



GORDON INSTITUTE
OF BUSINESS SCIENCE
University of Pretoria

**Resuscitating location-based service mechanisms to harness trust in
mobile commerce adoption**

Laven Moodley

28530102

A research project submitted to the Gordon Institute of Business Science,
University of Pretoria, in partial fulfilment of the requirements for the degree of
Master of Business Administration.

9 November 2011

Abstract

Mobile commerce (m-commerce) has created the opportunity to transact anywhere, anytime, transcending barriers of space and time. However, this freedom has been found to be intrusive in the lives of mobile users, acting counterproductively to trust building and exacerbating the reluctance to adopt m-commerce. The research design was a quantitative study that pivoted around the concept of location-based services (LBS) for mobile users and was focused on understanding specific behaviours around usage and trust under pre-determined conditions of connecting (particular place, particular time), push and pull mechanisms, brand loyalty and social network recommendations. The study was conducted through an online questionnaire with a non-probability sample of 189 individuals. Factors including push and pull LBS mechanisms, brand loyalty and social network recommendations were found to exhibit significant influence on mobile users trust and propensity to transact in m-commerce. No empirical support was found between the connecting conditions with mobile users and adoption of m-commerce, eliciting future research in this area. These results contribute to the body of research regarding mobile commerce by extending the existing understanding of its use through application with push and pull location-based services.

Keywords

trust, location-based services, m-commerce, push, pull

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Laven Moodley

Signature:

9 November 2011

Acknowledgements

This is a special thank you to all my supporters whose kindness and strength provided me impetus in achieving this glorious outcome.

- To my darling wife, Janice; you have been my compass through this entire experience and continue to remain the wind beneath my wings. Our babies Priyal, Milan and Dhiyal – daddy loves you all for allowing him to be all that he can be for you. There are great times ahead for all of us...loads of family time.
- To my brother, Rishen; thank you for being my most trusted of friends; but more importantly for being there in my time of need.
- To my supervisor Kerry Chipp; thank you for your encouragement and your wisdom. This work would not have reached the level it needed to where it not for your guidance.
- To Honest Muchabaiwa; thank you for your statistical support.

Table of Contents

Abstract	i
Declaration.....	iii
Acknowledgements	iv
Chapter 1: Introduction to research problem	1
1.1. Research title.....	1
1.2. Research problem	1
1.3. Research objectives	8
Chapter 2: Literature review.....	10
2.1. Introduction	10
2.2. M-commerce	10
2.3. Trust.....	16
2.4. Location-based services (LBS).....	27
2.5. Mobile vendors	32
2.6. Brand loyalty.....	35
2.7. Social networks	38
2.8. Conclusion.....	43
Chapter 3: Research Hypotheses	45

3.1.	Introduction	45
3.2.	Hypothesis 1	46
3.3.	Hypothesis 2a	46
3.4.	Hypothesis 2b.....	46
3.5.	Hypothesis 3a	47
3.6.	Hypothesis 3b.....	47
3.7.	Hypothesis 4a	47
3.8.	Hypothesis 4b.....	48
3.9.	Hypothesis 4c.....	48
3.10.	Hypothesis 4d.....	49
3.11.	Hypothesis 5a	49
3.12.	Hypothesis 5b.....	49
	Chapter 4: Research methodology	51
4.1.	Introduction	51
4.2.	Research design.....	51
4.3.	Unit of analysis.....	52
4.4.	Population.....	52
4.5.	Sample size and sampling method.....	52
4.6.	Research instrument	54
4.7.	Data gathering	57

4.8.	Analysis of data	58
4.8.1	Cronbach’s alpha coefficient	58
4.8.2	Independent samples t-test	59
4.8.3	Correlation analysis	60
4.8.4	Significance level	61
4.9.	Limitations of the research	61
4.10.	Conclusion.....	62
Chapter 5: Results		63
5.1.	Introduction	63
5.2.	Sample characteristics.....	63
5.3.	Respondents behaviours and beliefs within mobile connectivity.....	67
5.4.	Hypothesis testing	71
5.4.1	Hypothesis 1	71
5.4.2	Hypothesis 2a.....	76
5.4.3	Hypothesis 2b.....	77
5.4.4	Hypothesis 3a	79
5.4.5	Hypothesis 3b.....	80
5.4.6	Hypothesis 4a.....	82
5.4.7	Hypothesis 4b.....	84
5.4.8	Hypothesis 4c.....	85

5.4.9	Hypothesis 4d.....	86
5.4.10	Hypothesis 5a.....	88
5.4.11	Hypothesis 5b.....	89
5.4.12	Conclusion	90
 Chapter 6: Discussion of results		92
6.1.	Introduction	92
6.2.	H₁: particular place, particular time versus adoption of m-commerce.....	92
6.3.	H₂ and H₃: push and pull - LBS versus trust; propensity to transact.....	95
6.4.	H₄: Brand loyalty - LBS versus trust; propensity to transact	97
6.5.	H₅: Social network recommendations - LBS versus Trust; Participation	99
6.6.	Conclusion.....	100
6.7.	Learning.....	101
 Chapter 7: Conclusion.....		103
7.1.	Introduction	103
7.2.	Summary of findings.....	103
7.3.	Academic implications.....	106
7.4.	Managerial implications	107
7.5.	Recommendation for mobile marketers/vendors.....	112
7.6.	Limitations of study.....	113

7.7. Suggestions for future research	113
References.....	115
Appendix 1: Research Questionnaire	125

List of Figures

Figure 1: Frequency of mobile phone activities	3
Figure 2: Model for testing the resuscitation of location-based service mechanisms in harnessing trust in m-commerce adoption.....	45
Figure 3: Frequency of mobile phone activities	68
Figure 4: Mobile users' perceptions of mobile vendors	69
Figure 5: Information sharing with mobile vendors.....	70

List of Tables

Table 1: Mobile user’s attitudes (AMPS, 2010)	6
Table 2: Demographics of respondents	64
Table 3: Group statistics for Hypothesis 1.....	73
Table 4: Independent samples t-Test for connecting (place and time) in m-commerce adoption.....	74
Table 5: Reliability statistics for push location-based service variables	76
Table 6: Correlation analysis of push LBS against trust.....	77
Table 7: Correlation analysis of push LBS against adoption	78
Table 8: Reliability statistics for pull location-based service variables.....	79
Table 9: Correlation analysis of pull LBS against trust.....	80
Table 10: Correlation analysis of pull LBS against adoption	81
Table 11: Reliability statistics for brand loyalty variables	82
Table 12: Correlation analysis of specific brands against trust.....	83
Table 13: Correlation analysis of specific brands against propensity to transact	84
Table 14: Correlation analysis of any brands against trust.....	86
Table 15: Correlation analysis of any brands against propensity to transact ...	87
Table 16: Correlation analysis of social networks against trust.....	88
Table 17: Correlation analysis of social networks against participation.....	90
Table 18: Summary of hypothesis tests	91

Chapter 1: Introduction to research problem

1.1. Research title

Resuscitating location-based service mechanisms to harness trust in mobile commerce adoption

1.2. Research problem

Towards the latter part of 2008, the number of available mobile devices was almost equal to half of the world population (Ghadiri, Baraani-Dastjerdi, Ghasem-Aghaee, & Nematbakhsh, 2011) and by the end of 2009, mobile penetration globally (as a percentage of service population) ranked the highest at 70.2% among all communication channels (The Mobile Advertising Industry Outlook, 2010). Ghadiri et al. (2011) stated that despite the evolution in mobile computing over the past two decades, a gap still prevailed in the integration and adoption of the technology in supporting mobile users' lifestyles and their responsibilities (Ghadiri et al., 2011, p. 47).

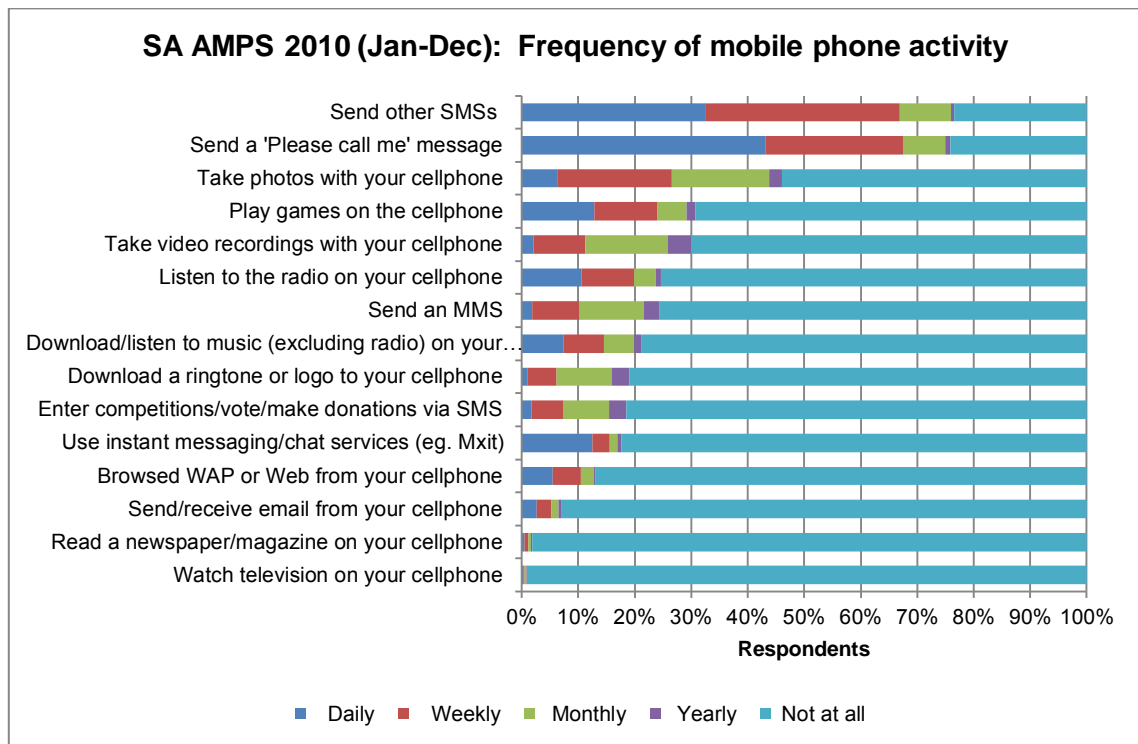
South Africa's telecommunication sector contributes approximately six percent to the country's gross domestic product (GDP) (Ramburn & van Belle, 2011, p. 28). Being ranked 23rd in telecommunications development, it is not surprising

South Africa represents one of the most sophisticated telecommunication systems of all emerging markets (Ramburn & van Belle, 2011, p. 28). With 76.3% of the South African population currently using mobile phones, it is potentially the largest cellular market on the African continent holding approximately 26 million mobile users (AMPS, 2010). These attributes provide a solid foundation for economic growth and revenue generation by integrating itself with people being connected anywhere, anytime.

Mobile users typically utilise short message service (SMS) and are generally slow to adopt the more advanced 3G data services (Ramburn & van Belle, 2011, p. 28). The South African Advertising Research Foundation's (SAARF) 2010 All media and Product Survey (AMPS) provides further impetus for effective engagement with mobile users to stimulate a mobile-commerce environment.

Figure 1 provides a graphical understanding of the activities that mobile users are spending time on.

Figure 1: Frequency of mobile phone activities



These mobile users are typically spending more time on sending SMS (76.6%) or sending a “please call me” message (75.8%), as opposed to transacting through their mobile device (AMPS, 2010). These outcomes support the claims made by Ramburn & van Belle, 2011 that mobile users are not readily making use of the more advanced data services available.

Less than 30% of their activities, possibly a consequence of the small screen size, are aimed at traditional services such as reading a newspaper/magazine (1.9%) entering competitions/voting/making donations through SMS (18.6%) downloading/listening to music (21.1%); downloading a ringtone/logo (19.1%) or browsing Wireless Application Protocol (WAP) or web (13%) (AMPS, 2010).

The poor uptake in using these advanced services prevents the realisation of the benefits that m-commerce could afford in South Africa. Interestingly, whilst the other functional features of mobile phones such as taking photos (46.1%) or video recording (30%) are becoming more integrated in its use (AMPS, 2010); there is an overwhelmingly large percentage on average (72.8%) that still use it primarily for its core functionality (making and receiving calls) (AMPS, 2010).

This hesitancy in making use of advanced services such as those offered by m-commerce is further amplified in mobile banking services. The infrastructure for mobile banking has already been created by most banks; however mobile users still remain reluctant about the service being secure (Ramburn & van Belle, 2011, p. 29). Chung & Kwon (2009) support this view, contending that the reason is because the level of mobile service provided, has superseded the mobile users trust in service providers. The level of trust in this relationship is dynamic due to its limited physical contact, which becomes increasingly important in defining mobile users' satisfaction with these services, in addition to influencing their attitude towards these services (Chung & Kwon, 2009) and the m-commerce value proposition retrospectively.

M-commerce has created the opportunity to transact anywhere, anytime (Balasubramanian, Peterson, & Jarvenpaa, 2002) breaking down barriers to space and time. However this freedom has been found to be intrusive (Islam, Khan, Ramayah, & Hossain, 2011) in the lives of mobile users, acting counterproductive to trust building. With SMS being the popular activity

amongst mobile users in South Africa (AMPS, 2010); it should be considered a palpable vehicle to facilitate m-commerce. Ironically, despite its popularity, mobile users have negative overall attitudes towards SMS advertisements and deem this interception as an irritation (Van der Walt, Rebello, & Brown, 2009). The idea of transacting “anywhere, anytime” is reduced to a conundrum because of its implications on mobile users. Inadvertently, academics have failed to acknowledge that this supposition of the engagement with mobile users has morphed into an implicit “everywhere and all the time” encounter, leaving mobile users ever more guarded in their behaviour towards these services.

Amen (2010) corroborated the findings of Van der Walt et al. (2009) with a study focused on understanding the factors influencing consumer attitudes towards mobile advertising. The results revealed that mobile users do not have a positive attitude towards the media (Amen, 2010); emphasising the need for alternative approaches for mobile user engagement through m-commerce such that it is able to overcome the apprehension perpetuated by mobile advertising.

It is these attitudes of irritation and apprehension that are placing the brakes on innovation and technology development, as mobile vendors engaged in a virtual space will not realise their return on investment if mobile users are not prepared to trust the platform and adopt the application by participating in the services provided (Chung & Kwon, 2009).

In order to gauge mobile users' acceptance of m-commerce, it is important to understand their existing attitudes towards advertising, community or social network interests, brands, shopping, technology and innovation.

Table 1 represents mobile users' attitudes that are higher than the median favouring these elements.

Table 1: Mobile user's attitudes (AMPS, 2010)

Cellphone activities	Median Groups for Attitude splits					
	Advertising	Community	Branding	Shopping	Technology endorsement	Innovation Endorsement
	High (above the mean)					
Play games on the cellphone	51%	48%	46%	50%	55%	54%
Enter competitions/vote/make donations via SMS	48%	46%	44%	49%	51%	51%
Send other SMSs	48%	46%	46%	48%	54%	53%
Use instant messaging/chat services (e.g. Mxit)	51%	42%	45%	51%	59%	55%
Send a "Please call me" message	50%	51%	51%	52%	51%	52%
Send an MMS	52%	44%	46%	46%	58%	55%
Download a ringtone or logo to your cellphone	57%	39%	48%	47%	59%	51%
Send/receive e-mail from your cellphone	49%	40%	45%	42%	59%	54%
Browse WAP or Web from your cellphone	52%	42%	42%	47%	64%	59%
Average	51%	44%	46%	48%	57%	54%

An average 51% of mobile users have an open mind to advertising as a useful source of information, whilst only 44% of them on average have an enquiring mind about their communities. These percentages are fairly low, reinforcing the indifference towards advertising and low interest towards social news.

Similarly the enthusiasm for shopping is also fairly low with these mobile users as only 48% of them on average admit to seeking pleasure from shopping, with 46% claiming loyalty to well-known brands and shops they know and trust. In

terms of technology and innovation, 57% of these mobile users on average are at ease with existing and new technology, and 54% of them on average indicate an appreciation for the innovation experience.

These existing attitudes are nonchalant. They do however reflect the opportunity to excite mobile users' dormant attitudes especially with more than half of them showing ease with technology and its innovation.

These attitudes are important to utilise, particularly when it is understood that user-generated content has become a mass phenomenon accounting for more than 11% of global internet traffic (Hennig-Thurau, et al., 2010). High-tech mobile devices are empowering mobile users' ubiquitously, facilitating user-generated content through new media channels such as Facebook, YouTube, Wikipedia and Twitter (Hennig-Thurau et al., 2010). These channels are enticing mobile users to remain connected through information exchange defining their behaviour.

With the increasing trend towards remaining connected through information exchange, mobile users have become astute to their ubiquity and the nature of intrusion in their lifestyles. They are redefining the rules of engagement by ensuring that the content is aligned to their context through self-selection and/or permission granting. The research objectives are orchestrated to understand m-commerce and its relevance to mobile users based on these predicaments.

1.3. Research objectives

The fundamental question this research aims to answer is:

“If mobile users are provided with a choice in selecting information or services they require and have this material promoted to them when it is appropriate to them, will this reduce their inhibitions to transact through mobile?”

The primary objectives of the research will be:

- **Objective 1:** To explore if connecting with a mobile user at a particular place, particular time (as they are not available everywhere, all the time) will increase the mobile user transacting through the mobile device, hence m-commerce adoption.
- **Objective 2:** To determine if mobile vendors engaged with mobile users through "push" location-based services, will increase the trust and the propensity to transact in m-commerce.
- **Objective 3:** To determine if mobile vendors engaged with mobile users through "pull" location-based services, will increase the trust and the propensity to transact in m-commerce.
- **Objective 4:** To ascertain if the recommendation of product/service brands by location-based services will increase the trust and the propensity to transact in m-commerce.

- **Objective 5:** To see whether the recommendation of location-based services on social networks will encourage mobile user trust and participation.

Chapter 2: Literature review

2.1. Introduction

The theory reviewed in this section is broken down into six sections: m-commerce, trust, location-based services, mobile vendors, brand loyalty and social networks. In m-commerce, the discussion explores the concept, its intended proposition, limitations and its applicability. The subject of trust is then interrogated as a deliverable in terms of building rapport with mobile users and overcoming m-commerce adoption fatigue. Location-based services are further analysed in terms of their capacity to influence trust in m-commerce engagement through push and pull mechanisms and lastly, the importance of mobile vendors, brand loyalty and social networks are analysed in terms of their capacity to influence trust and their inherent strengths to propel adoption of m-commerce through location-based services.

2.2. M-commerce

M-commerce has been relatively slow in getting off the ground (Ramburn & van Belle, 2011) as the emphasis has always been placed on “breakthrough” technologies as opposed to its relationship with mobile users. Despite the fact that there is often an understanding of the technology addressing important mobile user needs, there has been complacency in managing the undue

demands placed on the mobile user and the profitability of taking the technology to market (Chung & Kwon, 2009).

In the absence of mobile technologies, achieving work-life balance is another challenge because activities that are constrained by space and time reduce effectiveness and limit the quantity of an individual's output (Kennedy, Wellman, & Amoroso, 2011). These constraints also hinder the decision-making process, further inhibiting timeous opportunities from being realised (Cousins & Varshney, 2009).

The relationship between space and time play an important role in economic activity by providing flexibility in terms of work-life balance (Duxbury & Smart, 2011). Harnessing the play between these variables can offer significant benefits by allowing individuals to move between a work and home continuum such that they are able to work from home, conduct personal business at work and to do both simultaneously, transitioning between work and life roles as needed (Shumate and Fulke, 2004, p. 59, cited in Duxbury & Smart, 2011). This differential between space and time facilitates economic growth by reducing local physical barriers for global integration and real time engagement (Duxbury & Smart, 2011).

Space provides a platform to transact in by allowing the development, location and boundaries of a physical market (Condillac, 1776 cited in Balasubramanian

et al., 2002); whilst time is afforded meaning by an individual's lifespan (Balasubramanian et al., 2002; Peng, Ilies & Dimotakis, 2011). These variables collectively intertwine to facilitate economic activity that shift back and forth along a continuum, trading off space for time and vice versa (Balasubramanian et al., 2002).

Balasubramanian et al. (2002) aver to the inevitability of m-commerce as a ubiquitous element in marketing practices. Mobile technologies that enable m-commerce provide flexibility between spatial (space) and temporal (time) activities; allowing transactions to occur on an anywhere, anytime basis (Balasubramanian et al., 2002). Senn (2000) grouped these transactions into three categories:

- Transaction management – mobile business transactions that include online shopping, payment for purchases and services and micro transactions (using digital cash).
- Digital content delivery – information browsing for instant retrieval such as weather, transit schedules, sports scores and even market prices. Music downloads, ringtones, emails and social networking sites have successfully added their contribution to m-commerce engagement.
- Telemetry – an innovative service allowing the mobile user to communicate with various devices from their homes, offices, or in the field such as promotional coupons or messages.

These forms of transacting should have sweetened the adoption of m-commerce; yet limitations in the form of screen size and resolution (Venkatesh, Ramesh, & Massey, 2003) continually arise as issues to detract mobile users from making the transition. These findings are indifferent to Balasubramanian et al. (2002) who have reproached the dependence of m-commerce adoption on technology platforms.

Other factors identified by Venkatesh et al. (2003) as significant from a usability perspective and from an adoption point of view included the importance of content, ease of use and device compatibility. Ultimately Balasubramanian et al. (2002), Venkatesh et al. (2003) and Dholakia & Dholakia (2004) concurred that the value proposition for m-commerce adoption is in creating an experience that is largely about saving time, varying locations, and convenience.

With the progression of technology and time, and the enormous pressures of achieving work-life balance; the implication of m-commerce for transacting anywhere, anytime; is transacting everywhere, all the time; thus reducing personal time reserved for other events (Cousins & Varshney, 2009). Information sharing tends to become an invasion of one's personal space that perpetuates resistance to adoption because mobile vendors tend to spam their mobile users with content that is irrelevant and extensive (Al-alak & Alnawas, 2010).

Exacerbating this intrusiveness is the notion that because the technology enables an anywhere, anytime engagement, this must mean the same for the mobile user, which is often not the case, therefore alluding to the importance of engaging with a mobile user at a particular place, particular time for availability and their context. Although Balasubramanian et al. (2002) conceptualised the probability cloud where mobile users could be communicated to at a particular place, particular time; they did not address the availability, receptivity and context of these mobile users to these spatial and temporal overtures.

With these limitations in engaging with mobile users; relevance becomes crucial to adoption as information should not be a splurge of information sharing that has no purpose (Rodgers & Thorson, 2000). The success of m-commerce is dependent on the value proposition its mobile users perceive to mitigate any discomfort to their overall mobile experience (Venkatesh et al., 2003).

Location-based services integrate “locatability” (Xu, Teo, Tan & Agarwal, 2010) and personalisation to create a value proposition for the mobile user that is devoid of superfluous information (Xu et al., 2010). Location-based services are applications that use geographical positioning technologies to determine the physical location of mobile users through their mobile device in order to provide personalised services (Zibuschka, Rannenber, & Kolsch, 2011).

Therefore; in managing the availability of the mobile user, location-based services becomes a viable alternative to facilitate adoption of m-commerce as it is more focused on the choice and needs of the mobile user. Shankar, Venkatesh, Hofacker & Naik (2010) support this view, claiming the increased mobile user utility with location-based services promotes faster adoption.

Location-based services build on the ubiquitous nature of m-commerce (Balasubramanian et al., 2002) by reaching and accessing mobile users through their positioning (Xu et al., 2010). Some of the essential applications of location-based services include services related to safety, navigation and tracking, transaction, and local information (Barnes, 2003; Huang, Hsieh, & Chang, 2011). The additional benefits of location-based services also allow for personalising mobile services based on location (Sakthi & Bhuvaneshwaran, 2011).

Adapting location-based services to local needs can be undertaken quickly and easily to facilitate mobile innovation opportunities for mobile users and mobile vendors (Chircu & Mahajan, 2009). However, the use of location-based services does pose a constraint for mobile users' privacy through frequent use. Mobile users may feel uncomfortable sharing their location due to the service's ability to profile their movements (Xu et al., 2010).

This has enormous implications in revealing personal information based on the places the mobile user visits regularly or at specific times (Zibuschka et al., 2011). Therefore, it becomes important that mobile users are able to trust that the location-based services will not utilise their information against them should they willingly share their location.

2.3. Trust

There continuously appears to be an impasse in the adoption of m-commerce because of various factors underpinned by trust. For “trust” to gain traction “common meaning” (Balasubramanian et al., 2002) needs to prevail and this has remained unresolved due to its unrelenting resurgence in m-commerce participation.

When Balasubramanian et al. (2002) conceptualised m-commerce as a novel platform to transact ubiquitously, not much thought was given to its adoption based on trust. Ironically enough, trust remained a conversation that originated with the birth of e-commerce and then m-commerce; and now still remains a burning issue for adoption almost a decade later.

Trust would normally be viewed in terms of psychological relations between people; however Siau & Shen (2003), like Venkatesh et al. (2003) have charged that the small screens, low-resolution displays, tiny multifunction keypads and

limited computational power, memory and battery life; have made user-friendly interfaces and graphical applications a challenge for enabling trust with mobile users in m-commerce.

The shortcomings with the form factor in terms of the technology stimulate debate by reaffirming the claim of Balasubramanian et al. (2002) about the confusion that arises when the concept is embedded in the technology. They reason that mobile users are often mistaking the concept for the technology itself. His thought process resonates profoundly, more so because, although the technology has become more efficient and is able to support the service; there is still a reluctance to adopt the services of m-commerce and issues of trust prevail (Keramati, Taeb, Larijani, & Mojir, 2011).

Mobile phones nowadays are being used as more than a communication device. Technological innovations enable mobile users to take photos, play games, play music, send email, access the internet and even watch television (Amen, 2010, p. 77). These innovations, while they enable m-commerce technologically, negate form factors such as the small screens; as the primary point for developing trust in mobile users (Chua, Balkunje, & Goh, 2011); revealing other possibilities for enabling trust in m-commerce and its adoption.

Bart et al. (2005) presented an unusual perspective about the “fun” aspect of the device as being just as important for m-commerce adoption. Fun supports

the mobile users learning process by confining their fears to a safe environment where their mistakes and time invested have no significant ramifications on them (Davis, 2010). More importantly, Davis (2010) acknowledges its role in cementing the mobile users' relationship with the technology, promoting a relationship of trust which is essential for m-commerce adoption.

To further address the challenges to the adoption of mobile devices and services, Shankar & Balasubramanian (2009) formulated their argument from an innovation acceptance theory perspective. According to them factors that promoted the decision for adoption, lay in its relative advantage and adaptation to the mobile user's needs and usage patterns.

These factors are inherent in location-based services where relevant information is sent to the mobile user dependent on their proximity or where it is needed. The delivery mechanisms through "push and pull" offer the mobile users the advantage of receiving information where and when they need it through user-defined preferences (Unni & Harmon, 2007).

Other factors that were included were perceived complexity and risk, trial and the degree to which the innovation was observed by others (Rogers, 1995; Shankar & Balasubramanian, 2009). The delivery mechanisms through "push" and "pull" empower the mobile user to manage their risk aversion by either retrieving (pull) relevant information when they require it or opting in (push) to a

service they have approved (Unni & Harmon, 2007). The value proposition that location-based services suggests through its delivery mechanisms is perfectly positioned to the innovation acceptance theory postulated by Shankar & Balasubramanian (2009).

With the progression of time the theory of Shankar et al. (2010) has now evolved into one where mobile devices are seen as cultural objects because of their use in daily practices. The device was seen to facilitate personal experiences for the mobile user, protecting their security and privacy whilst creating a mobile lifestyle that was tapping into marketing opportunities for mobile vendors.

However, Shankar et al. (2010) did not follow this through to its logical consequence. These opportunities infer intrusion through mobile vendors being available anywhere, anytime. The premise of mobile vendor availability anywhere, anytime disregards the likelihood that mobile users are not available everywhere, all the time; orchestrating a fragmented relationship that becomes devoid of trust and certainty. The intrusive nature of mobile vendor engagement with mobile users aggregated with the small screen size that continually resurfaces as per previous studies; remain debilitating factors for developing trust with mobile users (Shankar et al., 2010).

A recent study showed that developing trust through the technical aspects of the device has become highly dependent on the mobile user and not an impediment as prior studies have articulated (Chua et al., 2011). This is because although some mobile users feel restricted when viewing applications; there are also those mobile users that place portability higher on their list of needs fulfilment, claiming mini-joysticks, touch-screens and lack of network connectivity are impediments to trust-building (Chua et al., 2011). Li & Yeh (2010) also weaken the impediment of small graphical screens to trust development with mobile users, by reaffirming the earlier work by Sarker & Wells (2003) in which the physical limitations of devices are overcome by website aesthetics that enable ease of use.

It is important to understand that the mobile device is not just a tool for receiving information; it has become a personal accessory that is generally not shared and hence has become a gateway for accessing an intimate relationship with the mobile user (Shankar et al., 2010). The rules of engagement take on a more sophisticated role when the implications of connecting with mobile users everywhere, all the time are considered in view of this gateway. Therefore, mobile etiquette in terms of mobile users' availability (as they are not available everywhere, all the time) has to be manifested to prevent the imposition of this relationship, perpetuating issues of trust.

Lee & Benbasat (2003) illustrated a 7Cs framework for encouraging mobile users to adopt m-commerce. These attributes focused primarily on the

interface design which consisted of: “context, content, community, customisation, communication, connection, and commerce” (Lee & Benbasat, 2003). This study reinforced the ideas put forward by Siau & Shen (2003); however brought to light the importance of customisation and secure payment methods for m-commerce adoption.

Customisation provides mobile users the opportunity to receive information that is relevant to them founded on their needs and interests without a one size fits all approach from their mobile vendors. By repeatedly connecting to mobile users in terms of their personal qualities and prior history; information is adapted each time to better fit their needs (Georgiadis, Mavridis & Manitsaris, 2005). The effect of personally connecting with a mobile user fosters trust because the mobile user need is realised with ease of use and relevance.

Security is another aspect of trust (Eze, Gan, Ademu, & Tella, 2008; Wei, Marthandan, Chong, Ooi, & Arumugam, 2008). Mobile users are risk-averse when it comes to storing, processing and sharing sensitive information through their mobile phones because of the likelihood of losing their handset or having their device used without their consent as a consequence of their mobility (Georgiadis et al., 2005). Trust is yet again the common thread underlying both customisation and security as concepts; elevating its necessity in the adoption of m-commerce as the discussion which follows demonstrates.

These threats to ubiquity can be best moderated through information delivery through push and pull mechanisms that place control firmly with the mobile user. Pull mechanisms offer the widest moderation purely from the premise that the mobile user connects to a service to retrieve information for immediate use (Unni & Harmon, 2007; Xu et al., 2010). This information is often the most relevant and most needed.

Push mechanisms allow the mobile user to be pleasantly connected to information that they have personalised with the sender of the information (Unni & Harmon, 2007; Xu et al., 2010). This information has just as much relevance because the mobile user has initiated conscious contact with the mobile vendor by sharing personal information to facilitate communication. These mechanisms propagate trust because the mobile user is in complete control of the engagement (Li & Yeh, 2010).

However these efforts have not seemed to bear fruit as seven years later, further work by Li & Yeh (2010) on design aesthetics show that trust has still not materialised within m-commerce and that it remains a pressing issue in the adoption of m-commerce. The constructs put forward by Li & Yeh (2010) expand on the work of Lee & Benbasat (2003); reiterating the importance of personal usefulness, ease of use, customisation and now design aesthetics as antecedents for gaining mobile users' trust. This continued fascination with the mobile device and its features has overlooked the privacy concerns facing mobile users.

To make use of the design aesthetics created for the device generally requires mobile users to provide their personal information to make use of the site, forcing them to confront their own inherent privacy policies (Kwon, Lee, & Sarangib, 2011). Some may willingly provide their information, others will grudgingly accept the service whilst others will disconnect from the service completely (Kwon et al., 2011).

There is also further anxiety for those mobile users that have signed up regarding whether their information will be kept confidential and whether their engagement with the service will be personalised. These extrinsic issues are fundamental to instilling trust with mobile users to support m-commerce adoption.

Recent work by Islam et al. (2011) provided additional assessment to factors affecting m-commerce adoption. The study focused on the major factors influencing the adoption of m-commerce services with the moderating effect of self-efficacy (mobile user capabilities). The factors were a combination of intrinsic (e.g. awareness and knowledge, convenience of devices and WAP/GPRS enabled handsets) and extrinsic (e.g. pricing and cost, security and privacy, rich and fast information, and perceived usefulness) variables affecting m-commerce adoption. The findings revealed that pricing and cost, security and privacy, rich and fast information were significant factors in the adoption of m-commerce (Islam et al., 2011).

Although trust was not featured in the study in terms of space and time management; trust does underpin all these success factors necessary for m-commerce adoption due to these factors reliance on mobile vendors for delivery in terms of pricing, security, privacy and relevant timeous information. M-commerce is largely driven by mobile vendors advertising services that can be integrated with the lifestyles of mobile users.

However, the recent studies of Van der Waladt et al. (2009) and Tsang, Ho & Liang (2004), as cited in Saadeghvaziri & Seyedjavadain (2011) appear to nullify the past movement to facilitate m-commerce trust. Their recent studies have revealed that despite the past efforts of so many before them; mobile users in general have not warmed to mobile advertising and entertainment.

The experience has often left mobile users irritated and betrayed by its credibility (Saadeghvaziri & Seyedjavadain, 2011; Van der Walt et al., 2009). Despite mobile users' lack of trust in advertising, they tended to be more positive toward advertising-in-general than mobile advertising (Saadeghvaziri & Seyedjavadain, 2011). These feelings of polarisation towards these two forms of advertising could be possibly explained in terms of mobile user selection.

In general advertising, the participants are able to switch the media (television or radio) off should it not have any relevance to their immediate need; whereas with mobile advertising there is no self-selection and the mobile user becomes a

grudging participant. This partiality towards general advertising alludes to the proliferation of mobile advertising that has no meaning to mobile users; creating feelings of irritation and betrayal. These reckless behaviours of sending mobile users content that bears no interests to their context and their availability destroys any trust in this relationship, further inhibiting adoption of m-commerce.

The growth of m-commerce is also mutually reliant on the effectiveness of transacting through effective m-payment (mobile payment) solutions. It is not surprising that m-payment solutions share the same challenge of insufficient mobile user acceptance as m-commerce (Keramati et al., 2011). However, there is yet another caveat.

M-commerce has alternative services to stimulate trust by tapping into the need and relevance of the mobile user through location-based services and delivery mechanisms such as “push and pull” that manage the risk-averseness of the mobile users. M-payment services, on the other hand face greater uncertainty due to a lack of robustness and hyper-sensitivity regarding mobile users sharing information and details concerning their banking accounts (Andreev, Duane, & O'Reilly, 2011).

Due to the nature of the immediate risks, m-payments services need a declaration of trust upfront as the mobile user must first trust the “payment

service provider behind the solution” before using the solution (Eze et al., 2008, p. 227). Location-based services on the other hand facilitate a layering of trust through repeated application reinforcing competence (Chang & Chou, 2011).

There has been much debate about trusting the services in order to transition m-commerce adoption. However, both Islam et al. (2011) and Keramati et al. (2011) have mentioned the notion of self-efficacy of the mobile user in determining adoption. This presents another premise that as much as the onus is on the services of m-commerce to initiate trust with mobile users, there is another school of thought stating that mobile users could be unable to trust themselves and their capabilities to adopt the services of m-commerce.

Mobile users that held a strong belief within themselves and their capabilities would perceive m-commerce services easy to use; whilst those mobile users that felt less capable of handling the technology will retreat through feelings of inadequacy (Islam et al., 2011) and reduced motivations to participate in m-commerce services. Mobile users trust in their individual capabilities becomes another case in point in the adoption of m-commerce.

These studies have further not been extended to the spatial and temporal patterns of the mobile user and hence intrusion was not addressed as a vehicle for the lack of self-trust for mobile users that were constrained by space and

time. Accordingly no mechanisms were explored to make the transition tangible such as those of “push and pull”.

The studies thus far occur in an “application-free” context. Their frame of reference is typically generic, focusing on attributes such as screen size, web interfaces, connection, content and customisation with some inclination towards brand significance as antecedents for reluctance to adopt m-commerce. These variables were found to be underpinned by mobile users trust with the innovation and themselves as effective participants.

Location-based services reposition m-commerce for adoption through its application. The ability to identify a mobile user’s location at a point in time has paved the way for many permutations of mobile user engagement through its customised services and delivery mechanisms facilitating trust and credibility.

2.4. Location-based services (LBS)

LBS is delivered through two delivery mechanisms, which Senn (2000) alluded to in terms of “active” and “passive” applications. Depending on the delivery mechanism, mobile users would be able to control their personal engagement with service providers (Xu et al., 2010) and vice versa.

Active applications are typically referred to as “pull-based” LBS where the mobile user makes a periodic request for specific information pivoted to their location (Xu et al., 2010). These mobile users are much more in control of their interactions with LBS providers as their relationships are volitional where they provide their location information only to facilitate their requested transaction (Xu et al., 2010).

Passive applications are “push-based” LBS where the mobile vendor deliberately sends mobile users’ information based on their proximity to a transacting area (Xu et al., 2010). These mobile users have provided their mobile vendors with their preferences however; having waived their privacy in terms of location would automatically be sent customised information based on their positioning (Xu et al., 2010).

Xu et al. (2010) further alluded to the ability of location-based services to threaten mobile users’ information privacy through tracking of their preferences, behaviours and identity. The mobile vendor is privileged to be able to know these personal attributes of their mobile user at any point in time and can connect with them based on these identified needs. This faith of the mobile user in the mobile vendor is based on a relationship of mutual trust where the mobile user expects not to be taken advantage of and for the mobile vendor to make the engagement value-adding.

These expectations have significant implications for the layering of trust and the building of credibility as mobile users are not available everywhere, all the time; so mobile vendors need to tread cautiously to prevent irritation with their approach eroding any basis of trust previously conceived (Saadeghvaziri & Seyedjavadain, 2011).

The reluctance to adopt location-based services was attributed to its inherent value not being realised by mobile users (Pura, 2005). However, the marketing communication proposed for value creation for driving awareness and trial of the service has to be managed without mobile user invasion. This study, like others, predisposes itself to the notion that the mobile user gains value from being intercepted anywhere, anytime thus acting counterproductively to trust building.

The ability to trust the adoption of the service comes into play with push-based services. The availability of information anywhere, anytime as opposed to particular place, particular time and need of the receiver for the information lays undue strain on the sender-receiver relationship. If the information does not serve the context of the mobile user (Pura, 2005), it becomes more of a nuisance (Saadeghvaziri & Seyedjavadain, 2011), eroding the mobile users trust and creating a negative image for transacting through mobile devices.

This erosion of trust is further exacerbated by targeting the information and acknowledging the proximity of the receiver. It is these forms of spontaneous efforts that are construed as intrusive because they occur without the consent of the receiver. These intrusions perpetuate the degeneration of trust facilitating anti-disclosure, security measures and privacy paranoia in m-commerce as a whole.

Mobile users are much more positive towards information delivered to them when mobile vendors seek their permission (Al-alak & Alnawas, 2010). Their willingness to receive the information ensures that they will remain attentive to it, promoting participation (Mir, 2011). Obtaining consent from consumers has always been part of the marketing-selling protocol and it is a mystery why consent should be seen as any different in m-commerce.

Seeking permission from mobile users serves to build a long-term relationship layered by trust (Mir, 2011). Location-based services using push and pull mechanisms actively aids mobile users to manage their consent with mobile vendors confining their engagement to what information (relevant) they need where (place) and when (time) thus reinforcing trust, facilitating m-commerce adoption.

Financial compensation also offers a solution to the promotion of the uptake of location-based services, in particular those that are push-based; however, the

context in which the service is used and the mobile users experience ultimately defines behavioural intentions and commitment (Pura, 2005). “Locatability” (Xu et al., 2010, p. 142) and personalisation are the two most important dimensions that need to merge before value can be sought from location-based services (Xu et al., 2010). Offering financial compensation for any location-based service predisposes the service to sustainability issues because of its dismissiveness regarding mobile users’ needs of “relevance.” Hence, by obliterating this personalisation dimension by triviality, no value can be derived from location-based services.

In as much as privacy and security appear to be issues that are pertinent to unlocking the opportunity of m-commerce through location-based services, trust remains the underlying issue. Privacy and security issues are perpetuated by reduced amounts of trust. The lack of trust often creates paranoia in the mobile user in terms of outcome; hence disclosure and adoption would be a consequence of trust (Xu et al., 2010).

Mobile users generally tend to have more control with pull-based services (Unni & Harmon, 2007; Xu et al., 2010); resulting in reduced apprehension, facilitating trust (Li & Yeh, 2010). Information is provided at a particular place, particular time for a particular need. The simplicity, speed and accuracy with which the information is retrieved have the potential to promote further use and adoption of the service.

By empowering mobile users to opt in or opt out (Pura, 2005) of push-based services, there is an opportunity to create an environment that is conducive to trust, facilitating m-commerce adoption. Mobile users would then consent to releasing location specific information without feeling any violation in terms of their privacy.

Location-based services that are “pulled-based” are appropriate vehicles to combat the breakdown in trust by streamlining information sharing to a particular point in place and time, as the mobile user is evidently not available everywhere, all the time (Van der Walt et al., 2009). The mobile user’s frame of mind may not be ready to receive the information, albeit relevant.

2.5. Mobile vendors

Siau & Shen (2003) framed trust around the mobile vendor and technology, claiming that it was a continuous process which originated from trust formation through to on-going trust development (Siau & Shen, 2003). The creation of trust with mobile vendors was never explicit (Siau & Shen, 2003).

However, brand familiarity, reputation, delivery of high quality information, third-party recognition and certification, in addition to the provision of attractive rewards, were essential attributes needed to be created and sustained (Siau &

Shen, 2003). Mobile users tended to feel more secure and appreciated with these approaches from mobile vendors.

Earlier work by these mobile vendors was focused on developing trust through improving site quality, sharpening business competence, maintaining company integrity, post privacy policies, strengthening security controls, fostering a virtual community, encouraging communication with increased accessibility and external auditing to monitor the operation (Siau & Shen, 2003). These ways of working created positive feelings of respect, fairness and safety, reinforcing trust.

Tan & Wu (2010) emphasised the importance of mobile vendors improving their integrity, ability and benevolence for eliciting mobile users' trust which, when achieved, would produce unlimited success in the m-commerce context. This self-development referred to the importance of mobile vendors maintaining themselves as a brand and delivering on a brand promise that mobile users deemed valuable and trustworthy.

Trust is also a critical factor in information systems (McKnight et al., 2002; Shin & Shin, 2011) and despite the variation of views in terms of its meaning; its essence places emphasis on meeting mobile user expectations (Shin & Shin, 2011). Due to the impersonal nature of the online environment, mobile users

tended to exhibit uneasiness with online vendors and the outcome of online transactions (Shin & Shin, 2011).

With this in mind and the capacity of mobile vendors to access the mobile users' environment anywhere, anytime; trust becomes a foundation for this relationship, directing future engagement and the sustenance of credibility for the mobile vendor. By assuming that the mobile user has the same sentiment as the mobile vendor of being available anywhere, anytime could be seen as a breach of trust and possible ruination of the value proposition sought to be shaped by mobile vendors.

Mobile vendors employ a number of marketing practices such as the creation and maintenance of mobile websites, mobile emailing and messaging, mobile advertising, mobile couponing and mobile user service through to mobile social network management to satisfy the needs of mobile users (Shankar et al., 2010). Whilst these practices aim to woo mobile users, its intrusive nature poses to undermine all efforts of a trusting relationship. Mobile vendor trust remains an important differentiator for the adoption of mobile environments (Bart, Shankar, Sultan, & Urban, 2005).

Trust becomes crucial when the mobile users interaction with the service is immediate and in real time (Shin & Shin, 2011). Fostering trust in this virtual reality promotes ease of use and adoption such that mobile users spend less

effort scrutinising the service and the mobile vendors credentials (Shin & Shin, 2011). Credibility, as a component of trust, greatly impacts behaviour to adoption (Shin & Shin, 2011) re-emphasising that trust as an important variable impacting adoption of m-commerce.

Mobile vendors play a significant role in the development of trust with mobile users and hence drive the agenda in achieving m-commerce adoption. Consent is often taken for granted by mobile vendors who have previously interacted with mobile users such that there is brevity in readily pushing information disguised as mobile user relationship communication (Pura, 2005).

However, mobile vendors like these, put themselves at risk of alienating their mobile users by wooing them through unwritten rules of engagement. Suki (2011) states that brand image and service honesty are important qualities necessary for mobile vendors to achieve satisfying mobile user relationships in m-commerce, gaining trust and generating loyalty from mobile users.

2.6. Brand loyalty

The significance of trust emerges when there is uncertainty or risk about an outcome. This is potentially the reason why brands tend to be a great attraction in unfamiliar territories where the trust is blurred. A strong brand resonates highly because it delivers on its promise to mobile users' validating their feelings

of confidence and security (Chung & Tan, 2011). The emotional attachment of the brand often leads to frequent consumption, loyalty and positive word-of-mouth (Goldsmith, Flynn, & Clark, 2011).

Given Chung & Tan's (2011) implicit emphasis on the importance of brand trust in reducing the perceived risk of using a virtual service, there is an opportunity to explore whether brand trust would facilitate the same for mobile users engaging through location-based services delivery mechanisms; thereby encouraging m-commerce adoption altogether. The brands that have resonated with the mobile user offline become brands that hold value for them online (Bravo, Iversen, & Pina, 2010), where past experiences evoke the necessary trust to drive loyalty (Oliver, 1999 cited in Forgas et al., 2011). As a result, there is a reduced tendency to object to a service that pushes favourite brands that are creating a context for the mobile user (Chen, 2011).

Although this somewhat contradicts previous claims of mobile users not wanting to be spammed by mobile vendors, it must be borne in mind that there is a precautionary view taken between spamming mobile users with brand related information and those that are fit for use (Al-alak & Alnawas, 2010). Mobile users are not available anywhere, anytime and information that is sent to them needs to be integrated into the mobile users' itinerary and be presented at the appropriate place, appropriate time to meet their needs (Chen, 2011).

Therefore, information sent to mobile users emphasises the importance of personalised content to ensure relevance, providing further impetus for location-based services in fulfilling mobile users' engagement through need and immediate use. It must be acknowledged that a push-based service that understands its mobile users' needs including their relationship with their brands based on mobile users' self-selection has the advantage of promoting relevance and a trusting relationship curbing mobile user anxiety and resentment (Chen, 2011).

Push-based services such as direct marketing efforts have created a negative spinoff in terms of trust between advertising and mobile vendors (Al-alak & Alnawas, 2010). Mobile users are reluctant to share personal information with mobile vendors that subject them to extensive advertising (Al-alak & Alnawas, 2010) articulating the inherent lack of trust in these mobile user-vendor relationships. For trust to permeate in relationships, it becomes important for mobile vendors to display credibility through understanding the motivations of their mobile users and engaging them on their terms (Al-alak & Alnawas, 2010; Chen, 2011).

Recent insight reinforces this sentiment articulating that “people are craving communication from brands through their mobile devices” (Marketing Daily News, 2011); however, they are adamant that these brand communications need to be “relevant and on their terms” (Marketing Daily News, 2011).

As a result permission-based marketing enables this as a basis for engagement by breakings down the walls of “No mobile vendor allowed” and “This is all you can know” captions by contextualising the availability of mobile users in terms of their intention to participate and their intention to purchase (Al-alak & Alnawas, 2010) propagating an environment conducive to trust formation between mobile users and mobile vendors. The lowering of mobile users’ defences to mobile vendor engagement is crucial for mobile vendors to understand mobile users’ needs and their relationship with brands that impact them.

Brand loyalty offers yet another extension to trust building by tapping into the inherent trust and cravings mobile users have for their brands. This intimacy serves to platform the adoption of m-commerce through participation in location-based services by connecting mobile users in their context with their brands.

2.7. Social networks

Mobile users are now able to participate much more actively as market players and therefore trust becomes a key requirement for all relationships based on the ubiquitous nature of their mobility. The rise of new media channels such as Facebook, YouTube, Google, Twitter and MXit (Hennig-Thurau et al., 2010) have enabled mobile users to reach each other and be reached by almost everyone anywhere, anytime (Hennig-Thurau et al., 2010) through their mobile devices.

This freedom to communicate has given social networks such power that they have also changed the dynamics of brand positioning (Fournier & Avery, 2011) by overhauling the unidirectional flow of marketing information to now flow in multidirectional and interconnected ways (Hennig-Thurau et al., 2010). This has forced marketers to realise that they have limited control in managing the communication of their brands because the old ways of brand management has evolved itself into a “brand conversation” (Hennig-Thurau et al., 2010).

The sincerity and transparency of these conversations has the potential to enable a trusting relationship to be formed between marketers/mobile vendors and their mobile users (Saftescu-Jescu, 2011). The ability to trust information or a service depends largely on the credibility of the source.

The theory on social networks supports this view, claiming that the location and strength of the relationships in a social network greatly influence the behaviour of the participants in their network as opposed to their own individual personalities (Barnes, 1972 cited in Shankar et al., 2010; Jackson & Yariv, 2006). This is because these social network participants are also interconnected within their communities, sharing each other’s personal virtual space (Morris, Teevan, & Panovich, 2010).

These spaces facilitate virtual discussions and recommendations of shared interests strengthening the linkages between participants (Fournier & Avery,

2011). These linkages pave the way for a trusting relationship because it is now founded on familiarity, past experiences and an openness to share information resulting in easier adoption of information (Nooteboom, 2011) from the network. As a result mobile users are also able to place greater emphasis through media convergence on the information from these networks for authenticating possible services; than directly with mobile vendors that have yet to earn their trust (Morris et al., 2010).

In addition to being a source of recommendations, social networks are more often seen as recreational applications as opposed to a service that is primarily focused on addressing mobile users' needs through transacting (Fournier & Avery, 2011). Fournier & Avery, 2011 reaffirm this notion, stating that social networks were made for people and their conversations and not as a new media channel for marketing communications. Thus they emphasised the abhorrence of participants in social networks towards mobile vendors crashing their social media party with their information.

These attitudes provide further support against intrusively connecting with mobile users anywhere, anytime, amplifying the erosion of their trust with mobile vendors. Depending solely on social network recommendations for the authentication of trust has obviously serious repercussions on marketers in terms of vulnerabilities.

However, a recent study by Seyedi, Saadi, & Issarny (2011) has offered the initialisation of trust, also called bootstrapping trust, as an alternative to recommendation-based ones in mobile social networking where the trust is set through direct-based relationships. Seyedi et al. (2011) emphasise the importance of the proximity of the participants in terms of space, time and context (work, home for instance) in initialising direct-based relationship trust because people spent more time with people they trust, thereby reducing their anywhere, anytime interactions that are built on risk factors.

In its physical form, proximity occurs in both space and time; and remains time dependent only in its virtual form (Seyedi et al., 2011). This has implications for mobile vendors that want to connect with mobile users proactively through minimum reliance on recommendation-based relationships. This again reinforces the availability of mobile user in terms of space and time engagement.

Although virtual proximity is gained through time only (Seyedi et al., 2011), having the engagement context dependent indirectly purports place as another important variable that mobile vendors need to contend with virtually. Therefore, by engaging mobile users at a particular context (information and place) and particular time, trust can be initialised in its virtual form through proximity.

However, for those mobile vendors that are able to participate with mobile users in their physical form as well, there is an opportunity to establish the relationship and create frequency or duration with mobile users, thereby facilitating trust. This reinforces the sentiment expressed by Nooteboom (2011) that trust is related to the social strength of relationships as networks are preferred recommenders to each other.

Therefore, mobile vendors would be in a position to leverage their direct-based relationship with mobile users to one that could be recommendation-based. According to Seyedi et al. (2011), development of trust is the solution of spontaneous social networking, as it reduces the proximity between participants while improving the relationship of trust that is independent of recommendation-based relationships.

Seyedi et al. (2011) contended that proximity did not necessarily pertain to only the physical distance between people, as it also included the establishment of closeness in the virtual integration of people through for instance phone calls, emails and social network interactions. For this reason, location-based services are ideal in bridging the proximity between virtual participants as it uses Global Positioning Systems (GPS) to establish connection with people in real time; improving trust in the relationship through increased familiarity.

Therefore, bootstrapping trust through direct relationships reinforces the importance of using location-based services through push and pull mechanisms to foster trust between mobile users and mobile vendors for the adoption of m-commerce because of location-based services' links with place, time and context.

2.8. Conclusion

M-commerce has not been fully realised by mobile users because the emphasis has been largely focused on enabling technologies to facilitate the adoption as opposed to its relationship with mobile users (Ramburn & van Belle, 2011). As a result, issues of trust have been perpetuated and continue to resurface through past and present experiences where mobile vendors' repeated marketing have alienated mobile users because the information had no context to mobile users (Al-alak & Alnawas, 2010). This has created a wedge between adoption of m-commerce and mobile users.

The literature reviews the seminal work of Balasubramanian et al. (2002) in terms of the ubiquity of transacting in m-commerce, against the backdrop of attainment of trust with mobile users through application, which past studies have not addressed. The premise for connecting with mobile users anywhere, anytime has been found to elicit irritation (Van der Walt et al., 2009) and reduced credibility of mobile marketers or mobile vendors (Saadeghvaziri &

Seyedjavadain, 2011) because mobile users are not available everywhere, all the time.

Location-based services are offered as a solution to managing the spatial and temporal patterns of mobile users in accordance with their availability (Xu et al., 2010). The services also empower mobile users through the use of push and pull delivery mechanisms that allow mobile users to explore m-commerce on their terms (Unni & Harmon, 2007).

This increasingly manages the rules of engagement between them and mobile vendors or marketers such that mobile vendors are able to connect with mobile users in their mobile context by providing them with information related to their brands and needs where and when they require it (Chen, 2011).

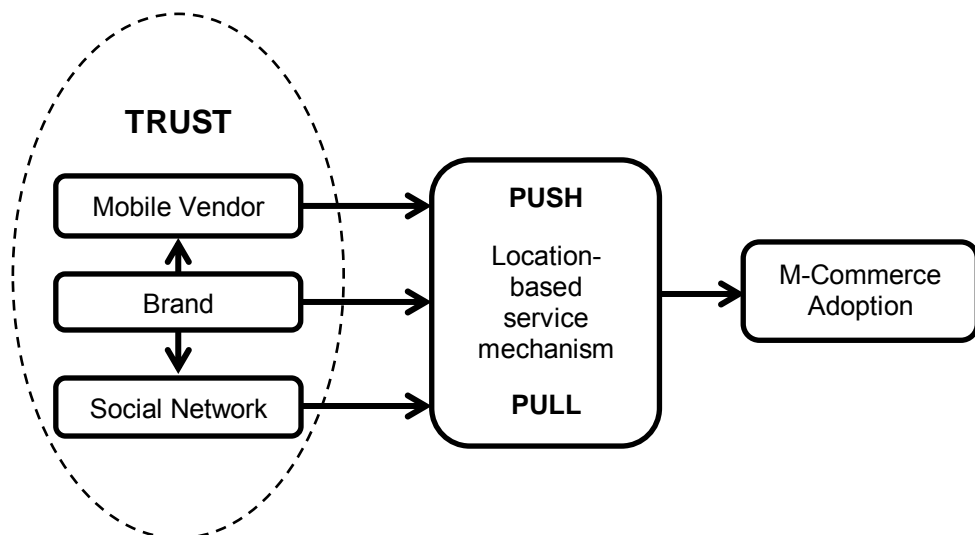
These efforts serve to foster trust with mobile users to embrace the opportunities of m-commerce and its adoption. Location-based services could further accelerate the spread of their value proposition by leveraging the trust afforded within social network platforms to encourage m-commerce adoption. This research aims to provide empirical evidence to support these perspectives whilst mapping a way forward for m-commerce.

Chapter 3: Research Hypotheses

3.1. Introduction

In order to explore the capability of location-based service (LBS) mechanisms to harness trust for mobile commerce adoption, the research objectives were integrated with the literature review and the hypotheses proposed are based on figure 2.

Figure 2: Model for testing the resuscitation of location-based service mechanisms in harnessing trust in m-commerce adoption.



3.2. Hypothesis 1

The null hypothesis (H_{1_0}) under objective 1 states that connecting with a mobile user at a particular place, particular time will not increase m-commerce adoption. The alternative hypothesis (H_{1_a}) states that connecting with a mobile user at a particular place, particular time will increase m-commerce adoption.

3.3. Hypothesis 2a

The first null hypothesis (H_{2a_0}) under objective 2 states that mobile vendors engaging with mobile users through “push” location-based services will not increase the trust to transact in m-commerce. The alternative hypothesis (H_{2a_a}) states that mobile vendors engaging with mobile users through “push” location-based services will increase the trust to transact in m-commerce.

3.4. Hypothesis 2b

The second null hypothesis (H_{2b_0}) under objective 2 states that mobile vendors engaging with mobile users through “push” location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis (H_{2b_a}) states that mobile vendors engaging with mobile users through “push” location-based services will increase the propensity to transact in m-commerce.

3.5. Hypothesis 3a

The first null hypothesis (H_{3a_0}) under objective 3 states that mobile vendors engaging with mobile users through “pull” location-based services will not increase the trust to transact in m-commerce. The alternative hypothesis (H_{3a_a}) states that mobile vendors engaging with mobile users through “pull” location-based services will increase the trust to transact in m-commerce.

3.6. Hypothesis 3b

The second null hypothesis (H_{3b_0}) under objective 3 states that mobile vendors engaging with mobile users through “pull” location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis (H_{3b_a}) states that mobile vendors engaging with mobile users through “pull” location-based services will increase the propensity to transact in m-commerce.

3.7. Hypothesis 4a

The first null hypothesis (H_{4a_0}) under objective 4 states that the recommendation of specific product/service brands (favourite) by location-based services will not increase the trust needed for m-commerce adoption. The alternative hypothesis (H_{4a_a}) states that the recommendation of specific

product/service brands (favourite) by location-based services will increase the trust needed for m-commerce adoption.

3.8. Hypothesis 4b

The second null hypothesis (H_{4b_0}) under objective 4 states that the recommendation of specific product/service brands (favourite) by location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis (H_{4b_a}) states that the recommendation of specific product/service brands (favourite) by location-based services will increase the propensity to transact in m-commerce.

3.9. Hypothesis 4c

The third null hypothesis (H_{4c_0}) under objective 4 states that the recommendation of any product/service brands by location-based services will not increase the trust needed for m-commerce adoption. The alternative hypothesis (H_{4c_a}) states that the recommendation of any product/service brands by location-based services will increase the trust needed for m-commerce adoption.

3.10. Hypothesis 4d

The fourth null hypothesis (H_{4d_0}) under objective 4 states that the recommendation of any product/service brands by location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis (H_{4d_a}) states that the recommendation of any product/service brands by location-based services will increase the propensity to transact in m-commerce.

3.11. Hypothesis 5a

The first null hypothesis (H_{5a_0}) under objective 5 states that the recommendation of location-based services on social networks will not encourage mobile user trust. The alternative hypothesis (H_{5a_a}) states that the recommendation of location-based services on social networks will encourage mobile user trust.

3.12. Hypothesis 5b

The second null hypothesis (H_{5b_0}) under objective 5 states that the recommendation of location-based services on social networks will not encourage mobile user participation. The alternative hypothesis (H_{5b_a}) states

that the recommendation of location-based services on social networks will encourage mobile user participation.

The research methodology in Chapter 4 provides a description of the process of gathering the responses for the study and the techniques used to test the hypotheses outlined.

Chapter 4: Research methodology

4.1. Introduction

This chapter discusses the methodology that was used in the study. The literature review and the stated hypotheses formed the basis for the direction of the research.

4.2. Research design

The research design was a quantitative study in the form of an electronic survey of the current state and was testing the hypotheses posed (Blumberg, Cooper, & Schindler, 2008). The study pivoted around the concept of location-based services for mobile users and was focused on understanding specific behaviours regarding usage and trust under pre-determined conditions of connecting, push and pull mechanisms, brand and social network recommendations. As typical of a cross-sectional study, it represented a “snapshot” of a point in time (Blumberg et al., 2008)

Blumberg et al. (2008) cited versatility as a great strength of surveys being used as a primary data-collecting tool. Further evidence in support of surveys, described them as more efficient, and economical than observation because an efficient toolkit of questions yielded information that would be tedious to gather

by observation (Blumberg et al., 2008). The additional benefit of self-administered surveys was that it preserved anonymity and reduced bias as it allowed the respondent freedom from any external stimuli.

4.3. Unit of analysis

Blumberg et al. (2008) described unit of analysis as the level at which the research was performed and which objects were researched. The unit of analysis for this study was the individual users of a mobile phone; as they would be the initiators of m-commerce transactions.

4.4. Population

The population was all mobile phone users that utilised their mobile phones for more than its intended purpose of making “calls.” These activities included social networking, sending SMSs and browsing the internet.

4.5. Sample size and sampling method

The members of the sample were selected on a non-probability basis (Blumberg et al., 2008) because of the complexity of accessing the members of the population through a limited database and the efficiency of retrieving

responses. As a result, the sample elements were drawn through both convenience and snowball techniques. These techniques also enabled the population to stay connected ubiquitously which was an important attribute for the study and was therefore a more engaging channel to source respondents.

For the convenience sample, both the Masters of Business Administration (MBA) students and members of social networking sites (Facebook, LinkedIn and Twitter) were utilised. These channels facilitated a faster, economical and more effective platform for accelerated responses. These groups were also used to locate others in the population by having the survey link forwarded to their own individual network. This snowball sampling technique was useful in identifying sample subjects within the population of the study (Blumberg et al., 2008).

According to Blumberg et al. (2008), the size of the sample is largely a function of the variation in the population parameters under investigation and the precision required by the researcher. The three criteria for the determination of the appropriate sample size are sampling error, the confidence level and the degree of variability in the attributes being measured (Israel, 2009).

The computation was not performed because of the sampling method used and the limited resources. However, in order to ensure that the sample size was sufficient on which to perform significant statistical analysis, a minimum sample

size of 30 (Hintze, 2007, pp. 206-25) was used as a benchmark for each of the five hypotheses that needed to be tested. Therefore, the minimum sample size needed for the study was targeted at 150 respondents.

4.6. Research instrument

The questionnaire was designed to understand mobile phone users in terms of:

- demographics
- activities conducted on their mobile phones
- attitudes and behaviours to location-based services subject to conditions of “connecting,” push and pull mechanisms, brand and social networking recommendations

The questionnaire was compiled through consultation with peer reviewed journals, marketing research questionnaires and an expert in the field of questionnaire design. The initial questions in the survey were inserted to screen the respondents by ensuring that they were mobile phone users and that these mobile users utilised their devices for activities for more than the intended purpose of making calls. These questions assisted in ensuring that respondents were perfectly positioned to answer the questions that followed.

The demographic part of the survey was compiled through reviewing relevant questions from the SAARF 2010 AMPS questionnaire and former postgraduate theses. This cross-examination provided a reference point in terms of streamlining criteria necessary to profiling demographics, understanding mobile users' activities in terms of mobile phone use and ensuring that the questions were conversational to deter confusion.

A Living Standard Measure (LSM) profiling question was also incorporated into the demographic section of the survey to indicate the socio-economic status of the sample. These short lists of questions were based on a paper by Chipp & Corder (2010), in identifying the tiers of the South African bottom of the pyramid (BOP). These questions were less involved and lengthy in achieving an LSM profile for the respondents.

Prior to the questions that were going to test the hypotheses, an introduction featured the definition of location-based services and examples. The aim of the introduction was to clarify location-based services in the minds of the respondents for subsequent questions.

The questions for the five hypotheses were initially compiled by reviewing the questionnaires of Chang & Chou (2011) for the “push and “trust” construct; Saadeghvaziri & Seyedjavadain (2011) for the “trust” construct; Xu et al. (2010) for the “push and pull location-based services” construct and Goldsmith et al.

(2011) for the “brand” construct. These questions were useful in terms of detailing the questions within a construct. However, they fell short in terms of specificity, context and distinctiveness. Therefore, these questions were disregarded by framing new ones that were free of ambiguity. As a result, these respondents were now provided with questions that were more detailed and relevant to the constructs.

Every effort was made to ensure that the questionnaire was relevant to the research problem. The initial questions for testing the first hypothesis required a respondent to select between two-paired statements; whilst the remainder of the questionnaire required statements to be rated against a 5-point Likert-type scale; with 1 being “strongly disagree” and 5 being “strongly agree” or in some instances with 1 being “very unlikely” and 5 being “very likely.” Blumberg et al. (2008) recommended that between 20 and 25 properly constructed questions about an attitude object were required for a reliable Likert-type scale (Blumberg et al., 2008, p 466).

The draft survey questionnaire was developed further by reviewing it with a professional skilled in questionnaire design. It was then emailed to five people to address any shortcomings in terms of readability and understanding and their recommendations were built into the new questionnaire. Every effort was made to ensure that answering the questionnaire would take the respondent not more than ten minutes to complete as recommended by Blumberg et al. (2008).

However, this was found to be of no relevance as it was subjective and dependent on the individual's reading pace and frame of mind.

4.7. Data gathering

The questionnaire consisted of 29 questions with six questions on average dedicated to each of the five hypotheses (connecting, push and pull LBS, brand and social networks) against adoption and trust. Survey Monkey was used to host the online self-administered anonymous questionnaire (see appendix 1) and collect the responses. The survey was opened for a month subject to achieving the targeted minimum number of respondents.

In total, 212 observations were received after a month. Two observations did not have a mobile phone whilst a further 12 were not using their mobile phones for more than its intended purpose of making calls. These 14 observations were excluded for failing to meet the minimum criteria of the study. Nine more observations were also excluded because there was too much missing information for them to be used effectively in the study. Therefore, 189 observations were used in total for the study. The sample size obtained exceeded the targeted 150 observations envisioned.

4.8. Analysis of data

Descriptive statistics were used to review the sample from the demographic and behavioural data elicited.

4.8.1 Cronbach's alpha coefficient

Cronbach's alpha (or coefficient alpha) was used to test the reliability of the research instruments (Hintze, 2007, pp. 505-2). Reliability ensured that each time the test was performed it produced the same result. Cronbach's alpha coefficient for internal consistency reliability becomes increasingly important when using Likert-type scales (Gliem & Gliem, 2003). The reliability of the items is low when data analysis is conducted in the absence of summated scales as the test does not provide reliability estimates for individual items (Gliem & Gliem, 2003). According to George & Mallery (2003), cited in Gliem & Gliem (2003) any Cronbach alpha coefficient less than or equal to 0.6 was questionable.

The statistical techniques used were:

4.8.2 Independent samples t-test

The independent sample t-test was used to decide whether two groups (levels) of a factor have the same mean (Hintze, 2007, pp. 206-1). When carrying out a two-sample t-test there was an assumption to be made concerning the variances of the two samples involved; and the formula used to determine the test statistic was dependent on whether the samples have equal variance or not.

The Levene's Test for Equality of Variances was found to be most robust and powerful (Hintze, 2007, pp. 206-20) and was therefore used to test whether the two independent samples (levels) being measured had equal variances (Hintze, 2007). The method used to calculate the t-values, and by extension the p-values, depended on whether there was equal variance or not. In this instance, the method that assumes unequal variance was used for the t-test because the difference between the variances of the two samples was significant; alternatively the equal variance would have been applied were the difference between variances not significant.

In the case of hypothesis 1 which needed to compare the means of the two independent samples; a t-test was found to be the most appropriate statistical technique to perform this comparison (Hintze, 2007, pp. 206-20). The independent samples t-test compares the means of two independent random

samples (in this case “I would have my location-based services on all the time because I am open to receive information everywhere, all the time” and “I would only like to receive information on my mobile phone at particular places, particular times” are the two samples. The samples were independent in the sense that they were drawn from different populations and each element of one sample was not paired (linked to) with its corresponding element of the other sample, therefore a t-test was deemed most appropriate for testing the hypothesis.

4.8.3 Correlation analysis

Pearson’s correlation coefficient was used to test the association between variables that were assumed to follow a normal distribution (Hintze, 2007, pp. 300-45) and because the sample size was large (larger than 30), the variables being tested would be assumed to follow a normal distribution by the central limit theorem.

Therefore for hypotheses 2 to 5 which needed to compare the relationship between two variables, the correlation analysis was found to be the most appropriate statistical technique to perform this comparison (Hintze, 2007, pp. 300-45). All these variables have a sample size larger than 30 and could be assumed to follow a normal distribution by the central limit theorem; therefore the Pearson’s correlation coefficient technique was deemed most appropriate for the testing the hypotheses.

4.8.4 Significance level

According to (Albright, Winston, & Zappe, 2009), the significance level, also called alpha (α), determines the size of the sample data that leads to the rejection (rejection region) of the null hypothesis. They further confirm that the sample results in the rejection region are called statistically significant at the α level and that the rejection region is chosen precisely so that the probability of a Type I error is at most α . The α will follow the traditional means and be set at 0.05 where the evidence will be statistically significant at the five percent level (Albright et al., 2009, p. 502).

4.9. Limitations of the research

The following research limitations need to be acknowledged:

- As a result of using the convenience and snowball sampling technique to target respondents through social networking sites and the researcher's business school, the sample reflected responses from predominantly the higher LSM (Buttress/LSM 7-8) and Apex/LSM 9-10) mobile user. However, it must be acknowledged that this group closely demonstrated the desired population characteristics.
- The paired statements for determining mobile users' availability for location-based services were developed by the author personally. Although every

effort was made to construct the statements free of ambiguity and social desirability bias; this process could have been a little more rigorous to ensure that the paired statements were indeed paired and had the desired clarity in terms of interpretation. These oversights that had surfaced in the field would have been addressed through a qualitative pre-testing phase.

4.10. Conclusion

The research design was carefully constructed and supported by a methodology to achieve pioneering insight into mobile users' ability to embrace m-commerce as a platform for doing business. The study closes the gap that is defunct in most prior studies by providing an applicability perspective to m-commerce.

Chapter 5: Results

5.1. Introduction

The outcomes from the study will be presented in this chapter. The ultimate question that this research needed to answer was whether mobile users, when provided with a choice in selecting information or services they required and had this material promoted to them when it was appropriate to them, would it reduce their inhibitions to transact through mobile.

A total of 189 observations were used for statistical analysis to test the hypotheses.

5.2. Sample characteristics

The table below summarises the demographic information of all the respondents who participated in the study.

Table 2: Demographics of respondents

Variable	Statistic	Variable	Statistic
Race		Marital Status	
Black	13%	Divorced/Separated	7%
Coloured	8%	Married/Living together	57%
Indian	31%	Single	35%
White	48%	Widowed	1%
Occupation		Gender	
Administrative and Managerial	34%	Female	46%
Artisans and Related	1%	Male	54%
Clerical and Sales	4%	Highest Education	
Engineering Student and work part time.	1%	Certificate	10%
Not Active	1%	Diploma	22%
Production and Mining	2%	High School	15%
Professional and Technical	49%	Post Graduate Degree	33%
Service	6%	Undergraduate Degree	20%
Transport and Communication	3%	Age	
Province		<18	1%
Eastern Cape	2%	18-24	10%
Free State	1%	25-30	22%
Gauteng	79%	31-35	26%
KwaZulu-Natal	10%	36-40	17%
Limpopo	1%	41-45	16%
Mpumalanga	1%	>50	8%
North West	1%	LSM Classification	
Western Cape	6%	Buttress	3%
		Apex	97%

The sample consisted of a representation of all races in South Africa. However, it was skewed towards the White (48%) and Indian (31%) population. The reason for this disproportionate representation of the racial groups (over-representation of white and Indian people) can be attributed to the sampling methods used to recruit respondents. Gender bias was not prevalent in the sample albeit slightly skewed towards males (54%).

The geographic representation of the sample proved to be successful despite the sampling method used as eight of the nine provinces were represented. The results were skewed towards Gauteng (79%), KwaZulu-Natal (10%) and Western Cape (six percent), the three main economic hubs in South Africa (Statistics South Africa, 2010). The channels (through email and social networking sites: Facebook, Twitter and LinkedIn) proved to be effective in attaining the sample's geographic footprint.

The LSM profile of the sample primarily consisted of Buttress/LSM 7-8 (three percent) and Apex/LSM 9-10 (97%). The questions used to determine this characteristic were based on the work of Chipp & Corder (2010) where seven subtle questions were asked to determine the sample's living standards. Despite the sample's weighting more towards the higher LSM profile, it does demonstrate closely the desired population characteristics sought.

The education and occupation are an extension of the LSM profile obtained for the sample. The highest education was skewed towards postgraduate degrees (33%) followed by diplomas (22%) and undergraduate degrees (20%). Twenty-five percent of the sample did not have a tertiary qualification such as a diploma or a degree. These educational backgrounds of the respondents were aligned to the occupations of the sample as the sample was largely made up of professional & technical (49%) and administration and managerial (34%) occupations. One percent of sample that were not active showed congruence to the one percent that were under 18 years of age.

The maturity levels within the sample proved to be varied and represented at all intervals; however the sample was more heavily weighted for the age groups between 25 and 35 (48%) and 36 and 45 (33%) year-olds. It must be noted that only 10 percent of the sample represented the 18 to 24 year-olds which are considered to be the most active young consumer group on social networking websites (Zafar & Khan, 2011).

For this study, this age group was not deemed critical as the focus was on using a sample that possessed buying power and mobility in order to transact through location-based services. In terms of seniority, eight percent of the sample reflected respondents that were older than 50 years of age, reaffirming this generation's integration with mobile technology. These maturity levels are commensurate with the occupational areas depicted within the sample.

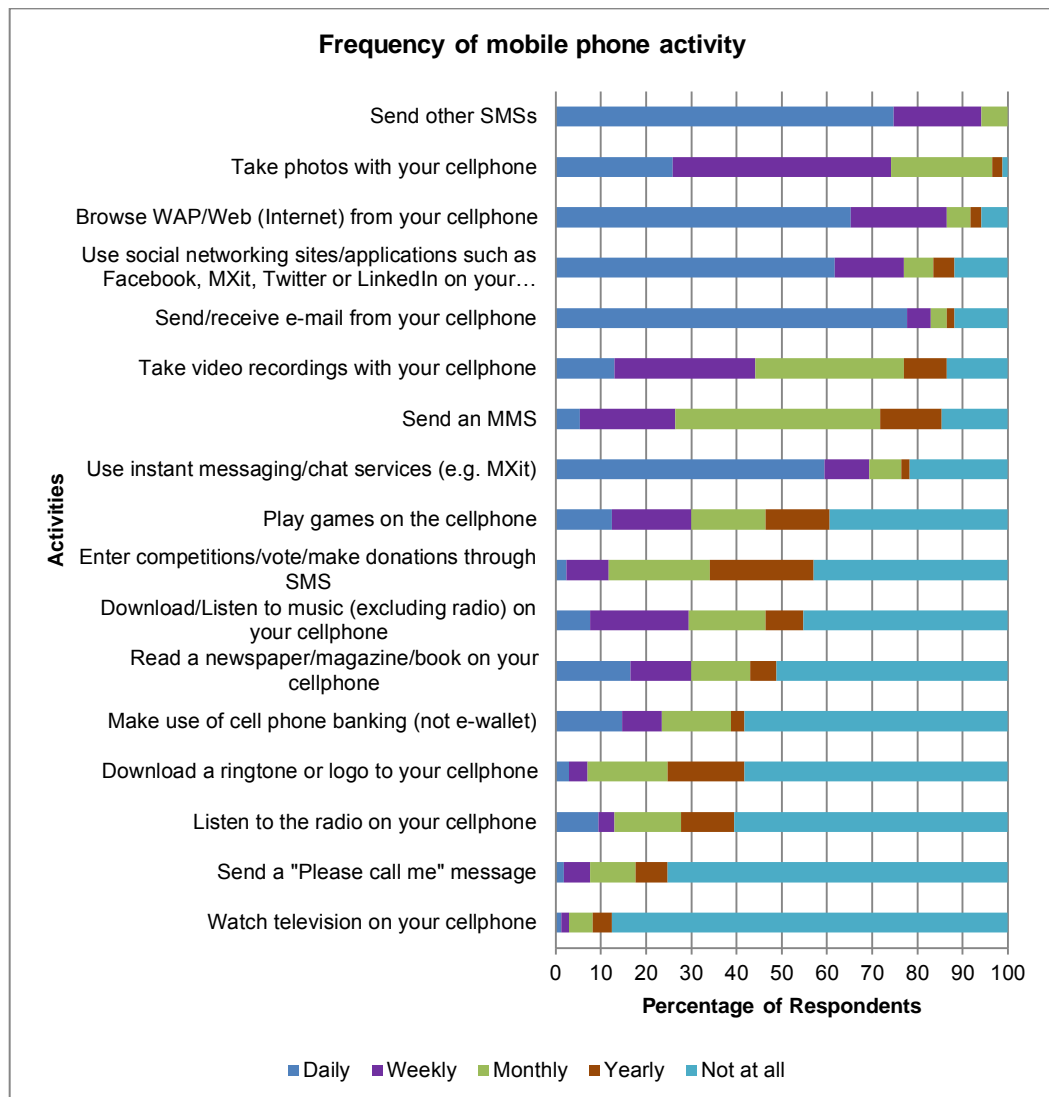
The marital status of the sample was largely skewed towards people who were married/living together (57%) and people that were single (35%). Although marital status was not a definitive for the study, it does allude to the way a household is managed in both space and time and the flexibility needed; especially when this is overlaid with both occupational and age demographics.

The overall dispositions of the sample meet the criteria in terms of closely demonstrating the traits required of the population for the study; therefore providing credibility to the hypothesis presented.

5.3. Respondents behaviours and beliefs within mobile connectivity

Figure 3 is a graphical representation of the activities participated in by the respondents and their frequency of usage (daily, weekly, monthly, yearly and not at all).

Figure 3: Frequency of mobile phone activities

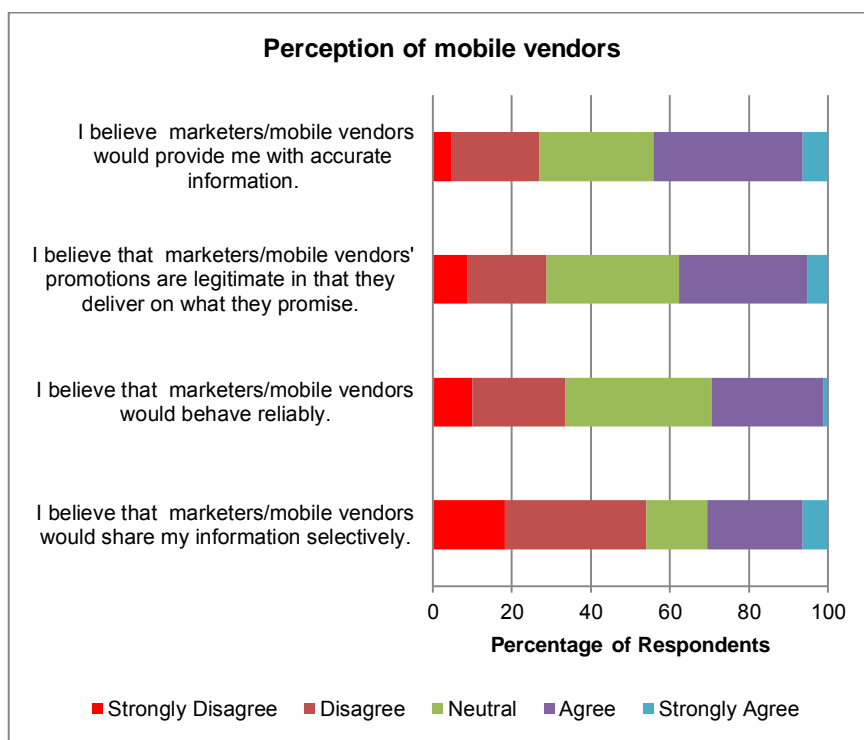


Comparing figure 3 with figure 1 (see p.3) which was based on AMPS (2010), it is evident that these mobile users are much more integrated with mobile technology, as in addition to sending SMS and taking photos with their mobile phones; the top three activities that these mobile users are involved in includes browsing the internet (94%), using social networking sites (88%) and sending/receiving emails (88%) from the mobile phones. This level of use

indicates that these mobile users have a relatively high degree of comfort with mobile technology and therefore would be at ease with mobile commerce.

Figure 4 is a graphical representation of the beliefs shared by the respondents about mobile vendors.

Figure 4: Mobile users’ perceptions of mobile vendors

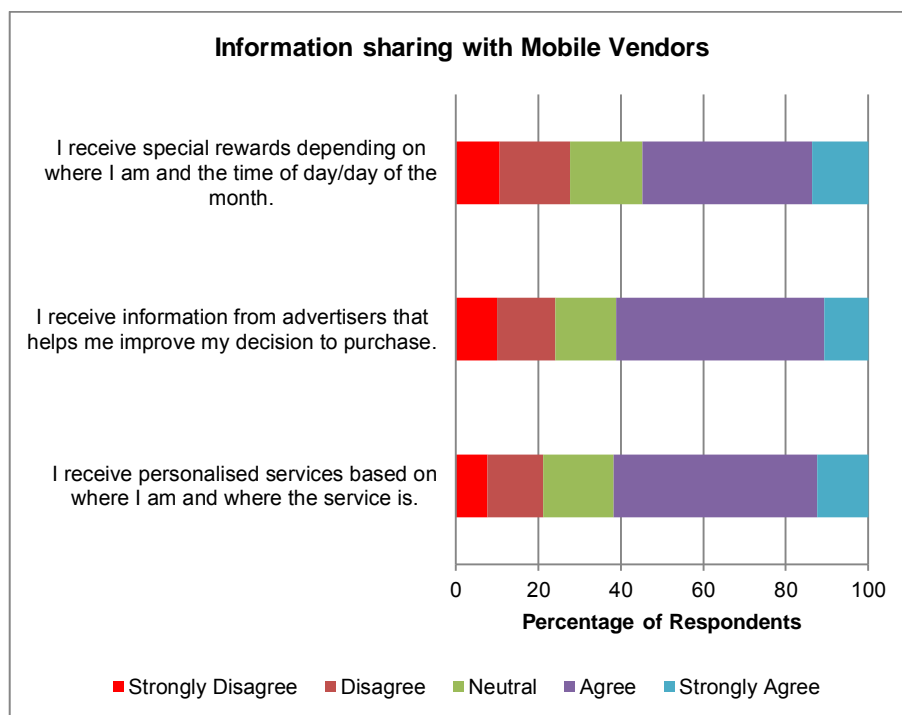


For mobile commerce to gain any traction, it was also important to understand the perceptions of the sample towards mobile vendors/marketers. Figure 4 illustrates that on average less than 35% of the sample had a favourable perception of mobile vendors.

The two biggest concerns for mobile users were whether mobile vendors would behave reliably (71%) and whether they would share their information selectively (70%). These concerns highlight the lack of trust that mobile users have with mobile vendors in terms of respecting their privacy.

Figure 5 is a graphical representation of the respondents' willingness to share their information with mobile vendors based on the services provided.

Figure 5: Information sharing with mobile vendors



The results from figure 5 provides mobile vendors with an opportunity to redeem themselves with respect to the low levels of perception depicted in figure 4 because on average 60% of mobile users are willing to share their information

with them, provided that they receive information that helps them improve their purchase decision (62%) and they receive personalised services based on where they are and where the services are provided (61%). Both these statements allude to their openness to advertising and their need for a location-based service respectively.

There has been an overwhelming support for the study as indicated through respondents' feedback in terms of understanding more about location-based services and its availability to them. This study has paved the way for innovation in the developer world in terms of transcending the mobile user to the next level of sophistication. This overall assessment of the sample provides context to the hypothesis testing and the implications of the results to be discussed.

5.4. Hypothesis testing

Statistical techniques that were described in Chapter 4 were used to determine the results of the hypotheses. The results are presented per hypothesis.

5.4.1 Hypothesis 1

The null hypothesis (H_{1_0}) under objective 1 states that connecting with a mobile user at a particular place, particular time will not increase m-commerce

adoption. The alternative hypothesis (H_{1_a}) states that connecting with a mobile user at a particular place, particular time will increase m-commerce adoption.

To test hypothesis 1, Independent t-tests were performed between the mean Adoption rating for the respondents who chose the variable “I would have my location-based services on all the time because I am open to receive information everywhere, all the time” against those who chose the variable “I would only like to receive information on my mobile phone at particular places, particular times.”

A variable with the two options was created and any respondents who agreed with both statements ($n=9$) were excluded from the analysis. The results are shown below

Table 3: Group statistics for Hypothesis 1

Adoption	Conditions	n	Mean	Std. Deviation
I would likely use a service where I can receive information on my mobile phone with the conditions I selected above.	I would have my location-based services on all the time because I am open to receive information everywhere, all the time.	19	4.000	0.471
	I would only like to receive information on my mobile phone at particular places, particular times	114	3.781	0.993
I would rather use location-based services rather than other forms of advertising.	I would have my location-based services on all the time because I am open to receive information everywhere, all the time.	19	3.474	0.964
	I would only like to receive information on my mobile phone at particular places, particular times	114	3.254	1.029

There were two t-tests performed; one with “equal variances assumed” and the other with “equal variances not assumed”. These results of these tests provided direction for analysis. The results are shown below

Table 4: Independent samples t-Test for connecting (place and time) in m-commerce adoption

Independent Samples Test	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	P-Value	t	df	P-Value	Mean Difference	
I would likely use a service where I can receive information on my mobile phone with the conditions I selected above.	Equal variances assumed	8.090	0.005	0.942	131	0.348	0.219
	Equal variances not assumed			1.537	50	0.131	0.219
I would rather use location-based services rather than other forms of advertising.	Equal variances assumed	0.001	0.980	0.867	131	0.387	0.219
	Equal variances not assumed			0.909	25	0.372	0.219

The p-values for testing equal variances for the variable “I would likely use a service where I can receive information on my mobile phone with the conditions I selected above” revealed that there were different variances between “I would have my location-based services on all the time because I am open to receive information everywhere, all the time” and “I would only like to receive information on my mobile phone at particular places, particular times” since the p-value for the F-test is 0.005. This value is less than $\alpha = 0.05$, therefore equal variances cannot be assumed. With no assumption of equal variances, the t-

test statistic is 1.537 with a p-value = 0.131 > 0.05; which indicates that there is no significant difference in the means of the samples, and the null hypothesis (H_{1_0}) should not be rejected in favour of the alternative hypothesis (H_{1_a}). Therefore, the data supports the null hypothesis (H_{1_0}) where connecting with a mobile user at a particular place, particular time would not increase m-commerce adoption.

The p-values for testing equal variances for the variable “I would rather use location-based services rather than other forms of advertising” revealed that the variances were the same between “I would have my location-based services on all the time because I am open to receive information everywhere, all the time” and “I would only like to receive information on my mobile phone at particular places, particular times” since the p-value for the F-test is 0.980. This value is greater than 0.05 (α), therefore equal variances can be assumed. With the assumption of equal variances, the t-test statistic is 0.867 with a p-value = 0.387 > 0.05; which indicates that there is no significant difference in the means of the samples, and the null hypothesis (H_{1_0}) should not be rejected in favour of the alternative hypothesis (H_{1_a}). Therefore, the data supports the null hypothesis (H_{1_0}) where connecting with a mobile user at a particular place, particular time would not increase m-commerce adoption.

Therefore, based on the two tests above it can be concluded that connecting with a mobile user at a particular place, particular time would not increase m-commerce adoption.

5.4.2 Hypothesis 2a

The first null hypothesis (H_{2a_0}) under objective 2 states that mobile vendors engaging with mobile users through “push” location-based services will not increase the trust to transact in m-commerce. The alternative hypothesis (H_{2a_a}) states that mobile vendors engaging with mobile users through “push” location-based services will increase the trust to transact in m-commerce.

A Cronbach’s alpha test was performed for the push location-based service variables. Cronbach’s alpha is the most common measure of internal consistency to check the reliability of an ordinal scale (Gliem & Gliem, 2003). The Cronbach’s alpha for push LBS is shown below

Table 5: Reliability statistics for push location-based service variables

Cronbach's alpha	n of Items
0.719	3

The Cronbach’s alpha for push LBS was 0.719, which shows a very high level of internal consistence. This means that the variables can be grouped together to form a summated scale for push LBS. A summated scale for push LBS was computed by finding the average of the three push LBS variables.

To test hypothesis 2a, a correlation analysis was performed for the summated push construct against the variable “Given this opportunity of receiving information relevant to you to your cell phone, how likely are you to trust this marketer/mobile vendor?” The results are shown below

Table 6: Correlation analysis of push LBS against trust

	Trust this marketer/mobile vendor		
	Pearson	P-Value	n
	Correlation		
Summated push LBS	0.602	0.000	148

The results show that the correlation between the push LBS and trust is 0.602. The p-value = 0.000 < 0.05 (α); which indicates that correlation is significant and that the null hypothesis (H_{2a_0}) should be rejected in favour of the alternative hypothesis (H_{2a_a}). Therefore, the data supports the alternative hypothesis (H_{2a_a}) where mobile vendors engaging with mobile users through “push” location-based services would increase the trust to transact in m-commerce.

5.4.3 Hypothesis 2b

The second null hypothesis (H_{2b_0}) under objective 2 states that mobile vendors engaging with mobile users through “push” location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis

(H_{2b_a}) states that mobile vendors engaging with mobile users through “push” location-based services will increase the propensity to transact in m-commerce.

To test hypothesis 2b, a correlation analysis was performed for the summated push construct against the variable “How likely are you to subscribe to a service that customises communication to your needs based on where you are?”, and variable “Given this opportunity of receiving information relevant to you to your mobile phone, how likely are you to make use of this location-based service?” The results are shown below

Table 7: Correlation analysis of push LBS against adoption

Summated push LBS	Pearson Correlation	P-Value	n
Subscribe to a service that customises communication to your needs based on where you are	0.485	0.000	148
Make use of this location-based Service	0.588	0.000	148

The results show that the correlation between push LBS and the likelihood to subscribe to a service is 0.485 and that of push LBS and the likelihood to use the LBS service is 0.588. In both cases, the likelihood “to subscribe” and “to use” have p-values of 0.000 which are less than 0.05 (α) indicating that the correlation coefficient are positive and significant, and that the null hypothesis (H_{2b₀}) should be rejected in favour of the alternative hypothesis (H_{2b_a}). Therefore, the data supports the alternative hypothesis (H_{2b_a}) where mobile

vendors engaging with mobile users through “push” location-based services would increase the propensity to transact in m-commerce.

5.4.4 Hypothesis 3a

The first null hypothesis (H_{3a_0}) under objective 3 states that mobile vendors engaging with mobile users through “pull” location-based services will not increase the trust to transact in m-commerce. The alternative hypothesis (H_{3a_a}) states that mobile vendors engaging with mobile users through “pull” location-based services will increase the trust to transact in m-commerce.

A Cronbach’s alpha test was performed for the pull location-based service variables. The Cronbach’s alpha for pull LBS is shown below

Table 8: Reliability statistics for pull location-based service variables

Cronbach's alpha	n of Items
0.739	4

The Cronbach’s alpha for pull LBS was 0.739, which shows a high level of internal consistence. This means the variables can be grouped together to form a summated scale for pull LBS. A summated scale for pull LBS was computed by finding the average of the four pull LBS variables.

To test hypothesis 3a a correlation analysis was performed for the summated pull construct against the variable “Given all these features of accessing information relevant to you from your cell phone, how likely are you to trust this marketer/mobile vendor?” The results are shown below

Table 9: Correlation analysis of pull LBS against trust

Given all these features of accessing information relevant to you from your cell phone, how likely are you to trust this marketer/mobile vendor?			
	Pearson Correlation	P-Value	n
Summated pull LBS	0.425	0.000	141

The results show that the correlation between the pull LBS and trust is 0.425. The p-value = 0.000 < 0.05 (α); which indicates that correlation is significant and that the null hypothesis (H_{3a_0}) should be rejected in favour of the alternative hypothesis (H_{3a_a}). Therefore, the data supports the alternative hypothesis (H_{3a_a}) where mobile vendors engaging with mobile users through “pull” location-based services would increase the trust to transact in m-commerce.

5.4.5 Hypothesis 3b

The second null hypothesis (H_{3b_0}) under objective 3 states that mobile vendors engaging with mobile users through “pull” location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis

(H_{3b_a}) states that mobile vendors engaging with mobile users through “pull” location-based services will increase the propensity to transact in m-commerce.

To test hypothesis 3b a correlation analysis was performed for the summated pull construct against the variable “Given all these features of accessing information relevant to you from your mobile phone, how likely are you to make use of this location-based service?” The results are shown below

Table 10: Correlation analysis of pull LBS against adoption

Given all these features of accessing information relevant to you from your cell phone, how likely are you to make use of this location-based service			
	Pearson Correlation	P-Value	n
Summated pull LBS	0.533	0.000	141

The results show that the correlation between the pull LBS and the likelihood to make use of the location-based service is 0.533. The p-value = 0.000 < 0.05 (α); which indicates that correlation is significant and that the null hypothesis (H_{3b₀}) should be rejected in favour of the alternative hypothesis (H_{3b_a}). Therefore, the data supports the alternative hypothesis (H_{3b_a}) where mobile vendors engaging with mobile users through “pull” location-based services would increase the propensity to transact in m-commerce.

5.4.6 Hypothesis 4a

The first null hypothesis (H_{4a_0}) under objective 4 states that the recommendation of specific product/service brands (favourite) by location-based services will not increase the trust needed for m-commerce adoption. The alternative hypothesis (H_{4a_a}) states that the recommendation of specific product/service brands (favourite) by location-based services will increase the trust needed for m-commerce adoption.

A Cronbach's alpha test was performed for the brand loyalty variables. The Cronbach's alpha for brand loyalty is shown below

Table 11: Reliability statistics for brand loyalty variables

Cronbach's alpha	n of Items
0.838	3

The Cronbach's alpha for brand loyalty construct was 0.838, which indicates a very high level of internal consistence. This means that the variables can be grouped together to form a summated scale for brand loyalty. A summated scale for brand loyalty was computed by finding the average of the three brand loyalty rating variables.

To test hypothesis 4a, a correlation analysis was performed for the summated brand loyalty construct against the variable “If this location-based service offered me information on any of my favourite brands, I would trust this location-based service.” The results are shown below

Table 12: Correlation analysis of specific brands against trust

If this location-based service offered me information on my favourite product/service brands I would trust this location-based service.			
	Pearson Correlation	P-Value	n
brand loyalty	0.466	0.000	138

The correlation between the brand loyalty and trust of location-based services providing information to mobile users on their specific brands is 0.466. The p-value = 0.000 < 0.05 (α); which indicates that correlation is significant and that the null hypothesis (H_{4a0}) should be rejected in favour of the alternative hypothesis (H_{4a_a}). Therefore, the data supports the alternative hypothesis (H_{4a_a}) which states that the recommendation of specific product/service brands (favourite) by location-based services would increase the trust needed for m-commerce adoption.

5.4.7 Hypothesis 4b

The second null hypothesis (H_{4b_0}) under objective 4 states that the recommendation of specific product/service brands (favourite) by location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis (H_{4b_a}) states that the recommendation of specific product/service brands (favourite) by location-based services will increase the propensity to transact in m-commerce.

To test hypothesis 4b a correlation analysis was performed for the summated brand loyalty construct against the variable “If this location-based service offered me information on any of my favourite brands, I would join this location-based service on my mobile phone to receive this news (including specials, promotions and free gifts).” The results are shown below

Table 13: Correlation analysis of specific brands against propensity to transact

	Pearson Correlation	P-Value	n
If this location-based service offered me information on my favourite product/service brands, I would join this location-based service on my mobile phone to receive this news (including specials, promotion and free gifts).	0.368	0.000	138

The correlation between brand loyalty and joining a location-based service providing information to mobile users on their specific brands is 0.368. The p-value = $0.000 < 0.05 (\alpha)$; which indicates that correlation is significant and that the null hypothesis (H_{4b_0}) should be rejected in favour of the alternative hypothesis (H_{4b_a}). Therefore, the data supports the alternative hypothesis (H_{4b_a}) which states that the recommendation of specific product/service brands (favourite) by location-based services would increase the propensity to transact in m-commerce.

5.4.8 Hypothesis 4c

The third null hypothesis (H_{4c_0}) under objective 4 states that the recommendation of any product/service brands by location-based services will not increase the trust needed for m-commerce adoption. The alternative hypothesis (H_{4c_a}) states that the recommendation of any product/service brands by location-based services will increase the trust needed for m-commerce adoption.

To test hypothesis 4c, a correlation analysis was performed for the summated brand loyalty construct against the variable “If this location-based service offered me information on any brands (they do not have to be my favourite), I would trust this location-based service” The results are shown below

Table 14: Correlation analysis of any brands against trust

If this location-based service offered me information on any brands (they do not have to be my favourite), I would trust this location-based service.			
	Pearson Correlation	P-Value	n
brand loyalty	0.237	0.005	138

The correlation between brand loyalty and the trust of location-based service providing information on any brand (not necessarily specific/favourite brand) is 0.237. Although the correlation coefficient is lower than that of a LBS offering specific brand, the correlation has a p-value of 0.005 which is less than 0.05 (α) indicating a significant relationship and that the null hypothesis (H_{4c_0}) should be rejected in favour of the alternative hypothesis (H_{4c_a}). Therefore, the data supports the alternative hypothesis (H_{4c_a}) which states that the recommendation of any product/service brands by location-based services would increase the trust needed for m-commerce adoption.

5.4.9 Hypothesis 4d

The fourth null hypothesis (H_{4d_0}) under objective 4 states that the recommendation of any product/service brands by location-based services will not increase the propensity to transact in m-commerce. The alternative hypothesis (H_{4d_a}) states that the recommendation of any product/service brands by location-based services will increase the propensity to transact in m-commerce.

To test hypothesis 4d, a correlation analysis was performed for the summated brand loyalty construct against the variable “If this location-based service offered me information on any brands (they do not have to be my favourite), I would join this location-based service on my mobile phone to receive this news (including specials, promotion and free gifts).” The results are shown below

Table 15: Correlation analysis of any brands against propensity to transact

	Pearson Correlation	P-Value	n
If this location-based service offered me information on any brands (they do not have to be my favourite), I would join this location-based service on my mobile phone to receive this news (including specials, promotion and free gifts).	0.172	0.044	138

The correlation between brand loyalty and joining a location-based service offering information on any brand is 0.172. The p-value = 0.044 < 0.05 (α); which indicates that the correlation is significant and that the null hypothesis (H_{4d_0}) should be rejected in favour of the alternative hypothesis (H_{4d_a}). Therefore, the data supports the alternative hypothesis (H_{4d_a}), namely that the recommendation of any product/service brands by location-based services would increase the propensity to transact in m-commerce.

5.4.10 Hypothesis 5a

The first null hypothesis (H_{5a_0}) under objective 5 states that the recommendation of location-based services on social networks will not encourage mobile user trust. The alternative hypothesis (H_{5a_a}) states that the recommendation of location-based services on social networks will encourage mobile user trust.

To test hypothesis 5a, a correlation analysis was carried out between the variables “How likely are you to be interested in a location-based service that everyone was talking about on Twitter or Facebook” and “Given all these recommendations of location-based services for enabling you to information relevant to you from your mobile phone, how likely are you to trust the recommendations from this social network”. The results are shown below

Table 16: Correlation analysis of social networks against trust

	...trust the recommendations from this social network?		
	Pearson Correlation	P- Value	n
... interested in a location-based service that everyone was talking about on Twitter or Facebook	0.761	0.000	129

The correlation between “... interested in a location based service that everyone was talking about on Twitter or Facebook” and “... trust the recommendations from the social network sites?” is 0.761, which is very high. The p-value = 0.000 < 0.05 (α); which indicates that correlation is significant and that the null hypothesis (H_{5a_0}) should be rejected in favour of the alternative hypothesis (H_{5a_a}). Therefore, the data supports the alternative hypothesis (H_{5a_a}) where the recommendation of location-based services on social networks would encourage mobile user trust.

5.4.11 Hypothesis 5b

The second null hypothesis (H_{5b_0}) under objective 5 states that the recommendation of location-based services on social networks will not encourage mobile user participation. The alternative hypothesis (H_{5b_a}) states that the recommendation of location-based services on social networks will encourage mobile user participation.

To test hypothesis 5b, a correlation analysis was conducted between the variables “How likely are you to be interested in a location-based service that everyone was talking about on Twitter or Facebook” and “Given all these recommendations of location-based services for enabling you to information relevant to you from your mobile phone, how likely are you to make use of this service.” The results are shown below

Table 17: Correlation analysis of social networks against participation

	Pearson Correlation	P-Value	n
...how likely are you to make use of this service recommended on these social networks?			
... interested in a location-based service that everyone was talking about on Twitter or Facebook	0.799	0.000	129

The correlation between the “... interested in a location-based service that everyone was talking about on Twitter or Facebook” and “... how likely are you to make use of these services recommended on these social networks” is 0.799, which is very high. The p-value = 0.000 < 0.05 (α); which indicates that correlation is significant and that the null hypothesis (H_5b_0) should be rejected in favour of the alternative hypothesis (H_5b_a). Therefore, the data supports the alternative hypothesis (H_5b_a) stating that the recommendation of location-based services on social networks would encourage mobile user participation.

5.4.12 Conclusion

Eleven tests were conducted for the five hypotheses because of the duality between trust and adoption (propensity to transact) against the variables. The results of the hypothesis-testing are summarised in Table 18 below

Table 18: Summary of hypothesis tests

Hypothesis		Result
Hypothesis 1	H_{10}	Fail to reject
Hypothesis 2	H_{2a0}	Rejected
	H_{2b0}	Rejected
Hypothesis 3	H_{3a0}	Rejected
	H_{3b0}	Rejected
Hypothesis 4	H_{4a0}	Rejected
	H_{4b0}	Rejected
	H_{4c0}	Rejected
	H_{4d0}	Rejected
Hypothesis 5	H_{5a0}	Rejected
	H_{5b0}	Rejected

With the exception of hypothesis 1, all the rest were rejected in favour of the alternative hypotheses. These results will be discussed in Chapter 6.

Chapter 6: Discussion of results

6.1. Introduction

This chapter discusses the results of the study and integrates the findings with the literature in Chapter 2. The fundamental question that this research aims to answer is: “If mobile users are provided with a choice in selecting information or services they require and have this material promoted to them when it is appropriate to them, will this reduce their inhibitions to transact through mobile?” In order to answer this question, this chapter will be structured according to the research objectives outlined in Chapter 1.

6.2. H₁: particular place, particular time versus adoption of m-commerce

The results achieved for hypothesis 1 provided no empirical support for the assertion that connecting with a mobile user at a particular place, particular time would increase adoption of m-commerce. This contradiction can be explained through the limited awareness and usage among mobile users of location-based services.

Although the sample demonstrated closely the desired population characteristics pursued, an overwhelming number of respondents demonstrated

their limited awareness through their positive feedback in wanting to know more about the services and their availability to them.

All these scenarios were provided as hypothetical examples to illustrate meaning as these services have not reached widespread execution in its truest form for mobility. Therefore, the intrusive aspect as held by Tsang et al., 2004, as cited in Saadeghvaziri & Seyedjavadin (2011) of receiving information anywhere, anytime has not been truly experienced by the respondents to warrant a change or reluctance in their engagement with information providers.

The result does lend support to the earlier work of Balasubramanian et al. (2002) where he advocated the ubiquity of m-commerce and its capacity to provide flexibility between spatial and temporal activities. However, it must be borne in mind that his deduction on the propagation of m-commerce does not address the mobile users' context and their lack of trust for transacting, which the studies of Van der Walt et al, (2009) and Al-alak & Alnawas (2010) have respectively asserted.

Van der Walt et al. (2009) pointed out that marketers need to ensure that messages are sent to mobile users at a reasonable time during the day to prevent feelings of irritation, thereby sustaining their contradicting view of the results. The intrusive nature of anywhere, anytime is further supported by the view of Al-alak & Alnawas (2010) where they posited that information sharing

tended to become an invasion of one's personal space that perpetuated resistance to adoption because mobile vendors tended to spam their mobile users with information that was irrelevant and extensive. Despite the fact that 65% of the sample on average had an unfavourable perception of mobile vendors, 60% of them on average indicated their overwhelming willingness to share their information with mobile vendors, inferring their limited experience of mobile vendors sending them information everywhere, all the time.

The views of Van der Walt et al. (2009) and Al-alak & Alnawas (2010) dispute the results of Balasubramanian et al. (2002) because the latter did not address the intrusive nature of ubiquity on mobile users and their availability. According to them, these reckless behaviours of sending mobile users content that does not relate to their context and their availability destroys trust in this relationship, further inhibiting adoption of m-commerce. It must further be acknowledged that this seminal work from Balasubramanian et al. (2002) was conceptualised when m-commerce was in its incubatory stages and they have since encouraged further work challenging their existing premises for the realisation of m-commerce adoption.

As such, Shankar & Balasubramanian (2009) provide additional evidence from their innovation acceptance theory that also supports the dispute of the result of the study emphasising that the decision for adoption of innovation lies in its relative advantage and adaptation to mobile users' needs and usage patterns

and therefore by not connecting with mobile users at a particular place, particular time does not promote m-commerce adoption.

6.3. H₂ and H₃: push and pull - LBS versus trust; propensity to transact

These hypotheses have been combined for discussion purposes because they are the two means by which information sharing can occur with mobile users and mobile vendors/marketers.

The results achieved for hypotheses 2 and 3 both provided empirical support for the assertion that mobile vendors engaging with mobile users through “push” and “pull” location-based services would increase the trust and the propensity to transact in m-commerce. These mechanisms enable mobile users to dictate the terms of engagement with mobile vendors where their expectations are clearly defined, fostering a relationship of trust and understanding their requirements for transacting.

These results for both these hypotheses are accepted by Unni & Harmon (2007) and Xu et al. (2010). These authors believe that these delivery mechanisms empower mobile users to manage their risk aversion by either retrieving (pull) relevant information when they require it or opting in (push) to a service they have approved. The benefits of these services are further expounded by Georgiadis et al. (2005) in terms of the mechanism’s capacity to

adapt each time to better fit the mobile users' needs based on their mobile users personal qualities and prior history with the services.

The results also revealed a predisposition of the sample towards push LBS rather than pull LBS as deduced by the comparison of their Pearson correlation coefficients. The trust and propensity to transact correlation coefficients, albeit moderate (0.4 to 0.6), were marginally stronger for the push LBS mechanism reaffirming the sample's leaning towards having information pushed to them by mobile vendors instead of retrieving it themselves through the pull mechanism.

Xu et al. (2010) dispute the outcome of this result, claiming that push LBS is likely to raise greater concerns over violation of data collection because mobile users have considerably less control over their interaction with mobile vendors than they do with pull LBS. They argue that pull LBS offers the least reluctance in terms of adoption because of the increased control mobile users are able to exercise.

The results can possibly be explained in terms of the sample's disposition towards mobile vendors and their limited experience with having information pushed to them through their mobile devices. Although the general perceptions of the sample towards mobile vendors were unfavourable, with concerns arising regarding privacy and reliability as depicted in figure 4, almost 60% of them showed a willingness to share their information with mobile vendors, preempting

a trusting relationship and therefore displaying openness to information being pushed from mobile vendors.

The leniency regarding push LBS could be further explained in terms of the sample's interest in a service that is unfamiliar to them and because they are unsure of where to subscribe for this service through pull LBS; they imploringly exhibit openness to use this service through push from mobile vendors.

6.4. H₄: Brand loyalty - LBS versus trust; propensity to transact

Like hypotheses 2 and 3, these hypotheses have been combined for discussion purposes because they provide insight into whether mobile users are specific in terms of the brands they are willing to receive information on from location-based services.

The results achieved for hypothesis 4 provide empirical support for the assertion that the recommendation of product/service brands by location-based services would increase the trust and the propensity to transact in m-commerce. According to Chung & Tan (2011), these results are supported because of the ability of strong brands to validate feelings of confidence and security by delivering on their promise to mobile users and their ability to reduce their perceived risk of using a virtual service as was the case for location-based services.

Goldsmith et al. (2011) expand on Chung & Tan's (2011) premise by explaining that the emotional attachment of the brand often leads to frequent consumption, loyalty and positive word of mouth. Therefore, brand loyalty can provide the impetus for trust and the propensity to transact, affirming the results.

Interestingly, the brands that were used in the questionnaire to create context for the sample were brands that generally resonated well with mobile users' offline. Consistent with Bravo et al. (2010), the results have shown that brands that are able to resonate with mobile users offline have value for them online.

The results also revealed a predisposition of the sample towards specific brands (favourite) rather than any brands as deduced by the comparison of their Pearson correlation coefficients. The trust and propensity to transact correlation coefficients, albeit moderate (0.4 to 0.6), were marginally stronger for the recommendation of specific brands (favourite) by LBS, reaffirming the sample's tendency towards preferring to have specific brands (favourite) recommended to them through LBS instead of having any brand recommended to them through LBS.

The results of the study were further supported by Chen (2011), who claimed that there is a reduced tendency to object to a service that pushes favourite brands. This is not surprising and is supported by Marketing Daily News (2011),

who contend that mobile users crave brand-related information which must be relevant and on their terms. This provides additional impetus for the results.

All past (for example Lee & Benbasat (2003), Pura (2005) and Xu et al. (2010)) and present studies (for example Shin & Shin (2011) and Chen (2011)) reinforce the view that customisation is the key to unlocking trust in mobile users for the services of m-commerce and warrant its success in adoption. Therefore the link between recommendation of specific brands through location-based services fostering trust and adoption of m-commerce has been established by the results and affirmed by past studies.

6.5. H₅: Social network recommendations - LBS versus Trust; Participation

The results achieved for hypothesis 5 provide empirical support for the assertion that the recommendation of location-based services on social networks would encourage user trust and participation. Barnes (1972) cited in Shankar et al. (2010) and Jackson & Yariv, (2006) validate these results in terms of the theory on social networks where the location and strength of the relationships in a social network greatly influences the behaviour of the participants such that they are more freely able to participate in location-based services.

Nootboom (2011) offers further explanation on the premises of Barnes (1972) (cited in Shankar et al., 2010); Jackson & Yariv, (2006) by confirming that the linkages shared between participants in social networks develop into sources of trust because they are founded on familiarity, past experiences and an openness to share information which according to Shin & Shin (2011) reduces their ability to scrutinise the services and facilitate adoption.

Although Fournier & Avery (2011) dispute the results of the study claiming that social networks were made for people and their conversations and not as a channel for marketing communications, the Pearson correlation coefficient for both the trust and participation variables in the study were high (>0.75) affirming that the recommendation of location-based services on social networks would encourage user trust and participation.

6.6. Conclusion

Adoption of m-commerce can be realised through resuscitating trust with mobile users through location-based service mechanisms. This relationship of trust is highly dependent on the way mobile vendors/marketers connect with mobile users in terms of information relevant to mobile users' context and their preferences to receiving it in space and time. Mobile vendors that are able to utilise location-based services in terms of sending brand-related information and

integrate themselves to be recommended on social networks will attain mobile users' trust and increase their propensity to transact in m-commerce.

The research objectives as defined by four of the five hypotheses have therefore been met and contribute to the existing body of knowledge, specifically to the applicability of m-commerce through location-based services delivery mechanisms.

6.7. Learning

The study also revealed the importance of using a sample that was actively using a location-based service in order to better understand their relationship with mobile vendors and their response to being connected by mobile vendors ubiquitously.

In a South African context, this proved challenging because location-based services have not been fully integrated into the lifestyles of mobile users and therefore hypothetical examples were constructed to elicit responses to the study. Whether due to the limited experience with the services or an issue arising out of measurement, there appear to be a certain naiveties displayed by the sample in terms of their relationship with mobile vendors and their availability in terms of spatial and temporal activities.

As a result the hypothesis challenging the ubiquitous connection with mobile users to increase adoption was not supported by the study as well as the preference for a pull location-based service versus a push location-based service from a risk aversion perspective.

Chapter 7: Conclusion

7.1. Introduction

This thesis has explored the resuscitation of location-based service mechanisms in harnessing trust in the adoption of mobile commerce. This last chapter will provide a summary of the key findings of the research, along with recommendations to stakeholders. The final piece of this chapter focuses on the limitations of the study and provides suggestions for future research.

7.2. Summary of findings

Unlike the typical mobile users from the AMPS (2010) study, these mobile users are browsing the internet, participating on social networking sites and emailing on their mobile phones. These activities have indicated that they have a fairly high degree of comfort with mobile technology and by its very nature would be at ease with m-commerce. However, almost 60% of the sample did not participate in mobile banking as an activity, conceding to Chung & Kwon (2009) premise about technology superseding mobile users trust in service providers.

The study empirically showed that location-based service mechanisms were able to resuscitate the trust needed for the adoption of m-commerce and that trust was indeed the moderator of adoption of m-commerce.

A key finding of this study is that both push and pull location-based services have proved to increase mobile users' trust and their propensity to transact in m-commerce, lending support to the views shared by Unni & Harmon (2007) of the importance to mobile users of receiving relevant information where and when they need it through their own preferences. Although both these delivery mechanisms were validated in terms of the study, their individual influences were marginally different in terms of context. There was a greater preference for push location-based services; a result possibly stemming from the sample's willingness to share their information with mobile vendors and their limited experience with location-based services in a South African context and so have not experienced anywhere, anytime communication sent to them by mobile vendors.

Ironically, the notion of engaging mobile users at a particular place, particular time to avoid feelings of intrusiveness (Al-alak & Alnawas, 2010) and irritation (Van der Walt et al., 2009), thereby encouraging adoption of m-commerce is not supported by the results of the present research. This contradiction to the theory could possibly be explained in terms of the design of the questions or the naiveté of the respondents with a concept that has not been fully integrated into their lifestyles which they could draw on to make a decision based on real experiences. The leniency regarding push LBS could be further explained in terms of the sample's interest in a service that is unfamiliar to them and because they are unsure of where to subscribe for this service through pull LBS; they imploringly exhibit openness to use this service through push from mobile vendors.

Another finding from the research is the significance of the recommendation of brands through location-based services that increases trust and the propensity to transact in m-commerce. Although discussions were positive for brands in general, the results leaned more towards specific brands (favourite) that were relevant to mobile users, emphasising the resonance of strong brands in achieving feelings of confidence and security (Chung & Tan, 2011), paving the way for trust and the propensity to transact in m-commerce. This finding is not surprising as it affirms the view shared by Pura (2005) of the strength of customisation and relevance in serving the context of the mobile user.

Despite the exclusivity associated with the nature of social networks as depicted by Fournier & Avery (2011), location-based services have the potential to also utilise them to encourage trust and participation in its services because mobile users trust what their friends and family members say about a brand or product on social media (eMarketer, 2011). This finding creates breakthrough opportunities for adoption of m-commerce because of the influence of these networks as shared by the theory on social networks (Barnes, 1972 cited in Shankar et al., 2010; Jackson & Yariv, 2006) and its capacity to accelerate mobile user adoption.

7.3. Academic implications

These results contribute to the body of research regarding mobile commerce by extending the existing understanding of its use through application with push and pull location-based services and its adoption through recommendations based on trust from brand loyalty and social networks.

This research integrates the effects of ubiquity (anywhere, anytime) of m-commerce as demonstrated by seminal work of Balasubramanian et al. (2002) with the works of Xu et al. (2010) and Pura (2005) on location-based services in serving the needs of mobile users at their availability and in their context. This is one of the first studies to focus actively on challenging the ubiquitous nature of m-commerce by connecting with mobile users at a particular place, particular time to facilitate adoption; thereby laying the groundwork for future studies.

The research builds on the study of Xu et al. (2010) by demonstrating the effects of push and pull location-based service mechanisms in harnessing trust for m-commerce. The sample showed a greater tendency towards push location-based service, illustrating their acceptance of the push service for the adoption of m-commerce.

This research also expands understanding of brand loyalty and social networks as antecedents to fostering trust and propensity to transact in m-commerce

through location-based services recommendations. It provides additional support to the work of Chen (2011) where it concedes to the reduced objection experienced by mobile users that have had their favourite brands pushed to them through mobile vendors. It also disputes the exclusivity claimed by Fournier & Avery (2011) as barriers to entry of social network marketing, further encouraging mobile vendors to initiate credible contact.

7.4. Managerial implications

These findings create a base on which m-commerce can springboard off in terms of adoption because of trust in its application using location-based services and its mechanisms.

This study has revealed that, although mobile users have been typically using SMS as a phone activity and hence have been slow to adopt the more advanced 3G services as elucidated by Ramburn & van Belle (2011), there has been an overwhelming shift in behaviour as mobile users are now integrating the technology with their lifestyles. They are using their mobile phones to browse the internet and connect to their social networking applications like Facebook, Twitter and LinkedIn. Mobile users are also using their devices for sending and receiving email, in addition to using instant messaging services to stay connected with other mobile users.

As mobile users are becoming more empowered with their mobile phones, it becomes increasingly important for mobile vendors to improve their disposition in order to ensure that m-commerce can be realised for business. The perceptions of mobile vendors are very low with only 35% of the study on average having a favourable perception of mobile vendors/marketers. This means that there is a lot of work to do in changing the perceptions of mobile users in order to provide a service to them and achieve the results required by business investment.

Therefore, trust as iterated through many previous studies becomes a starting point for changing perceptions as it is a critical factor where information systems are concerned (Shin & Shin, 2011). The reluctance of mobile users to connect through their mobile phones and engage with m-commerce calls for a complete overhaul of mobile vendors existing engagement with mobile users to one that is focused on trust building and that is “mobi-centric”, placing greater emphasis around the mobile users’ requirements integrated with business objectives.

This alludes to the formulation of a mobile strategy that focuses on connecting with mobile users’ responsibly and further mandating mobile-vendors to refrain from knee-jerk responses in adopting a one-size-fits-all approach when it comes to achieving business pressures of revenue generation. The services of Groupon have come close to serving as a location-based service. However it has fallen short in terms of maintaining the mobile user context in its offering and its specificity in terms of place and time. Each promotion is mandated to a

minimum number of customers in order to qualify (Groupon, 2011) and these offers generally do not take into consideration the needs of the customer at a moment in time, thereby creating unnecessary uncertainty for the subscriber in whether his needs would be met. The geographic locations of these promotions are provided regionally without any impetus to the GPS of mobile phones (Groupon, 2011). These features do not appear to inspire repeat purchases from consumers as articulated by 82% of businesses in United States using Groupon (eMarketer, 2011). Therefore, there is an opportunity for a location-based service to provide personalisation and relevance in terms of location and need.

This study has confirmed the importance of personalisation through location-based service delivery mechanisms such as push and pull to ensure information is relevant to mobile users when and where they need it. This is further emphasised in terms of their greater tendency to prefer specific brand-related information from location-based services as opposed to any brand-related information, albeit they both increase the trust and propensity to transact in m-commerce. This is because each mobile user has different needs which they require to fulfil at different times appropriate to them (Unni & Harmon, 2007).

Moreover, there is an opportunity for mobile vendors to redeem themselves as 60% of the study on average was willing to share their information with them. Although this is not as high as one would like it to be, it does present openness

for engagement which mobile vendors can utilise in order to win with mobile users.

This presents an opportunity for mobile vendors to build trust with mobile users and change their low perceptions of them, by making use of the benefits afforded by location-based services and its delivery mechanisms. By providing the options of receiving information through push and pull location-based service mechanisms to their mobile users, mobile vendors can increase the trust and propensity to transact in m-commerce as depicted by the study.

There are two further opportunities available to mobile vendors to develop a relationship of trust with mobile users. The first entails the use of social networking sites where mobile users' recommendation of location-based services fosters the trust and encourages mobile users' participation as was evident in the study. Recommendation-based relationships are extremely useful to facilitate trust and accelerate the adoption of the services because of the linkages between participants in social networks (Morris et al., 2010). They do, however, place the brand or mobile vendor at risk because of the uncontrolled conversations that happen in these networks (Hennig-Thurau et al., 2010). This serves only to emphasise the importance of mobile vendors' abilities to listen in on these conversations and react appropriately to ensure their credibility is sustained or personified.

Alternatively, trust could be initialised between mobile vendor and mobile user through direct-based relationships. This is where mobile vendors engage physically with mobile users and through repeated engagement develop their proximity with the mobile user; as people spent more time with people they trust (Seyedi et al., 2011). This reduces mobile vendors' dependence on recommendation-based relationships to one that is within their control. Achieving this proximity as envisioned by Seyedi et al. (2011), would pave the way for a virtual relationship that is underpinned by trust.

Mobile vendors can also win with mobile users by engaging with them on their favourite brands provided their context is understood (Pura, 2005). This is a further project beyond the brand loyalty, as it advocates mobile vendors to take time to understand their mobile users and connect with them based on their individualised requirements. The study has confirmed that the recommendation of favourite brands to mobile users is able to foster trust and increase their propensity to transact, making it a suitable way to engage with them. These recommendations need to be administered through location-based service mechanisms as they are reliant on where and when the mobile user needs the information.

Location-based services and its mechanisms create a base on which mobile vendors can use to build trust on with mobile users and breed familiarity into the m-commerce. Through familiarity, mobile users' reluctance in m-commerce

could be alleviated, paving the way for future innovative services to be realised by the fraternity of mobility.

7.5. Recommendation for mobile marketers/vendors

The recommendations to mobile vendors stem directly from the results discussed:

- Mobile vendors need to understand the needs and interest of their mobile users. They need to expand the context of their mobile users into a personalised offering that is relevant and conveyed non-intrusively to their target mobile user.
- Trust underpins this relationship of continued engagement and mobile vendors need to conduct themselves appropriately at all times especially when information is disclosed to them by their mobile users.
- Mobile vendors have the ability to form direct-based relationships with mobile users that are reluctant to transition to a virtual one. This familiarity through direct-based relationships can be used to develop the trust needed to facilitate a virtual relationship through information sharing and credibility.
- In order to leverage and manage their credibility in social networks, mobile vendors need to listen in on the conversations and respond appropriately. These initiatives are proactive and foster trust, serving as further support for developing recommendations through social networks.

7.6. Limitations of study

The research had the following limitations:

- The study focused on hypothetical examples to illustrate the concept of location-based services. These could have been subjectively interpreted because mobile users have not been fully integrated with these services in terms of usage.
- There was no specification that the mobile device needed to be WAP-enabled for receiving of information from location-based services.
- Respondents could have experienced confusion in terms of understanding the nuances between trust and privacy with mobile vendor engagement.
- The study could have had a larger sample of respondents and where possible have utilised random sampling when selecting respondents to participate in the study.

7.7. Suggestions for future research

There are limited studies that have explored discussions regarding the intentions to adopt m-commerce from the perspective of the application of location-based services' delivery mechanisms, as most of them have revolved around the technology acceptance perspective (Huang et al., 2011). Here are a few suggestions for future research:

- The study could use a larger sample of respondents and where possible make use of random sampling when selecting participants.
- The research could use a population that is actively participating with a location-based service; for example, “Garmap for mobile” and where possible make use of random sampling when selecting respondents in the study.
- Evaluate companies that have integrated location-based services as part of their mobile strategy and understand their allocation of budget and their return on investment attained.
- Understand whether age and early adopter traits to mobile technology services play a role in the freedom to disclose information to facilitate location-based services.
- Determine the effects of adoption through repeated recommendation of location-based services through social networking sites.

References

- AMPS. (2010). Retrieved June 18, 2011, from eighty20:
http://www.eighty20.co.za/databases/launcher.cgi?to_launch=/databases/databases
- (2010). *The mobile advertising industry outlook*. Datamonitor.
- Al-alak, B. A., & Alnawas, I. A. (2010). Mobile Marketing: Examining the impact of trust, privacy concern and consumers' attitudes on intention to purchase. *International Journal of Business and Management*, 28-41.
- Albright, S. C., Winston, W. L., & Zappe, C. J. (2009). *Data Analysis & Decision Making with Microsoft Excel*. USA: South-Western Cengage Learning.
- Amen, U. (2010). Consumer Attitude towards Mobile Advertising. *Interdisciplinary Journal of Contemporary Research in Business*, 75-104.
- Andreev, P., Duane, A., & O'Reilly, P. (2011). Conceptualizing Consumer Perceptions of Making M-Payments Using Smart phones in Ireland. In M. Chiasson, O. Henfridsson, H. Karsten, & J. I. DeGross, *Researching the Future in Information Systems* (pp. 109-129). Heidelberg: Springer.
- Balasubramanian, S., Peterson, R., & Jarvenpaa, S. (2002). Exploring the Implications of M-Commerce for Markets and Marketing. *Academy of Marketing Science*, 348-361.

- Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005). Are the Drivers and role on online trust the same for all web sites and consumers? *Marketing*, 133-152.
- Blumberg, B., Cooper, D., & Schindler, P. (2008). *Business Research Methods*. Berkshire: McGraw-Hill Education.
- Bravo, R., Iversen, N. M., & Pina, J. M. (2010). Expansion strategies for online brands going offline. *Journal of Marketing Intelligence & Planning*, 195-213.
- Chang, S., & Chou, C. (2011). Factors affecting user's online shopping behaviour: Integrating the constraint-based and dedication-based relationship perspectives. *African Journal of Business Management*, 370-382.
- Chen, P. (2011). Personalized mobile advertising: Its key attributes, trends, and social impact. *Journal of Technological Forecasting & Social Change*, 1-15.
- Chipp, K., & Corder, C. (2010). Where practice meets theory: turning dollars into measurable variables at the bottom of the pyramid in an emerging market in South Africa. *IIMA Conference*, (pp. 1-22). South Africa.
- Chircu, A. M., & Mahajan, V. (2009). PERSPECTIVE: Revisiting the Digital Divide: An Analysis of Mobile Technology Depth and Service Breadth in the BRIC Countries. *The Journal of Product Innovation Management*, 455-466.

- Chua, A. Y., Balkunje, R. S., & Goh, D. H. (2011). Fulfilling Mobile Information Needs: A Study on the Use of Mobile Phones. *Communications of the ACM*, 1-7.
- Chung, K., & Tan, S. S. (2011). Brand Trust as quality cues in online tertiary education. *International Journal of Business and management*, 1-6.
- Chung, N., & Kwon, S. J. (2009). Effect of trust level on mobile banking satisfaction: a multi-group analysis of information system success instruments. *Behaviour and Information Technology*, 549-562.
- Condillac, E. B. (1776). *Le Commerce et le Gouvernement consid'er'es relativement l'un a l' autre*. Paris: Jombert et Cellot.
- Cousins, K. C., & Varshney, U. (2009, May). Designing Ubiquitous Computing Environments to Support Work-Life Balance. *Communications of the ACM*, pp. 117-123.
- Davis, R. (2010). Conceptualising fun in mobile commerce environments. *International Journal of Mobile Communications*, 21-40.
- Duxbury, L., & Smart, R. (2011). The "Myth of Separate Worlds": An exploration of how mobile technology has redefined work-life balance. In S. Kaiser, M. Ringlstetter, D. R. Eikhof, & M. P. E Cunha, *Creating Balance? - International Perspectives on the Work-Life Integration of Professionals* (pp. 269-284). Heidelberg: Springer.
- eMarketer. (2011, August 9). *Merchants Split on Groupon: eMarketer Incorporation*. Retrieved November 3, 2011, from eMarketer

Incorporation Web site:
<http://www.emarketer.com/Articles/Print.aspx?1008532>

eMarketer. (2011, July 11). *Mobile Social Media Usage Affects: eMarketer Incorporation*. Retrieved November 3, 2011, from eMarketer Incorporation Web site:
<http://www.emarketer.com/Articles/Print.aspx?1008487>

Eze, U. C., Gan, G. G., Ademu, J., & Tella, S. A. (2008). Modelling User Trust and Mobile Payment Adoption: A Conceptual Framework. *Communications of the International Business Information Management Association (IBIMA)*, 224-231.

Forgas, S., Palau, R., Sánchez, J., & Huertas-García, R. (2011). Online drivers and offline influences related to loyalty to airline websites. *Journal of Air Transport Management*, 43-46.

Fournier, S., & Avery, J. (2011). The uninvited brand. *Business Horizons*, 193-207.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*. Boston: Allyn & Bacon.

Georgiadis, C. K., Mavridis, I., & Manitsaris, A. (2005). Context-Based Humanized and Authorized Personalisation in Mobile Commerce Applications. *International Journal of Computing & Information Sciences*, 1-9.

- Ghadiri, N., Baraani-Dastjerdi, A., Ghasem-Aghaee, N., & Nematbakhsh, M. (2011). A Human-Centric Approach to Group-based Context-Awareness. *International Journal of Network Security & Its Applications*, 47-66.
- Gliem, J. A., & Gliem, R. R. (2003). *Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales*. Ohio: The Ohio State University.
- Goldsmith, R. E., Flynn, L. R., & Clark, R. A. (2011). Materialism and brand engagement as shopping motivations. *Journal of Retailing and Consumer Services*, 278-284.
- Groupon. (2011, November 5). *faq: Groupon*. Retrieved November 5, 2011, from Groupon Web site: <http://www.groupon.co.za/faq>
- Hennig-Thurau, T., Malthouse, E. C., Friege, C., Gensler, S., Lobschat, L., Rangaswamy, A., et al. (2010). The Impact of New Media on Customer Relationships. *Journal of Service Research*, 311-330.
- Hintze, J. L. (2007). *NCSS Help System*. Utah: NCSS.
- Huang, L., Hsieh, Y., & Chang, S. E. (2011). *The Effect of consumer innovativeness on adoption of location-based services*. Taiwan: Global Management and Service Science.
- Islam, M. A., Khan, M. A., Ramayah, T., & Hossain, M. M. (2011). *The Adoption of Mobile Commerce Service among Employed Mobile Phone Users in Bangladesh as a Moderator*. Canada: Canadian Center of Science and Education.

- Israel, G. D. (2009, April). *Determining Sample Size*. Florida: The Institute of Food and Agricultural Sciences (IFAS).
- Jackson, M. O., & Yariv, L. (2006). Social Networks and the Diffusion of Economic Behavior. *Yale Economic Review*, 42-47.
- Kennedy, T. L., Wellman, B., & Amoroso, J. (2011). Can you take it with you? Mobility, ICT's and work-life balance. In J. E. Katz, *Mobile Communication: Dimensions of Social Policy* (pp. 191-210). New Jersey: Transaction Publishers.
- Keramati, A., Taeb, R., Larijani, A. M., & Mojir, N. (2011). A combinative model of behavioural and technical factors affecting M-payment services adoption: an empirical study. *The Services Industries*, 1-16.
- Kwon, O., Lee, Y., & Sarangib, D. (2011). A Galois lattice approach to a context-aware privacy negotiation service. *Expert Systems with Applications*, 12619-12629.
- Lee, Y., & Benbasat, I. (2003). Interface Design for Mobile Commerce. *Communications of the ACM*, 4-52.
- Li, Y., & Yeh, Y. (2010). Increasing trust in mobile commerce through design aesthetics. *Computers in Human Behaviour*, 673-684.
- Marketing Daily News. (2011, August 22). *Mobile Users Want Relevant Messages: BDA Inc*. Retrieved October 25, 2011, from BDA Inc Web site: <http://www.bdainc.com/news-insights/marketwatch/mobile-users-want-relevant-messages-brands-0>

- Mir, I. (2011). Consumer Attitude towards M-Advertising Acceptance: A Cross-Sectional Study. *Journal of Internet Banking and Commerce*, 1-22.
- Morris, M. R., Teevan, J., & Panovich, K. (2010). What Do People Ask Their Social Networks, and Why? A Survey Study of Status Message Q&A Behavior. *ACM*, 1739-1748.
- Nooteboom, B. (2011). The Dynamics of Trust: Communication, Action and Third Parties . *Comparative Sociology*, 166-185.
- Peng, A. C., Ilies, R., & Dimotakis, N. (2011). Work-Family Balance, Role Integration and Employee Well-Being. In S. Kaiser, M. Ringlstetter, D. R. Eikhof, & M. P. E Cunha, *Creating Balance? - International Perspectives on the Work-Life Integration of Professionals* (pp. 121-142). Heidelberg: Springer.
- Pura, M. (2005). *Linking perceived value and loyalty in location-based mobile services*. Finland: Emerald Group Publishing Ltd.
- Ramburn, H., & van Belle, J. (2011). Use and adoption of Mobile Data Services in Africa: An Empirical study in in Mauritius and South Africa. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 28-34.
- Rodgers, S., & Thorson, E. (2000). The Interactive advertising model: How users perceive and process online ads. *Journal of Interactive advertising*, 42-61.

- Saadeghvaziri, F., & Seyedjavadin, S. (2011). Attitude toward Advertising: Mobile Advertising vs Advertising-in-General. *European Journal of Economics, Finance and Administration Sciences*, 104-114.
- Saftescu-Jescu, C. (2011). Web 2.0:A Step Closer To Transparency. *Erasmus Long Life Learning Intensive Program Summer Course* (pp. 35-42). Romania: West University of Timisoara.
- Sakthi, U., & Bhuvaneshwaran, R. (2011). Data Grid Mining of Mobile User Behaviors in Web Environments. *European Journal of Scientific Research*, 555-566.
- Sarker, S., & Wells, J. (2003). Understanding mobile handheld device and adoption. *Communications of the ACM*, 35-40.
- Seyedi, A., Saadi, R., & Issarny, V. (2011). Proximity-Based Trust Inference for Mobile Social Networking. *IFIP Advances in Information and Communication Technology*, 253-264.
- Shankar, V., & Balasubramanian, S. (2009). Mobile Marketing: Synthesis and Prognosis. *Journal of Interactive Marketing*, 118-129.
- Shankar, V., Venkatesh, A., Hofacker, C., & Naik, P. (2010). Mobile Marketing in the Retailing environment: Current Insights and future research avenues. *Interactive Marketing*, 1-29.
- Shin, D., & Shin, Y. (2011). Consumers' trust in virtual mall shopping: The role of social presence and perceived security. *International Journal of Human-Computer interaction*, 450-475.

- Siau, K., & Shen, Z. (2003). Building Customer Trust in Mobile Commerce. *Communications of the ACM*, 91-94.
- Statistics South Africa. (2010, October 30). *About South Africa: SouthAfrica.info*. Retrieved October 30, 2010, from SouthAfrica.info Web site: <http://www.southafrica.info/about/geography/provinces.htm>
- Suki, N. M. (2011). A structural model of customer satisfaction and trust in vendors involved in mobile commerce. *International Journal of Business Science and Applied Management*, 17-30.
- Tan, L., & Wu, L. (2010). An Empirical Study on Factors Affecting Customer Intention in Mobile Commerce Contexts. *Second International Conference on MultiMedia and Information Technology* (pp. 310-313). China: mmit.
- Tsang, M. M., Ho, S., & Liang, T. (2004). Consumer Attitudes Toward Mobile Advertising: An Empirical Study. *International Journal of Electronic Commerce*, 65-78.
- Unni, R., & Harmon, R. (2007). Perceived Effectiveness of Push vs. Pull mobile Location-Based Advertising. *Journal of Interactive Advertising*, 28-40.
- Van der Walt, D., Rebello, T., & Brown, W. J. (2009). Attitudes of young consumers towards SMS advertising. *African Journal of Business Management*, 444-452.
- Venkatesh, V., Ramesh, V., & Massey, P. (2003). Understanding Usability in Mobile Commerce. *Communication of the ACM*, 53-56.

Wei, T. T., Marthandan, G., Chong, A. Y., Ooi, K., & Arumugam, S. (2008).
What drives Malaysian m-commerce adoption? An empirical analysis.
Journal of Industrial Management & Data Systems, 370-388.

Xu, H., Teo, H., Tan, B., & Agarwal, R. (2010). The Role of Push-Pull
Technology in Privacy Calculus: The case of Location-Based Services.
Management Information Systems, 135-173.

Zafar, S., & Khan, M. M. (2011). The Attitude towards Social Network
Advertising: A study of young Pakistani Consumers. *International Journal
of Academic Research*, 299-302.

Zibuschka, J., Rannenbergh, K., & Kolsch, T. (2011). Location Based Services.
In J. Camenisch, R. Leenes, & D. Sommer, *Digital Pivacy* (pp. 679-695).
Heidelberh: Springer.

Appendix 1: Research Questionnaire

location-based services



Section 1: Background to Research and Respondent Consent

In partial fulfilment of the requirements of an MBA degree at the Gordon Institute of Business Science (University of Pretoria), all students are required to submit a research project. In this regard, I am looking at the role of location-based services in fostering trust in m-commerce.

To this end, you have been sent a link to a website to complete an online questionnaire that explores your personal experience and perceptions. The questionnaire should take no more than 10 minutes to complete. Participation is voluntary, and should you not wish to provide feedback, you can withdraw at any time.

All responses will be treated as private and confidential. (You are not asked to provide your name nor your employer details) Only aggregated data will be used in the results. Please complete the survey as honestly as possible.

Your participation in completing the survey will be highly appreciated.

Should you have any concerns, please contact myself or my supervisor, Kerry Chipp. Our Contact Details are provided below:

Researcher: Laven Moodley
Email: lavenm@hotmail.com
Phone: 084 715 4322

Supervisor: Kerry Chipp
Email: chippk@gibs.co.za
Phone: 011 771 4175

location-based services

1. Do you have a mobile phone?

Yes

No

Page 2

location-based services

2. Do you use your mobile phone for other activities (besides making calls)?

Yes

No

Page 3

location-based services

3. Age

- <18 18-24 25-30 31-35 36-40 41-45 >50

4. Gender

- Male
 Female

5. Race

- Black
 Coloured
 Indian
 White

6. Marital Status

- Single
 Married/Living together
 Divorced/Separated
 Widowed

7. Highest Education

- High School
 Certificate
 Diploma
 Undergraduate Degree
 Post Graduate Degree

Other (please specify)

location-based services

8. Occupation

- Professional and Technical
- Administrative and Managerial
- Clerical and Sales
- Transport and Communication
- Service
- Agriculture
- Artisans and Related
- Production and Mining
- Not Active

Other (please specify)

9. Province (where you currently reside)

- | | | |
|--|--|-------------------------------------|
| <input type="checkbox"/> Gauteng | <input type="checkbox"/> Eastern Cape | <input type="checkbox"/> Mpumalanga |
| <input type="checkbox"/> Northern Cape | <input type="checkbox"/> Free State | <input type="checkbox"/> North West |
| <input type="checkbox"/> Western Cape | <input type="checkbox"/> Kwazulu Natal | <input type="checkbox"/> Limpopo |

Other (please specify)

location-based services

10. General

	Yes	No
Is there access to hot running water where you stay?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a Personal Computer (either Laptop or Desktop) where you stay?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a motor vehicle where you stay?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a vacuum cleaner/polisher where you stay?	<input type="checkbox"/>	<input type="checkbox"/>
Is there an electric stove where you stay?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a microwave where you stay?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a "flush" toilet inside or outside where you stay?	<input type="checkbox"/>	<input type="checkbox"/>

location-based services

What are location-based services (LBS)?

The ability to locate a mobile user geographically and deliver services to the user based on his/her location.

Examples

Location-based services allow you to find Points of Interest using your current location:

e.g. At Lunch, I am looking for restaurants that are near me with lunch time specials.

Customized Advertising / Promotions:

e.g. I have registered with the Woolworths service for items that I am interested in hearing about (e.g. "ready-to-eat" meals). Whilst driving past a shopping Centre, the Woolworths at that specific Centre sends me a message "Come get 50% off all ready-to-eat meals by us, if you make your purchase in the next 60 minutes"

location-based services

11. To what extent do you believe each of these statements is TRUE for marketing organisations/mobile vendors who send you information on your mobile phone?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe that they would behave reliably.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that they would share my information selectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe they would provide me with accurate information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that their promotions are legitimate in that they deliver on what they promise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. In order to receive information on my mobile phone, I will share my information with marketers/mobile vendors if:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I receive information from advertisers that helps me improve my decision to purchase.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive personalised services based on where I am and where the service is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive special rewards depending on where I am and the time of day/day of the month.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

13. Please think about the things you do with your mobile phone.

How often do you participate in each activity?

	Daily	Weekly	Monthly	Yearly	Not at All
Play games on the mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enter competitions/vote/make donations via sms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Send other SMSs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use instant messaging/chat services (e.g. Mxit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Send a "Please call me" message	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Send an MMS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download a ringtone or logo to your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Send/receive e-mail from your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browse WAP/Web (Internet) from your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Listen to the radio on your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download/Listen to music (excluding radio) on your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watch television on your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read a newspaper/magazine/book on your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take photos with your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take video recordings with your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make use of cell phone banking (not e-wallet)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use social networking sites/applications such as Facebook, Mxit, Twitter, or LinkedIn on your mobile phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page 9

location-based services

14. You are presented with a series of paired statements.

From each of these statements below, please choose the one that BEST describes you:

- I would have my location-based services on all the time because I am open to receive information everywhere, all the time.
- I would rather receive information everywhere but not all the time (e.g. not late at night or on Sundays).

15. You are presented with a series of paired statements.

From each of these statements below, please choose the one that BEST describes you:

- I would rather receive information all the time but not everywhere (e.g. not at work or place of worship such as a church or temple).
- I would only like to receive information on my mobile phone at particular places, particular times.

16. You are presented with a series of paired statements.

From each of these statements below, please choose the one that BEST describes you:

- I like to be able to receive all kinds of information no matter where I am.
- I like to be able to receive specific information of my choice no matter where I am.

17. You are presented with a series of paired statements.

From each of these statements below, please choose the one that BEST describes you:

- I am open to all kinds of information but it depends on where I am.
- I am open to all kinds of information but it depends on the time (e.g. at times when I am interested)

18. Based on your choices for the previous questions (14-17), please rate the following statements;

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would likely use a service where I can receive information on my mobile phone with the conditions I selected above.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather use location-based services rather than other forms of advertising.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

19. Please rate these statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am happy to receive information when marketing organisations have something to send based on my location regardless of whether I ask them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to receive special information (promotions, discounts, freebies) for products/services that are relevant to me only when I ask them to, i.e. I turn my location-based service "ON", and the marketers sends me messages whenever they are ready to do so.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on my location and interests that I have signed in for (as per previous questions selected above), I would like to receive information that I can take advantage of because of my proximity and the availability of good deals when they are available.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

20. PLEASE CONSIDER THE FOLLOWING SCENARIO:

You have registered with your favourite store for all the items you are interested in, one of them being an iPad. You have turned your location-based service "ON".

Whilst driving past a shopping Centre, the Store at that specific Centre sends a message to your mobile phone: "Get 20% off iPad 2, if you make your purchase in the next 45 minutes."

	Very Unlikely	Unlikely	Undecided	Likely	Very Likely
How likely are you to subscribe to a service that customises communication to your needs based on where you are?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given this opportunity of RECEIVING information relevant to you to your cell phone, how likely are you to make use of this location-based service?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given this opportunity of RECEIVING information relevant to you to your cell phone, how likely are you to TRUST this marketer/mobile vendor?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

21. I would like you to consider the following statements and indicate the extent to which you Agree/Disagree with the statements that follows:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would only be interested in such services if I decide when to use my cell phone, for example, to get the nearest restaurants close to my location.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I visit an unfamiliar place, I would definitely use my mobile phone to select nearby entertainment spots to visit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use my mobile phone to download relevant information/services where ever I am and anytime I need to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can access "real time" (instant) information/services from my cell phone when I need to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

22. Please rate these statements:

	Very Unlikely	Unlikely	Undecided	Likely	Very Likely
Given all these features of accessing information relevant to you from your cell phone, how likely are you to make use of this location-based service?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given all these features of accessing information relevant to you from your cell phone, how likely are you to TRUST this marketer/mobile vendor?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

23. I would like you to think of your favourite brands;

Which is your favourite brand(s)?

- Apple
- BMW
- Blackberry
- Coco-Cola
- Woolworths

24. Please rate these statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have a special bond with the brands that I like.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can identify with important brands in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My favourite brands are an important indication of who I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

25. Please rate these statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
If this location-based service offered me information on any of my favourite brands, I would join this location-based service on my mobile phone to receive this news (including specials, promotion and free gifts).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this location-based service offered me information on any of my favourite brands, I would trust this location-based service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this location-based service offered me information on any brands (they do not have to be my favourite), I would join this location-based service on my mobile phone to receive this news (including specials, promotion, and free gifts).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this location-based service offered me information on any brands (they do not have to be my favourite), I would trust this location-based service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

26. Are you on any social networking sites (e.g. Facebook, Twitter, LinkedIn, MXit)?

Yes

No

Page 17

location-based services

27. If so, do you access this Social networking site/application through your mobile phone?

Yes

No

Page 18

location-based services

28. Please rate these statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
location-based service provides me with information I can share with my friends and associates in various networks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would recommend a location-based service I liked to social networks I belong to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My social networks would help me decide which location-based service I should be using.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would use a location-based service if my friends recommended it to me via my social networking site such as Facebook.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How likely are you to be interested in a location-based service that everyone was talking about on Twitter or Facebook?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

29. Please rate these statements:

	Very Unlikely	Unlikely	Undecided	Likely	Very Likely
Given all these recommendations of location-based services for enabling you to information relevant to you from your cell phone, how likely are you to make use of this service?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Given all these recommendations of location-based services for enabling you to information relevant to you from your cell phone, how likely are you to trust the recommendations from this social network?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

location-based services

30. If you DO NOT have a mobile phone and if you do but you DO NOT use your mobile phone for activities besides making calls, you will be unable to participate further as the survey relies heavily on this criteria.

However, we would like to thank you for your willingness to participate.

location-based services

31. You have been a great sport!

Thank you for taking the time to complete the survey.