erro Mean	Lower	Upper			
Pair 1	Small - Medium	-0.07538	0.47243	0.09092	-0.26227	0.1115	-0.829	26	0.415
Pair 2	Small - Micro	0.04682	0.59034	0.11361	-0.18671	0.28035	0.412	26	0.684
Pair 3	Medium - Micro	0.1222	0.44242	0.08514	-0.05282	0.29722	1.435	26	0.163

4.4.2 Performance by Firm Size (sub-sections)

The consideration on sections of the sample sizes is categorised by the dimensions of usability, working context and productivity.

Table 20: Firm Size Statistics (sub-sections)

Samples Statistics

Variable	Mean	N	Std. Deviation
SmallU	3.6888	10	.56439
MicroU	3.5917	10	.66194
MediumU	3.8746	10	.27833
SmallW	4.1619	5	.07289
MediumW	4.0434	5	.10530
MicroW	3.9211	5	.27675
SmallP	3.5594	12	.43885
MediumP	3.6236	12	.34628
MicroP	3.6354	12	.41788

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Erro Mean	Lower	Upper			
Pair 1	SmallU - MediumU	-0.18584	0.57828	0.18287	-0.59951	0.22783	-1.016	9	0.336
Pair 2	MediumU - MicroU	0.28293	0.55941	0.1769	-0.11725	0.68311	1.599	9	0.144
Pair 3	SmallU - MicroU	0.09709	0.74035	0.23412	-0.43253	0.62671	0.415	9	0.688
Pair 4	SmallW - MediumW	0.11854	0.10186	0.04555	-0.00793	0.24501	2.602	4	0.06
Pair 5	SmallW - MichoW	0.24084	0.32458	0.14515	-0.16217	0.64385	1.659	4	0.172
Pair 6	MediumW - MichoW	0.1223	0.31548	0.14109	-0.26942	0.51402	0.867	4	0.435
Pair 7	SmallP - MediumP	-0.06413	0.47099	0.13596	-0.36339	0.23512	-0.472	11	0.646
Pair 8	SmallP - MicroP	-0.07592	0.54874	0.15841	-0.42457	0.27274	-0.479	11	0.641
Pair 9	MediumP - MicroP	-0.01178	0.35687	0.10302	-0.23853	0.21496	-0.114	11	0.911

The last part of this analysis involves cross-matching performance dimensions and firm size. According to table 26 (see Appendix A), the pairs that reflect significant difference are: 'MediumU – SmallW', 'MediumW – MicroU' and 'MediumW – MicroW.'

MediumW and MicroW are the only pair from one logical group – i.e. they are both from the working context, implying that micro firms feel less favourably about the mobile service working context compared to medium- sized firms. The other two are difficult to interpret as there is nothing common to both members in each pair – e.g. medium sized firms feeling more favourably about usability than small firms feel about working context, is hard to conceive. Otherwise, in general, the sub-samples (categories combining variables of dimension and firm size), do not indicate any difference in magnitude of favourable perception on mobile services on organisational performance.

4.5 Summary

The task of this chapter has been accomplished in that the empirical data collected from the hospitality industry SMMEs was analysed according to the stated research objectives through their corresponding hypotheses – i.e. hypothesis 1 for objective 1, hypothesis 2 for objective 2, etc. Interesting findings emerged about the surveyed population, revealing their demographics (Section A of the questionnaire), the kind of technologies and applications they use and the degree of use thereof (Section B), the factors constraining their business success (section C), and how mobile technology influences their performance (section D). The next chapter (Chapter 5) concludes the study by presenting conclusions and recommendations.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter summarised the results of this study and through analysis of the empirical data, revealed the trends and behaviour of the hospitality industry SMMEs, in terms of the research question and its supporting hypotheses. The research objectives have been met and what remains is to consolidate and critically evaluate the research findings - both theoretical and empirical – into conclusions and recommendations of the research study. After such consolidation come recommendations useful to a plethora of possible beneficiaries, including the population of hospitality SMMEs and their broader industry. .Activity in the industry is not partitioned by firm size in servicing their market; providers of ICT services, as gaps can be turned into opportunities, government could review policies and implementation, academia could adapt, etc. Ideas on possible areas of further study emanating from this research will also be highlighted towards the end of this chapter.

5.2 Review of the Research Process

It might be important to appraise the reader about this research study with respect to process and the associated thinking. The first hypothesis attempted to rank the kind of ICT technologies and associated applications effectively, to confirm (or disqualify) mobile technology as the leading platform for the research population (hospitality SMMEs). Whether mobile technology emerges as dominant or not, the need to investigate ICT related barriers to the SMMEs operational success remains compelling (hypothesis 2) as it would shed light on the kind of interventions that could help mitigate those constraining factors. The next step was to narrow down into the operational space by investigating how mobile technology services affect the SMME (hypotheses 3, 4 & 5). The last step was to do a comparative investigation, to check whether behaviour is uniform or not across the population (hypotheses 6 & 7).

The research objectives of the study, which were stated in chapter 1 of the report, are now reviewed to bring together the beginning and the end of the research study. The primary objective of the study was to assess the prospects of economic success for the hospitality industry SMME through the contribution of mobile technology, amongst other contributors. This took the form of both empirical research and a literature review, which guides the empirical effort. In support of the empirical research, the following were the specific *objectives of the study:*

1) ***To investigate whether mobile technology is the preferred majority platform for the hospitality industry SMME business in South Africa***
2) ***To investigate whether there are factors constraining ICT use for operational success of the hospitality industry SMME of South Africa***
3) ***To investigate whether mobile technology impacts the SMME in the hospitality industry of South Africa in terms of usability.***
4) ***To investigate whether mobile technology impacts the SMME in the hospitality industry of South Africa in terms of working context.***
5) ***To investigate whether mobile technology impacts the SMME in the hospitality industry of South Africa in terms of work productivity.***
6) ***To investigate whether mobile technology impact on the SMME in the hospitality industry of South Africa is differentiated according to business size (small, medium or micro) on the aspect of constraining factors.***

7) ***To investigate whether mobile technology impact on the SMME in the hospitality industry of South Africa is differentiated according to location (urban, rural, Province, etc.) on the aspect of performance*.**

It is important to note that, while the literature study played an over-arching role, each specific primary objective was met through its corresponding hypothesis (chapter 4). The discussions that follow are more of substantiation of this achievement.

5.3 Conclusions based on Research Results

The literature review (chapter 2) revealed several behaviours that could reasonably be expected to prevail in the study population. For example, the hospitality industry in South Africa was reported to be 97 % dominated by SMMEs, most of which is being owner managed; severe skill shortages are prevalent at manager/owner level; low barriers to entry in the industry prevail and decision makers have no formal ICT training (Borsenik cited by Law & Jogaratnam, 2005); the average worker is poorly skilled and poorly compensated; there is a high turnover of staff; and innovations are generally introduced and driven by suppliers rather than the hospitality industry itself (Hjalager, 2002; etc. These characteristics generally result in an adverse impact upon the speed of technology diffusion and resultant improvement in competitiveness and overall sustainability. The current study revealed astounding similarities with the above-mentioned characteristics.,

The sequence followed in this section will resemble that of chapter 4 – i.e. start to make reflections on the total sample and then proceed to look at the comparative behaviour at province and firm size levels.

5.3.1 Total Sample

The results and conclusions about the total sample are discussed according to the layout of the questionnaire.

5.3.1.1 Basic Information

The total number of responses (completed questionnaires received) is 135 SMMEs from the three randomly chosen provinces.

Gauteng has the largest proportion of respondents (60%) followed by the Free State (26.67%) and last is the Eastern Cape (18%), while the proportion may be justifiable by the actual statistics of hospitality SMMEs in these provinces, the outcome is pure chance as an equal number of questionnaires (200 in number) were distributed in each of the provinces. The types of operation or business sector within the hospitality industry, which responded to the survey, were accommodation (24.44%), Food and Beverage (62.96%), Transport (5.19%), and those who claimed to operate in both; Accommodation as well as Food and Beverage (7.41%).

The question on number of employees using mobile technology (e.g. cell phone) for work is left out of the analysis for two reasons:

1 Many respondents have indicated relatively high numbers of users –e.g. a micro-sized firm boasting 20 users, which is way above the maximum definition number of five employees- giving rise to two questions: Does this number include manual labourers who are less likely to use the technology for work but rather use it for their own personal needs (e.g. being contacted on shift arrangements, absenteeism, etc); and does the number include casual staff?
2 The question's purpose has been achieved in that every firm has confirmed that employees use the technology for work (at least two of each firm's employees use mobile technology for work purposes). Therefore the benefit of the technology has the potential to be exploited fully with the support/recognition of the firm.

5.3.1.2 Basic Technologies

The ICT technologies use can be ranked in terms of the extent of use – from the most popular mobile phones/pagers down to the lowest popular represented by 'Intranets and Extranets'. Besides the two communication techniques, mobile and telephone being clearly favourable, as well as email where use and non-use are virtually the same, the unfavourable use of the rest is extreme – ranging from 80% (PCs at 108 out of 135 responses) to 98.5% (intranets and extranets at 135 out of 135 responses).

The mobile phone (excluding pagers, as pagers have virtually disappeared from the market) demonstrates the opposite trend in terms of use – absolute demonstration of significant use (budding, established and common together) at 98.5%. This finding augurs well for the current study because the mobile phone is not only the most popular technology device used in developing economies but virtually the only device affordable to the majority of SMMEs in South Africa.

However, while the mobile platform is almost 100% available/accessible to the SMMEs just like the actual cell phone penetration, the crucial issue is the level of use that could enhance firm productivity and general well-being of the SMME. Telephone usage is average among SMMEs i.e. symmetrical around the midpoint of 'budding'. It is important to note that the majority of these telephones are in urban areas where the supporting infrastructure exists. For reasons such as cost of maintenance, flexibility of use at any timeor place, the market of telephones is overtaken by cell phones - even though their value remains significant. Most firms have both modes of communication.

The above discussion on basic ICT technologies has proven the first (hypothesis 1): ***Mobile technology is the majority platform for the hospitality industry SMME business.*** This was done by establishing the unprecedented dominance of mobile over other technologies. The basis of the study – postulating mobile as the key platform – has been confirmed. Then the wish of the researcher to establish the extent of this use to enhance performance is justified.

5.3.1.3 Applications

The use of ICT applications is unfavourable (more non-use than use throughout the listed applications. The distribution of this unfavourable non-use is, however, more widely spread than for basic technologies. The spread has two categories:

- Moderate, consisting of internet (74%), 'stock and inventory control' (58.3%), 'distribution/warehouse management' (59%), and 'delivery planning and control' (67.4%); and
- Extreme, comprising the rest of the listed applications.

It can be inferred that **the benefits of these ICT applications can therefore not be fully realised by SMMEs irrespective of the technologies at their disposal**. This problem is exacerbated by the absence, or at least non-use, of the requisite technologies (section 4.2.2.1).

5.3.1.4 Technologies/Applications Enablers and Inhibitors

- **Technologies/Applications Enablers:** 9.6% of the total sample perceives all technologies and applications as essential enablers. This means that less than 10% of the firms believe all the listed technologies and applications are important for their growth. The situation deteriorates quickly as one considers individual technologies and applications.
- **Technologies/ Applications Inhibitors:** For this measurement, significant (5% or more SMMEs) interest, is observed with a few (7) parameters namely; 'All', internet, PCs, Landline, EDI, mobile phone, 'intranet and extranet', and 'Delivery Planning and Control'. The rest of the parameters remain insignificant.
- **Enablers and Inhibitors Combined:** Some patterns were observed for this combination. According to this researcher the (patterns) are random.

  Because of the predominantly 'non-existent' or 'embryonic' stages of use, as opposed to 'established' or 'common' use of the technologies and applications, the responses about inhibitors and enablers bear little significance in terms of intervention.

5.3.1.5 Investments and Constraints

The lowest perceived impediment or barrier was identified as labour, with only 41.67% of respondents feeling strongly worried by challenges associated with labour. A possible explanation of this behaviour could include unpreparedness to acknowledge this problem as these SMMEs are run by owners who 'play referees and player' at the same time – i.e. they would not see themselves as obstructing their own progress.

'Labour' is followed by labour-related factors of 'understanding staff' and 'skills/training', both at 65.16%. This finding is congruent with literature, particularly when these businesses are family operations where participation is more often a right than an appropriate set of job credentials and even more of a limitation than their financial muscle to attract and retain high calibre skills. However, the fact that these factors rate at 65 % means the majority of the SMMEs surveyed have come to terms with reality. The most serious barrier is 'access to a telephone network' at 76.52%. Therefore, as can be expected, the landline phone is the second most popular technology used after the cell phone. The perceived reliability and cost effectiveness of a landline phone, particularly for the low end user, who does not run complex systems and applications, increases use of the telephone.

5.3.1.6 Usability

The analysis of data for this study (section 4.2.5.1) indicated that **usability** is not significantly favourable. This means that mobile technology does not positively impact the SMME in the hospitality industry of South Africa in terms of usability; and thus hypothesis 3 is not true (or disproved). The value of this finding is questionable because the firms work in different environments (location, sector, infrastructure, market capacity, etc.)and expecting them to respond to a mobile service that was not specified in the questionnaire is problematic. The logical interpretation of this section is a generalist one that spans the entire spectrum of services that the responding firm (individual?) is exposed to and feels comfortable to share And this implies a need for further enquiry into the circumstances surrounding the state of affairs, ahead of effecting remedial measures.

5.3.1.7 Working Context

In the preceding analysis (section 4.2.5.2), it was discovered that **Working Context** is not significantly favourable (sig. value: 0.246> 0.05). This means that mobile technology does not positively impact the SMME in the hospitality industry of South Africa in terms of **Working Context.** As with usability, hypothesis 4 is not true. There is no ambiguity in this section and thus the finding is legitimate. The literature section was emphatic on the need for intervention in this area. The finding therefore confirms a continued need to improve the working environment through innovation and/provision of support for the SMME to

access high end facilities with ample flexibility and backup – 3G, smart phones, GPRS, skills development, improved broadband access, etc.

5.3.1.8 Productivity

Hypothesis 5, which read**: 'Mobile technology positively impacts the SMME in the hospitality industry of South Africa in terms of work productivity'** was successfully proven. Even though the measured variables are few, there is clarity among the SMMEs that their work productivity improves through the use of mobile technology. This is the climax of the study because what was investigated was exactly the impact of the technology on the operational success of the SMME. This finding is not just a perception of what mobile technology could do for industry, but as the questions are framed, the actual experience – e.g. work tasks completion rate and customer satisfaction levels, are arguably a reality.

5.3.1.9 Organisational Performance

The overall view of the SMME is that mobile technology actually does, or at least potentially can, improve their business operations. Even though there were some discrepancies such as question clarity with usability and lack of certainty on Usability and Working context among the SMME, the empirical evidence is convincing. This is confirmed by all the literature surveyed, that commented on the benefit of mobile technology. The literature studied also suggest optimal benefits by empowering the SMME through providing ICT infrastructure (technologies and applications) and addressing constraints such as those listed in section C of the questionnaire.

5.3.1.10 Additional Comments

Only a handful (8) of the 135 participants made input regarding additional comments. These comments had, however, mostly been addressed by earlier sections of the questionnaire. While the quantitative aspects of the situation: a very low response rate (only 6 %), that diminishes the weight of the inputs and the repetition of issues already addressed, the qualitative aspect pertaining to what a respondent actually meant remains elusive, particularly when the command of the language was clearly lacking to a point that

one is tempted to doubt that the respondent understood the information sought through the questionnaire. This would be a possible shortcoming of the study.

The manner in which the respondents answered open-ended questions, where they were requested to list additional technologies/applications of importance to their business (Section B of the questionnaire) and identifying those technologies/applications that may enable (question 8) or inhibit (question 9) business growth indicated possible literacy problems, also recorded by several researchers. If this were true, then the data collected is not a true reflection of the investigated environment.

5.4 Provinces

Results of the analysis of the behaviour of the SMMEs according to provincial base were that the perceptions cannot be differentiated by location (province). This dispels the belief that wealthier provinces like Gauteng, boasting better infrastructure and being richer (with a higher proportion of working people) markets close to home base would advantage their SMMEs.. Maybe the issue of the digital divide affects provinces– i.e. these SMMEs derive no benefit from the situation. An example of such an experience was seen with the 2010 World Cup where the majority of the SMMEs did not benefit anything (even worse, some lost out in the process, as they were promised better returns out of the event, by bigger players.).

5.5 Firm Size

This research established that there is a correlation between small- and medium- as well as medium- and micro- sized firms. While correlation does not imply causality, it is probable that causal factors are similar for a correlated pair. The fact that medium is correlated to both small and micro may imply ripple effect on the other two by addressing medium performance concerns.

In cross-matching performance dimensions and firm size, it was discovered that there are no significant patterns observed, except for 'Medium-Working Context and Micro-Working Context.' - i.e. within the working context, micro firms feel less favourable about the mobile service compared to medium- sized firms. While action can be justified for this particular pair, because it is only one out of nine possibilities, its significance may be questionable and thus worth further investigation.

5.6 Recommendations

Recommendations of this study are listed below:

- **Demographics**: A more careful approach to the population that seeks to ensure that respondents understand the questionnaire, in order to gather relevant/accurate information would improve the validity of the results.
- **Basic Technologies and Applications**: Provide some essentials to kick-start mobile technology beneficiation for the SMME. This includes participation by all stake holders including government and big businesses.
- **Barriers**: Same recommendation as with basic technologies and applications.
- **Organisational Performance**: As performance is in good state, it is urgent to follow-up and investigate the detailed state of affairs and intervene appropriately. This is a domain of several players, like the individual SMMEs directly, or through cooperatives, government and other well intending players. For example, provide some inexpensive interventions such as skills through SETA (state education and training agencies), internet hotspots, etc.
- **Overall:** Follow-up on the discrepancies such as clarity of questions - e.g. clarify the kind of services investigated. It is also important to follow-up on those findings that emerged different from previous outcomes as described in the literature studied -e.g. why labour is not seen as an important factor that needs the most improvement for enhanced business success.

5.7 Areas for Future Research

The following list provides a few areas this researcher feels are worth pursuing.

- Repeat the study for other locations (e.g. Provinces) taking into account the learning from this study
- Investigate why the state of affairs is as is at this time – why and how did the situation reach this level in the mist of so many opportunities afforded by the business environment. Answering the why question could provide uniformity of understanding of the real situation and enhance the development of possible effective solutions.
- Investigate the best intervention strategies and establish, with the affected stakeholders, how the strategies could be implemented and supported. For example: determine which technologies/applications to start off with, identify the barrier most urgently inhibiting/enabling progress and find out which services are most, relevant and urgently sort after etc.
- Investigate the market in terms of interests/needs, potential for business (customer profitability), customer satisfaction, etc.

5.8 Summary

Mobile technology did emerge as the technology of choice, but beyond its popularity the business environment is not conducive for a meaningful impact on the hospitality industry SMME. This is evidenced by the by the absence of and/ or lack of use of the key technologies and applications, as well as the dominance of constraining factors for the SMME. That the SMME believes in mobile technology's capacity to positively impact productivity and organisational performance in general is good news. The first step to adoption and beneficial use is belief in the technology capabilities – i.e. the growth of mobile telephony is of significance because, as most researchers agree, widespread acceptance of mobile ICT is a precursor to mobile e-commerce (m-commerce).

This study has also helped in identifying potential problem areas (lack of use and existence of constraining factors), and this is a good lead towards the formulation and implementation of an intervention strategy by the stakeholders. This situation holds true, even for the smaller categories as demarcated by firm size and province.

BIBLIOGRAPHY

Abrahamse, J. 2008. *Towards a framework, through action research, for mobile computi diffusion and adoption within a small-to-medium South African constructi company*..VDM Verlag Dr Muller e.K, Saarbrucken, Germany

Berry. A, Blottnitz.M, Cassim.R, Kesper.A, Rajaratnam.B and Ernstvan Sevenster.D. 200 *The Economics of SMMEs in South Africa*.

http://www.google.co.za/search?hl=en&safe=off&&sa=X&ei=ha5ETOWnLNObOI-22JIN&ved=0CBMQBSgA&q=Berry,+Blottnitz,+Cassim,+Kesper,+Rajaratnam+%26+Ern+van+Seventer,+2002&spell=1 (28/6/2010)

Blumberg, B., Cooper, D. R. and Schindler, P. S. (2005) *Business Research Metho* London: McGraw-Hill.

Braathen.E and May.J .2007. Research Proposal for 2007-2010 to the Research C operation Programme between South Africa and Norway (SOUTH AFRICA); School Development Studies, University of KwaZulu-Natal

Developing a Questionnaire for Measuring Mobile Business Service Experienc http://delivery.acm.org/10.1145/1410000/1409247/p53-vuolle.pdf?key1=1409247&key2=5460759721&coll=GUIDE&dl=GUIDE&CFID=9755561 &CFTOKEN=72507971 (4/7/2010).

Drostky, G.A.P. 2008. Ownership and acquisition of cellular products by Tshwa University of Technology students. Tshwane University of Technology.Pretoria. Nex (http://www.entrepreneur.com/tradejournas/pub/4496.html) (28/6/2010)

Featonby M. 2006. M-Commerce in SMMEs: an investigation into the barriers a motivators to the adoption of mobile commerce by cellular subscribers. Cape Peninsu University of Technology. Cape Town. Nexus.

Ghosh, B. N. 2003. *Scientific Method and Social Research*, Revised ed. New Dell Sterling Publishers Pty Ltd.

Gumede Z.P. 2004. The use of cellular technologies by students at the University Zululand. University of Zululand. Durban. Nexus

Hair, J.F., Bush, R.P. and Ortinau, D.J. 2000. *Marketing Research: A Practical Approa for the New Millennium.* Boston: Irwin McGraw-Hill.

http://africa.bizcommunity.com/196/459.htmll (28/6/2010).
http://en.wikipedia.org/w/index.php?tittle=mobile-commerce&action=edit&section=15
http://en.wikipedia.org/wiki
http://sampleresearchproposal.blogspot.com/2010/01/expanding-existing-business-to-canada.html
http://www.cellular-news.com/story/10950.php. Soweto Leading Africa in M-commer Usage (4/7/2010).
http://www.it-online.co.za/content/view/2314628/142/ World Cup spurs SA's ICT industry (4/7/2010)
Hu, Q. and Quan, J. 2009. *Information Intensity and Impact of IT Investments*. http://www.google.co.za/search?hl=en&source=hp&q=Hu+Quan+Information+Intensity+and+Impact+of+IT+Investments+&btnG=Google+Search&aq=f&aqi=&aql=&oq=&gs_rfai= (4/7/2010).
Hussey, J. and Hussey, R. 1997. *Business Research. A Practical Guide for undergraduate and post graduate students*. London: MacMillan.
Inman, M.C. 2004. An investigation into the extended use of mobile phone technology in the cellular industry in Port Elizabeth. Nelson Mandela Metropolitan University: Port Elizabeth. Nexus

Joanab, 2007. Rich ethnographic reports about the uses of ICT in low-income communities. http://culturematters.wordpress.com) June 28,2010.

Miller.J, Esselaar.P and Associates. 2002. ICT *Diffusion and ICT Application in Usage Sectors*. http://www.trigrammic.com/downloads/ICT%20Difussion%20-%20International%20Scan.pdf) June 28,/2010.

Olsen.K Characteristics of the Hospitality Industry (http://istrendshospitality.blogspot.com/ July 20, 2009

Olsen.K IS Use in the Hospitality Industry (http://istrendshospitality.blogspot.com/) September 26, 2009

Polonsky, M. J. and Waller, D. S. 2004. *Designing and managing a Research Project: A Business Student Guide.* New Delhi: Response Books.

Pynn, V. 2010. *Act Now to Secure Your Future, Hotels Told in New Industry Report***.** www.amadeus.com/hotelit/white-paper.html) July 42010).

QMX Support Services, Inc. Toronto: Ontario, Canada

Rauvinen, P. 2005. *Diffussion of digital mobile telephony: are developing countries different. Telecom Policy:* Science direct. http://www.google.co.za/search?q=Rouvinen,+P.+2005.+Diffusion+of+digital+mobile+telephony:+are+developing+countries+different.+Telecom+Policy:+Science+direct.&hl=en&safe=off&ei=GLRETLDXI8StOL30sIQN&start=40&sa=N) July 4/2010.

Schiffman, L. G. and Kanuk, L. L. 2004. *Consumer Behavior 8th ed.* Upper Saddle River, New Jersey: Pearson Prentice Hall.

Sheng, H., Nah, F.F., and Siau, K. 2005. *Strategic implications of mobile technology: A case study using Value-Focused Thinking*. Journal of Strategic Information Systems, 14, 269-290.

Stoica, M. Miller.D.W, Darryl W. and Stotlar.D, 2005. *'New Technology Adoption, Business Strategy and Government Involvement: The Case of Mobile Commerce'*, Journal of Nonprofit & Public Sector Marketing, 13: 1, 213 — 232

Streicher, P. 2009. http://bulksms.2way.co.za/w/whats_new.htm.) July 4, 2010.

UCT Centre for Innovation and Entrepreneurship (CIE) based at the UCT Graduate School of Business. 2009. *UCT research reveals digital divide amongst SMMEs* http://www.skillsportal.co.za/learning/business_schools/090601-uct-gsb-digital-divide-smme-ict-business.htm.

Vuolle, M., Tiainen, M., Kallio, T., Vainio, T., Kulju, M. and Wigelius, H. 2009. (http://www.hindawi.com/journals/ahci/2008/680159.html) (4/7/2010)

Wegner, T.2005. Applied Business Statistics: Methods and Applications. Juta; Lansdowne.

APPENDICES

Appendix A

SURVEY OF THE HOSPITALITY INDUSTRY SMME ON IMPACT OF MOBILI TECHNOLOGY ON PERFORMANCE

SECTION A: BASIC INFORMATION

1. Name of company (optional): _____

2. Location/Area: _____

3. Province: _____

4. Hospitality Industry Business Sector (e.g. accommodation): _____

5. Business Size: Small/Medium/Micro

6. Number of employees using Mobile Technology (e.g. cell-phone) for work: _____

SECTION B: TECHNOLOGY STATUS AND APPLICATION

7. Please indicate the extent of your firm's use in each of the following cases:

1=non-existent, 2=embryonic, 3=budding, 4=established, 5=common

Basic Technologies		**1**	**2**	**3**	**4**	**5**
ICT Hardwar	PC					
	Servers/mainframe					
ICT Network	Servers/mainframe					
	Servers/mainframe					
	Wide Area Networks (WANs					
	Virtual Private Networks (VPNs					
	Intranets and Extranet					
	The Interne					
Communications	Mobile phones/ pager					
	Landlines (telephones					
	E-mail (with customers an suppliers)					
	Electronic Data Interchange (EDI					

	e.g. automated order processing					
	Teleconferencing / conference call					
	Videoconferencin					
Applications		**1**	**2**	**3**	**4**	**5**
Information Acquisition an Management	Using CD-ROM source					
	Via Intranets and Extranet (Company informatior dissemination, document transfer, e mail, web access)					
	Via the Internet (advertising purchasing, entertainment, makin sales					
Streamlining Business Process	Business Planning and Suppor Activities (Finance/accounting, dat storage and retrieval, payro activities, business and strategi planning, training)					
	Marketing and sales e.g.: throug electronic promotional materials					
	Customer service e.g.: databas records of customers, telephone ca centres					
	Research, development, design an					

	production e.g.: CAD/CAM					
	Purchasing/procurement e.g.: EC					
	Manufacture/process control e.g MRP (manufacturing resourc planning)					
	Stock and inventory contrc					
	Distribution /warehous management					
	Delivery planning and contrc					
Transforming Business processes	Informational services e.g. quotin prices, answering queries, takin orders by e-mail					
	Transactions on line/e-commerce					
	Teleworking (employees have remot access facilities					

8. Which of the above technologies and application areas do you believe need the most emphasis for growth of your firm?

9. Which of the above technologies and application areas do you believe are the major inhibitors to achieving your business/organisational goals?

SECTION C: INVESTMENTS AND CONSTRAINTS

10. Which of the following factors are constraining the use of information and Communication technologies in your organisation? Please indicate the extent to Which you feel each factor is a barrier, ticking one box in each row where **1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree**

Barriers	**1**	**2**	**3**	**4**	**5**
Cost of equipment					
Availability of technical support					
Reliable power supply					
Access to telephone network					
Internet access providers					
Telecommunications bandwidth					
Staff knowledge of equipment					
Staff understanding regarding the value of use					
Availability of online resource material					
Cost of telecommunications within country					
Cost of international telecommunication					
Lack of air-conditioned office					
Government support (incentives, policy, etc.)					
Infrastructure					
Promotion of wireless networking					
Mentoring (Government, Private sector, etc.)					
Skills/Training (costs, time, capacity, etc.)					
Device limitations (screen size, functions, etc.)					
Labour					
Other (please specify)					

SECTION D: ORGANISATIONAL PERFORMANCE

Please indicate the extent to which you agree with each of the statements for the given dimensions by ticking one box in each row where **1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree**

Dimensions	**Examples of statements**	**1**	**2**	**3**	**4**	**5**
Installation	The mobile service was easy t assemble, install, and/or setu into the mobile device					
Learnability	It was easy to learn to use th mobile service					
	Experience with other mobil services (or products) made easier to operate this service					
Ease of use	It is easy to move from one pa of a task to the next with th mobile service					
Efficiency	I can complete my work task quickly by using the service wit a mobile device					
	The mobile service respond quickly to my actions					
Effectiveness	The work task sometimes fail because of the mobile service					
	The mobile service enable quick, effective and economica performance of work tasks					
User satisfaction	I would recommend the mobil service also for others doing th same work					
	Using the mobile service i performing the work tasks i					

	pleasing					
Factors related to Mobil work context	The battery capacity of th mobile device is sufficient for th use of the service for work tasks					
	The screen size of the mobil device is adequate for using th service for work tasks					
	Inputting information to th mobile device is easy					
	Sometimes, the environmer (such as coldness, sunshine darkness) makes the use of th service difficult					
	The mobile device suits well fc performing my work tasks whil on the move					
	Exchanging and transmission c data between the mobile servic and other products (e.g computer, other mobile devices is easy					
	Switching between the differer applications (e.g., calls and wor task) in the mobile device is easy					
Safety	The use of the mobile servic has caused me safety risks whil on the move					
	I sometimes have to full concentrate on using the mobil service and cannot observe th environment					
	It is easy to perform work tasks i a hurry with the mobile service					
Support	I always know who to ask fc help if I have problem performing work tasks with th					

	mobile service					
	The help information given by th mobile service is useful					
Impacts on Mobile wor productivity	Using the mobile service in m job reduces travelling from and t the office during the work day					
	The mobile service helps m complete my work tasks quickly					
	Using the mobile service in m job increases my productivity					
	Using the mobile service in m job increases my work motivatio					
	Customer satisfaction improve through mobile technolog resulting in repeat business					

Please state any further input you believe might help improve business performance through mobile technology:

Thank you for participating in this survey.

Appendix B

Table 21: Eastern Cape Province Barriers

Barriers	1	2	3	4	5	Score	
Cost of equipment	1	3	1	6	7	3.833	
Availability of technical	1	2	2	4	8	3.941	
Reliable power supply	4	1	3	2	7	3.412	
Access to telephone network	2	1	4	0	10	3.882	
Internet access providers	1	3	1	4	7	3.813	
Telecommunications bandwidth	0	1	2	2	11	4.438	
Staff knowledge of equipment	0	3	1	2	11	4.235	
Staff understanding	2	3	1	2	9	3.765	
Availability of online resource	1	2	3	2	9	3.941	
Cost of telecommunications	1	5	1	3	7	3.588	
Cost of international telecom	1	6	1	1	8	3.529	
Lack of air-conditioned office	2	2	2	1	10	3.882	
Government support	0	5	2	8	2	3.412	
Infrastructure	1	8	1	4	4	3.111	
Promotion of wireless networking	0	5	2	1	10	3.889	
Mentoring	3	3	3	3	5	3.235	
Skills/Training	1	4	3	3	7	3.611	
Device limitations	1	2	3	2	7	3.8	
Labour	2	5	1	1	7	3.375	
Overall	Average Std. Dev					3.721 0.331	

Table 22: Free State Province Barriers

Barriers	1	2	3	4	5	Score	
Cost of equipment	1	4	3	13	15	4.028	
Availability of technical	1	2	8	10	15	4	
Reliable power supply	3	0	4	15	14	4.028	
Access to telephone network	3	0	4	14	15	4.056	
Internet access providers	0	4	2	14	16	4.167	
Telecommunications bandwidth	0	8	5	15	8	3.639	
Staff knowledge of equipment	2	4	2	19	9	3.806	
Staff understanding	0	5	8	13	10	3.778	
Availability of online resource	1	1	8	14	12	3.972	
Cost of telecommunications	1	4	3	17	11	3.917	
Cost of international telecom	1	9	3	8	14	3.714	
Lack of air-conditioned office	3	3	3	17	9	3.743	
Government support	0	4	7	11	14	3.972	
Infrastructure	0	0	3	23	9	4.171	
Promotion of wireless networking	1	8	3	15	9	3.639	
Mentoring	3	3	1	18	11	3.863	
Skills/Training	1	8	2	12	12	3.743	
Device limitations	1	3	8	12	12	3.861	
Labour	2	5	14	11	4	3.278	
Overall	Average Std. Dev					3.862 0.215	

Table 23: Gauteng Province Barriers

Barriers	1	2	3	4	5	Total	Rank
Cost of equipment	3	18	5	20	33	79	
Availability of technical	2	7	16	14	40	79	
Reliable power supply	10	0	11	23	35	79	
Access to telephone network	5	2	10	31	31	79	
Internet access providers	2	18	4	31	25	80	
Telecommunications bandwidth	2	14	10	13	41	80	
Staff knowledge of equipment	3	24	3	14	36	80	
Staff understanding	2	11	17	13	37	80	
Availability of online resource	1	12	10	33	24	80	
Cost of telecommunications	1	21	7	9	42	80	
Cost of international telecom	1	21	3	6	49	80	
Lack of air-conditioned office	10	12	1	21	36	80	
Government support	2	14	7	34	23	80	
Infrastructure	1	26	3	2	47	79	
Promotion of wireless networking	1	13	10	19	36	79	
Mentoring	6	7	4	29	34	80	
Skills/Training	5	17	5	13	39	79	
Device limitations	0	6	14	6	53	79	
Labour	6	7	35	14	18	80	
Overall	Average Std. Dev					3.862 0.189	

Table 24: Dimensions by Firm Size

Dimensions	Small	Medium	Micro
Easy to assemble	3.1333	3.75	2.25
It was easy to learn	4.0455	3.3214	2.65
Experience	4.2444	3.9286	3.6833
Easy to move	4.6444	4.3214	3.85
Complete work tasks quickly	3.6818	3.7143	4.0667
Responds quickly to my actions	4.1136	3.9643	4.4
Work task sometimes fails	2.9556	4.1481	3.6833
Enables performance	3.1778	3.7407	3.7833
Recommend	3.6818	4.0714	4.0833
Performance	3.2093	3.7857	3.4667
Battery capacity	2.9767	3.9286	3.9
Screen size	3.5238	3.6429	4.3279
Information input	4.1628	3.7857	4.2459
Environment	3.2791	3.7143	3.2
Suits well for performance	3.9535	3.8214	3.8333
Data Exchange and transmission	3.0465	3.7778	3.9672
Switching applications	3.2558	3.2143	3.35
Safety risks	3.4318	3.6429	3.3667
Concentration	3.4091	3.1429	3.1667
easy to perform work tasks	3.3409	3.0714	3.2167
Ask for help	4.1778	3.4815	3.3167
Information given	4.1556	4.2593	3.7333
Reduces travelling	4.25	4.2143	3.7833
Complete tasks quickly	4.2	4	3.8167
Productivity	4.1818	3.9286	3.95
Work motivation	4.0667	4.037	4.3833
Customer satisfaction	4.1111	4.037	3.6721
Average	3.7189	3.7943	3.6721

Table 25: Dimensions& Size Correlations

		Small	SmallW	Small	Medium	MediumW	Medium	Micro	MicroW	Micro
SmallU	Pearson Correlatio	1	.196	.279	.293	.403	.314	-.687	-.746	.785
	Sig. (2-tailed)		.587	.435	.411	.248	.378	.200	.148	.115
	N	10	10	10	10	10	10	5	5	5
SmallW	Pearson Correlatio	.196	1	.550	-.200	-.228	-.603	-.618	-.035	.804
	Sig. (2-tailed)	.587		.099	.579	.527	.065	.267	.956	.101
	N	10	10	10	10	10	10	5	5	5
SmallP	Pearson Correlatio	.279	.550	1	.214	-.201	-.359	-.861	-.604	.324
	Sig. (2-tailed)	.435	.099		.553	.578	.309	.061	.281	.595
	N	10	10	10	10	10	10	5	5	5
MediumU	Pearson Correlatio	.293	-.200	.214	1	.298	.180	-.241	-.824	-.236
	Sig. (2-tailed)	.411	.579	.553		.346	.575	.696	.086	.703
	N	10	10	10	12	12	12	5	5	5
MediumW	Pearson Correlatio	.403	-.228	-.201	.298	1	.578*	.384	.676	-.389
	Sig. (2-tailed)	.248	.527	.578	.346		.049	.523	.210	.517
	N	10	10	10	12	12	12	5	5	5
MediumP	Pearson Correlatio	.314	-.603	-.359	.180	.578*	1	.716	-.284	-.691
	Sig. (2-tailed)	.378	.065	.309	.575	.049		.174	.644	.196
	N	10	10	10	12	12	12	5	5	5
MicroU	Pearson Correlatio	-.687	-.618	-.861	-.241	.384	.716	1	.393	-.581
	Sig. (2-tailed)	.200	.267	.061	.696	.523	.174		.513	.304
	N	5	5	5	5	5	5	5	5	5
MicroW	Pearson Correlatio	-.746	-.035	-.604	-.824	.676	-.284	.393	1	-.203
	Sig. (2-tailed)	.148	.956	.281	.086	.210	.644	.513		.743
	N	5	5	5	5	5	5	5	5	5

MicroP	Pearson Correlatio	.785	.804	.324	-.236	-.389	-.691	-.581	-.203	1
	Sig. (2-tailed)	.115	.101	.595	.703	.517	.196	.304	.743	
	N	5	5	5	5	5	5	5	5	5

Table 26: Tests on Dimensions and Firm Size

		Paired Differences					t	df	Sig. (2 tailed)
					95% Confidence Interval of th Difference				
		Mean	Std. Deviation	Std. Erro Mean	Lower	Upper			
Pair	SmallU - SmallW	-.1858	.57828	.18287	-.59951	.22783	-1.01	9	.336
Pair	SmallU - SmallP	.09709	.74035	.23412	-.43253	.62671	.415	9	.688
Pair	SmallU MediumU	.25075	.57711	.18250	-.16209	.66359	1.374	9	.203
Pair	SmallU MediumW	.11453	.52322	.16546	-.25976	.48882	.692	9	.506
Pair	MediumP SmallU	-.0313	.60047	.18989	-.46086	.39824	-.165	9	.873
Pair	MicroU - SmallU	.21204	.62611	.28000	-.56537	.98945	.757	4	.491
Pair	MicroW - SmallU	.09350	.65608	.29341	-.72113	.90813	.319	4	.766
Pair	MicroP - SmallW	.11394	.21656	.09685	-.15495	.38283	1.176	4	.305
Pair	SmallP - SmallW	-.2829	.55941	.17690	-.68311	.11725	-1.59	9	.144
Pair 10	MediumU SmallW	-.4365	.50572	.15992	-.79836	-.07482	-2.73	9	.023
Pair 11	MediumW SmallW	-.3003	.46214	.14614	-.63097	.03023	-2.05	9	.070
Pair 12	MediumP SmallW	-.2171	.65451	.20697	-.68536	.25106	-1.04	9	.321
Pair 13	MicroU - SmallW	.35478	.41202	.18426	-.15680	.86636	1.925	4	.126
Pair 14	MicroW - SmallW	.23624	.38146	.17059	-.23740	.70988	1.385	4	.238
Pair 15	MicroP - SmallP	.62108	.75742	.33873	-.31938	1.56154	1.834	4	.141
Pair 16	MediumU SmallP	-.1536	.68579	.21687	-.64425	.33693	-.709	9	.497
Pair 17	MediumW SmallP	-.0174	.78578	.24848	-.57955	.54467	-.070	9	.946
Pair 18	MediumP SmallP	.06578	.92272	.29179	-.59429	.72585	.225	9	.827

Pair 19	MicroU - SmallP	.86192	.86392	.38635	-.21077	1.93461	2.231	4	.090
Pair 20	MicroW - SmallP	.74338	.86803	.38820	-.33443	1.82119	1.915	4	.128
Pair 21	MediumU MediumW	-.0641	.47099	.13596	-.36339	.23512	-.472	1	.646
Pair 22	MediumU MediumP	-.0759	.54874	.15841	-.42457	.27274	-.479	1	.641
Pair 23	MediumU MicroU	-.5827	.50649	.22651	-1.21163	.04615	-2.57	4	.062
Pair 24	MediumU MicroW	-.4642	.57386	.25664	-1.17674	.24834	-1.80	4	.145
Pair 25	MediumU MicroP	-.3419	.61148	.27346	-1.10116	.41736	-1.25	4	.279
Pair 26	MediumW MediumP	-.0117	.35687	.10302	-.23853	.21496	-.114	1	.911
Pair 27	MediumW MicroU	-.3833	.10478	.04686	-.51344	-.25324	-8.18	4	.001
Pair 28	MediumW MicroW	-.2648	.08601	.03846	-.37159	-.15801	-6.88	4	.002
Pair 29	MediumW MicroP	-.1425	.33415	.14944	-.55741	.27241	-.954	4	.394
Pair 30	MediumP MicroU	-.2605	.39749	.17776	-.75405	.23305	-1.46	4	.217
Pair 31	MediumP MicroW	-.1419	.48690	.21775	-.74652	.46260	-.652	4	.550
Pair 32	MediumP MicroP	-.0196	.66835	.29889	-.84952	.81020	-.066	4	.951
Pair 33	MicroU - MicroW	.11854	.10186	.04555	-.00793	.24501	2.602	4	.060
Pair 34	MicroU - MicroP	.24084	.32458	.14515	-.16217	.64385	1.659	4	.172
Pair 35	MicroW - MicroP	.12230	.31548	.14109	-.26942	.51402	.867	4	.435
Pair 36	SmallU - MicroP	.02880	.39549	.17687	-.46226	.51986	.163	4	.879