The Use of Collaborative Virtual Spaces in a Physically Distributed Business in South Africa

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ABSTRACT

Collaboration is important to organisations because it has the potential to increase an organisation's flexibility and its access to market share, which may lead to strategic differentiation and revenue enhancement for the organisation in the marketplace.

The purpose of the research is to assess how a collaborative virtual space tool is used in a physically distributed business as well as to indicate the precursors and barriers of successful collaboration across the business.

The selected research method is a qualitative case study based on the interpretive paradigm. Several research instruments were used in collecting data for the case study and include documentation, archival records, direct observation and interviews.

The implementation of a collaborative space toolkit has allowed the case organisation to put processes in place to introduce services that make it easier for employees to find, manage, share and collaborate around information. It is recognised by interview respondents that there are value adding aspects of using the collaborative virtual space toolkit and that socio-psychological precursors, organisational precursors and technological precursors are necessary to promote collaboration within the organisation.

The three emergent reasons from respondents interviewed as to why users do not use some or all of the collaboration tools are employees firstly not being aware of these tools at their disposal, secondly not finding a need to use the tools in their daily working environment due to substitute communication and collaboration methods, and thirdly due to a lack of change management.

It is therefore in management’s interest to understand what collaborative space tools and processes employees need and how they will add value to the way they work. This could lead not only to improved workplace productivity, but also to compete for market share and competitive advantage more effectively.

DECLARATION

I, Steven George Maritz, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Steven George Maritz

Signed at ……**JOHANNESBURG**……

On the …**26th**.. day of ……**November**…… 2010

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CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to assess how a collaborative virtual space tool is used in a physically distributed business, particularly in the South African business context, and to clarify why, in terms of precursors and barriers of successful collaboration across the business, the use of the tool is successful or not.

1.2 Context of the study

The physical distance between business workers and stakeholders, in cases of geographically dispersed operations, could conceivably pose a challenge for communicating and working together effectively; a challenge that needs to be addressed as companies fiercely compete for market share and competitive advantage. One way in which companies can address this challenge is by encouraging employees to collaborate with each other more effectively using technologies as suggested by Manyika, Roberts and Sprague (2007): “Technology tools that promote tacit interactions, such as wikis, virtual team environments, and videoconferencing, may become no less ubiquitous than computers are now”. As companies learn to use these tools, they will develop managerial innovations – smarter and faster ways for individuals and teams to create value through interactions – that will be difficult for their rivals to replicate (Manyika, Roberts and Sprague, 2007).

Thompson and Good (2005) point out that “as enterprises gradually decentralise their operations and new networked business ecosystems start to find their way into profitable niche marketplaces, virtual, networked business teams gradually emerge as the wave of the future”. Furthermore, collaboration in the workplace using new communication technologies appears to be emerging as a trend for doing business effectively, as a paper by the European Commission points out:

“One of the characteristics of the knowledge-based economy is the increasing collaboration among enterprises and economic and social agents, in order to offer innovative services and products...” (Nachira, Nicolai, Dini, Le Louarn, and Leon, 2007).

In contrast to this though, collaboration could also be seen as seen as a complex, time-consuming endeavour (Hancock, John and Wojcik, 2005). Therefore, is collaboration relevant to businesses in the world and in South Africa? If it is, then companies operating within a physically distributed business team environment would possibly benefit from understanding the strategic collaboration requirements to be adopted in order to gain competitive advantage. The results of this research will help managers, both in South Africa and abroad, to be aware of the precursors and barriers of meaningful collaboration that could lead not only to improved workplace productivity, but also to compete for market share and competitive advantage more effectively.

1.3 Problem statement

1.3.1 Main problem

The purpose of the research is to assess how a collaborative virtual space tool is used in a physically distributed business as well as to indicate the precursors and barriers of successful collaboration across the business.

1.3.2 Sub-problems

The first sub-problem is to assess how a collaborative virtual space tool is used in a physically distributed business.

The second sub-problem is to indicate the precursors of successful collaboration across the business within a case study setting.

The third sub-problem is to indicate the barriers of successful collaboration across the business within a case study setting.

1.4 Significance of the study

The study fills a gap in knowledge in that the field of collaboration is fragmented and suggests that both academics and managers "need to tackle the hard work of crossing boundaries" (Mintzberg, Jorgensen, Dougherty and Westley, 1996). Understanding collaborative virtual spaces, its precursors to success and barriers of collaboration may lead to opportunity identification for enhanced productivity. In this light, a survey of more than 10,000 workers across industries, demographic classes, geographic areas and organisational types revealed that low levels of productivity in firms may be blamed on management for not providing a work atmosphere conducive to worker collaboration and commitment (Hall, 1994). Tremblay (2008) also found that research clearly needs to be pursued for the conditions and factors of success for computer supported workplace collaboration.

Researching the precursors to success and barriers of virtual collaborative spaces will therefore assist all managers and organisations who manage and control teams or functions situated across geographically dispersed locations to understand what/which requirements are helpful in improving productivity.

1.5 Delimitations of the study

The research topic focuses on a large organisation in South Africa with geographically dispersed operations across South Africa and abroad. Collaboration across knowledge workers (rather than production workers) is studied. Collaboration between the organisation's external stakeholders (suppliers, customers, distributors, etc) does not form the focus of this research; internal collaboration within the company is focused on instead.

1.6 Assumptions

The following assumptions are pertinent to this research:

- The research data gathered for the case study presented is reflective of an organisation that has geographically dispersed operations across South Africa and abroad.
- The organisation studied has implemented a collaborative virtual space tool in which precursors and barriers of collaboration in distributed work teams in their organisation may be identified.
- The collected data and views of the respondents are representative of the organisation for which they work.

CHAPTER 2: LITERATURE REVIEW

2.1. Definition of topic or background discussion

2.1.1 What is collaboration?

According to the Oxford Dictionary (1992), collaboration simply means “work together”. Marshall (in Haskins, Liedtka and Rosenblum, 1998) points out that collaboration is a labour ethic whereby work is collectively done through individuals. Collaboration is therefore presumably applicable to many views of life – a view supported by Mintzberg, Jorgensen, Dougherty and Westley (1996), who found that “there are economists who view interorganizational collaboration as collusion, lawyers who treat it as a contracting process, psychologists who consider it one of negotiation, scientists and engineers who see it in terms of technology transfer, and sociologists who describe it as networking”.

From a business orientated perspective, Cohen and Roussel (2004: 140) define collaboration as a method in which parties work together toward mutual goals through the sharing of ideas, information, knowledge, rewards and risks. This interpretation of collaboration alludes to the purpose of collaboration being that of benefit creation for multiple parties through these shared activities. Mintzberg, Jorgensen, Dougherty and Westley (1996), also follow a similar thought process by referring to collaboration as a principle of creative integration which avoids an unclear or uncut situation in which domination by one side occurs. They go on to point out that to achieve this is no easy task as collaborations are complicated relationships that can be “nuanced, intense, glorious, illicit, imbalanced, unrecognized, unrecognizable, titillating, and tiresome”. They also highlight that the difficulty or easiness of collaboration does vary from situation to situation and depends on the task and the goal, the parties involved, and its evolution over time.

Collaboration, therefore, appears to be a complex activity with uncertain outcomes that depend largely on the unique situational factors faced by organisations at the time. Added to this, collaboration also requires persistence and perseverance from participants, as Derr (1978) found that collaborative theory maintains that people should raise their dissimilarities and then work on these challenges until they have reached mutually acceptable solutions. Collaboration should not be treated as a once-off implementable event, but should be treated as a process (Mintzberg, Jorgensen, Dougherty and Westley, 1996). Collaboration could consequently be seen as a dynamic management tool used to drive selected organisational processes towards required outcomes.

Derr (1978) describes collaboration as having the following characteristics:

- Seeking a win-win position
- Emphasis on problem solving of conflicts and using energy positively
- Man is open, honest, trusting, collaborative
- Psychological contracts
- Overall improvement is for the common good
- Effective but inefficient use of conflict energy
- Information openly shared
- Joint problem solving
- Power parity
- Voluntary (internal commitment)

2.1.2 Why collaboration?

Companies are in quest of becoming more reactive to changing market conditions by streamlining and reshuffling their organisations and by making use of virtual enterprises and knowledge work teams (Gunasekaran, Kee-Hung and Cheng, 2008). Since collaboration can be used as a management tool (Mintzberg, Jorgensen, Dougherty and Westley, 1996) to achieve this effort of streamlining and restructuring organisations, there are several good reasons as to why a company would wish to pursue collaboration.

Motives and benefits associated with collaboration include:

- To increase the market share; to increase asset utilisation; to enhance customer service (e.g., reduction in lead times, customer complains); to reduce the cost and time of product development; to share costs; to increase the quality of the products; to increase/enhance skills and knowledge; to have a technological gain as participating firm; to achieve economies of scale in production (Chituca, Toscano and Azevedoa, 2008; Hansen and Nohria, 2004)
- From a human resource point of view, particularly in high turnover situations, it is increasingly important to get people connected more effectively in order to increase their productivity in an organisation and that collaboration should be used to achieve this objective (Cross, Borgatti and Parker, 2002)
- To decrease risk of failure of product development (Chituca, Toscano and Azevedoa, 2008)
- To gain rapid access to markets (Chituca, Toscano and Azevedoa, 2008)
- To increase flexibility, to cope with changing dynamics and to have an effective knowledge management (Derr, 1978; Chituca, Toscano and Azevedoa, 2008, Hansen and Nohria, 2004)
- To have access to dispersed resources (e.g., skills, knowledge) and capabilities that may be found in subsidiaries or divisions elsewhere (Chituca, Toscano and Azevedoa, 2008; Hansen and Nohria, 2004)

The potential varies by company; as highlighted by Hansen and Nohria (2004), a firm with many related businesses or country subsidiaries stands to benefit more than a loose conglomerate of businesses.

Although collaboration seems to be a sound management tool (Mintzberg, Jorgensen, Dougherty and Westley, 1996), the same authors found that it has several surprising aspects which a manager must be aware of:

- Application is difficult since it involves breaking out of the either/or and compromise habit.
- It necessitates a communication process at all levels, verbal, non-verbal, experiential and emotional.
- It may mean consorting with the enemy, which can turn out to be more effective than with friends.

- Senior managers may hinder rather than facilitate it.
- The best collaborators may be so subtle at collaboration that it is not perceived as collaborative.
- It has a saturation point.

Even though all the aspects above should be taken into account when pursuing collaborative activities, the last aspect above is particularly interesting – it alludes to collaboration adhering to the economic law if diminishing marginal output (defined as "the units of a variable input increase, given a fixed output, a stage will be reached where additional output will decrease (Chetty, Greyling and van Zyl, 2000: 69) – managers should therefore be aware of the cost-benefit nuances when dealing with collaborative efforts (Hansen and Nohria, 2004; Cohen and Roussel, 2004). In other words, for collaboration to really be effective, it must deliver quantifiable economic benefit to all partners (Cohen and Roussel, 2004).

2.1.3 Technology tools and collaboration

Since collaboration entails working together across organisational functions and barriers, technology has a major role in supporting collaborative efforts; technology-supported work teams "have become increasingly prevalent within the contemporary workplace and have gained significant importance over the past decade" (Suleiman and Watson, 2008).

Both collaboration and technology "are often suggested as ways of enhancing human judgment in complex decisions" (Convertino, Billman, Pirolli, Massar and Shrager, 2008). However, the structures of collaboration can vary significantly and it is not known which collaborative structures are most effective for "debiasing, particularly in the context of computer-supported intelligence analysis" (Convertino, Billman, Pirolli, Massar and Shrager, 2008). This suggests that there are choices of collaborative technologies and structures available, but it is not known which are more effective.

Furthermore, Orlikowski (1992) found that the role of technology can behave as both an enabler of and a constraint on human action: As an enabler because technology tools allow participants to perform certain work tasks more quickly than before, and as a constraint because executing various tasks require conforming to the dictates of the tools.

In unpacking the impact of technology on collaborative structures further, trends towards more flexible organisations and telecommuting have resulted in teams whose members are at various times scattered over large geographic areas and that “for such teams, shared physical spaces are not an option” (Pearce and Doh, 2005). It therefore appears as if the physical boundaries within physically distributed business networks become blurry and irrelevant through the presence and application of applicable technology.

In line with this trend, Ciolfi, Fitzpatrick and Bannon (2008) remark that “in this era of digital media and virtual reality, the terms “space” and “place” are often used interchangeably by people, with references to virtual places and physical spaces being found just as often as references to virtual spaces and physical places”. The authors also found that “collaboration system development in the 1990s ignored the relationship of people to their physical spaces and the emphasis was put instead on creating online spaces for distributed interaction and collaboration”. This infers that although physical spaces become less of a constraint with the presence of technology, it should not be ignored completely when dealing with collaborative technologies.

2.2. Collaborative virtual space tools in physically distributed businesses

2.2.1 Collaborative virtual spaces and tools

Collaborative virtual spaces are virtual worlds shared by participants across a computer network where participants are provided with graphical areas that convey their identity, presence, location, and activities to others (Benford, Greenhaigh, Rodden and Pycock, 2001). They are able to use these spaces to interact with the contents of the world and to communicate with one another using different media including audio, video, graphical gestures, and text (Benford, Greenhaigh, Rodden and Pycock, 2001).

Virtual spaces, also referred to as a virtual workplaces, should be able to "record, at a minimum, the process of the group, an agenda, libraries of solutions and practices, different forms of interaction, meta-information (such as date, sequence, author of contributions), and provide shared information storage, access and retrieval" (Majchrzak, Rice, King, Malhotra and Ba, 2000). Critical then to knowledge sharing and reuse, according to these authors, is that collaborative spaces include "not only a mechanism for exchanging information (such as email), but a mechanism for creating a knowledge repository and a mechanism for accessing a knowledge repository".

From the discussion above, it may be noted that collaboration is one out of several possible mechanisms for working together. Four levels of working together (Denning and Yaholkovsky, 2008) are listed in the table below along with examples of supporting tools:

Table 1: Four levels of working together

Category	Purpose	Tool Examples
Information Sharing	Exchanging messages and data	Blog Chat Content streaming Corporate directories Database sharing Discussion board Document sharing Email File servers Instant messaging live presentation PC access Recording Remote blackboard RSS Screen sharing Version control systems remote VOIP VPN
Co-ordination	Regulating elements and players for harmonious action	Auction systems Classroom management Concurrency control Decision support Interactive voice recognition Internet protocols Network meetings Online payments Operating system Project management Shopping cart Service-oriented architecture Support centre Telescience (remote lab) Workflow management
Co-operation	Playing together in the same game under agreed "rules of interaction" (including games of competition)	Collaboratory Creation nets Discussion forum Multiplayer games Newsgroup Second life Socially beneficial games Wiki (Wikipedia)
Collaboration	Creating solutions or strategies through the synergistic interactions of a group of people	Appreciative inquiry Brainstorming Charrettes Consensus workshop Straus Method

In some cases, one or more items listed in the table above may not guarantee that their users will necessarily collaborate on anything and only a few tools actually qualify as collaboration technologies (Denning and Yaholkovsky, 2008). The five collaboration tools listed in the table above are processes that, at best, are partially automated (Denning and Yaholkovsky, 2008) whereas the other categories are merely ways and means of facilitating or engaging in communication.

Olson and Olson (2000), play down this uncertainty of collaboration in the other three categories by pointing out that older technologies, such as telegraphy, fax machines, radio and telephones, despite their shortcomings, have turned out to be useful for a variety of purposes and have had an enduring impact on social and organisational life. The authors believe that more advanced present and future collaborative technologies may suffer a similar fate of criticism of shortcomings as their older predecessors, but that they will nevertheless impact on emergent social and organisational practices just as their the older ones have had.

2.2.2 Physically distributed business teams

Physically distributed business teams can be defined as team members who are not collocated and must often communicate via technology (Hinds and Bailey, 2003). They are teams whose members reside in different cities, countries, or continents and share a number of properties commonly associated with traditionally conceived teams – namely “they are groups of individuals that work together interdependently to accomplish a task, constitute distinct social entities, and jointly manage their team boundaries” (Cohen and Bailey, 1997, in Hinds and Bailey, 2003).

Furthermore, Orlikowski (2002) found that the alignment of products, projects, and people across time and space is accomplished through the use of a project management model, a structured systems development methodology and an agreement between players within the organisation of how their time will be spent across departments and or divisions.

McAfee and Brynjolfsson (2008) observed many companies, including CVS, Cisco, and Otis Elevator, that gained a market edge by competing on technology-enabled processes by “carefully examining their working methods, revamping them in interesting ways, and using readily available enterprise software and networking technologies to spread these process changes to far-flung locations so they're executed the same way every time”.

However, Kimble et al. (in du Plessis, 2008), raise serious concerning geographically dispersed communities of practice, as they argue that “certain types of knowledge such as lessons learned can only really be shared and learned through face-to-face contact and not through a technology system”. The authors also question the building of trusting relationships, which are essential to make communities of practice successful, over geographical boundaries.

Not only is the goal of productivity improvement the aim of understanding virtual collaborative spaces in the workplace, but also that of potentially reducing process costs too. Convertino, Billman, Pirolli, Massar and Shrager (2008) found that computer support for groups, whether collocated or distributed, synchronous or asynchronous, can reduce some of the process costs. They also found that two main opportunities have motivated research on technological support for groups: New forms of collaboration and more efficient forms of collaboration.

2.2.3 Examples of collaboration in companies

Many companies have embarked on the use of collaborative virtual space tools across their organisations: Dow, Ford, Chrysler and British Petroleum are examples of organisations using collaborative technologies to carry out their work (Ferranti, 1997; Hamblen, 1998).

The use of collaborative spaces across physically distributed businesses is inevitably a mechanism of work, task and team related activity achieved through a combination of technology tools (synchronous and asynchronous), as demonstrated by research undertaken by Oshri, Kotlarsky and Willcocks (2008) in presenting evidence from SAP and LeCroy which are cases of two companies where software development teams collaborate globally to develop products.

Also, in a study of an engineering design team for ten months, Majchrzak, Rice, King, Malhotra and Ba (2000) found that team members had two types of communication channels available to them: Interpersonal (which included face-to-face for a few members and telephone wide to all members) and a

collaborative tool, known as “the Internet Notebook” tool, which allowed team members to access a project knowledge repository which was housed on a centralised server located at the tool vendor’s site. Asynchronous and synchronous use of the tool was made.

2.2.4 Proposition 1

Collaborative virtual spaces are used across physically distributed businesses by means of non-collocated participants working together via a computer network through various mechanisms including exchanging information (such as email) and for the purpose of creating and accessing knowledge repositories. The use of collaborative spaces across physically distributed businesses is primarily intended as a mechanism of task-related team work activity through a combination of technology tools (synchronous and asynchronous).

2.3 Precursors of successful collaboration

In structuring the discussion, the precursors that may support meaningful workplace collaboration in physically distributed business networks are herewith broadly categorised into socio-psychological precursors, organisational precursors and technological precursors as discussed below.

2.3.1 Socio-psychological precursors

Matychak (2008) discusses the concept of tacit knowledge, where tacit knowledge is defined as “the knowledge communicated independently of words; it is the information we disseminate and gain by way of body language, facial expressions, subtle joking, and any other form of nonverbal gesturing” (Matychak, 2008). The author points out that tacit knowledge is a form of communication that is critical to acquiring trust within a group and that trust is necessary for successful collaboration.

Since tacit knowledge is more difficult to replicate by means of information technology communication methods as opposed to face-to-face communication, the author also highlights that an architecture that facilitates trust and collaboration in the virtual realm needs to be recreated, and that this recreation process must consider three social-psychological impacts:

- A sense of self
- A sense of place
- A sense of accomplishment

This means that when designing and implementing collaboration processes, the processes should allow for tacit knowledge to be shared according to individual needs. Paying attention to individuals' needs may garner additional commitment from individuals, which is interesting as it was shown in research by Tremblay (2008) that the commitment of individual participants is an important factor in making collaborative efforts successful.

Complementary to an individual's own needs is that of how the individual relates to those around him/her. In this regard Rasmussen and Wangel (2007) suggest that the continuous tasks of building and strengthening identity, trust and shared knowledge among staff are the three core dimensions of work in virtual enterprises. These core dimensions are described in more detail as follows (Rasmussen and Wangel, 2007):

- Identity is a source of meaningful interpretation of human life, while identity building is the process of developing meaningful patterns of interpretation related to one or several cultural settings
- Virtual teamwork depends on mutual trust. Trust may reduce uncertainty by providing what is expected from collaborators, which can contribute to the management of conflict and cooperation.
- The successful outcome of teamwork in virtual enterprises depends on how well the members are able to share and create knowledge across disciplinary, spatial and/or cultural boundaries either asynchronously or in real-time communication.

While identity (Rasmussen and Wangel, 2007) is similar to the concept of self (Matychak, 2008), mutual trust is also emphasised by Mintzberg, Jorgensen, Dougherty and Westley (1996) who state that “rather than everybody having to learn everything, everybody must learn to trust that each individual learns what he or she needs to know”.

Simply naming identity, mutual trust and knowledge sharing between collaborating parties may not be enough to describe the social-psychological precursors of collaboration. Splitting these three factors further, Wenger (1998) (in Amin and Roberts, 2008), lists the following key socio-psychological characteristics of collaboration:

- Sustained mutual relationships—harmonious or conflictual
- Shared ways of engaging in doing things together
- The rapid flow of information and propagation of innovation
- Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process
- Very quick setup of a problem to be discussed
- Substantial overlap in participants’ descriptions of who belongs
- Knowing what others know, what they can do, and how they can contribute to an enterprise
- Mutually defining identities
- The ability to assess the appropriateness of actions and products
- Specific tools, representations, and other artefacts
- Local lore, shared stories, inside jokes, knowing laughter
- Jargon and shortcuts to communication as well as the ease of producing new ones
- Certain styles recognised as displaying membership
- A shared discourse reflecting a certain perspective on the world

These characteristics may link to identity, mutual trust and shared knowledge in some way and, as such, may be re-arranged in the following table below:

Table 2: The key socio-psychological characteristics of collaboration within the three core dimensions of work in virtual enterprises

(Source: Adapted from Rasmussen and Wangel, 2007, and Wenger (1998),in Amin and Roberts, 2008)

Identity	Mutual Trust	Shared Knowledge
Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process	Sustained mutual relationships – harmonious or conflictual	Shared ways of engaging in doing things together
Substantial overlap in participants' descriptions of who belongs	Very quick setup of a problem to be discussed	The rapid flow of information and propagation of innovation
Mutually defining identities	The ability to assess the appropriateness of actions and products	Knowing what others know, what they can do, and how they can contribute to an enterprise
Local lore, shared stories, inside jokes, knowing laughter	Certain styles recognised as displaying membership	Specific tools, representations, and other artefacts
A shared discourse reflecting a certain perspective on the world		Jargon and shortcuts to communication as well as the ease of producing new ones

It is also important to consider what type of people are part of the collaborative process – organisations need to consider various dimensions, such as age, gender, commitment, and various characteristics of the community, since these dimensions may have an impact on the success and attainment of collaborative objectives (Tremblay, 2008). Lastly, Haskins, Liedtka and Rosenblum (1998) suggest that at the core of collaboration is a set of moral values and principles that is rooted in a desire to serve and manage – this needs to be borne in mind when embarking on collaborative efforts.

2.3.2 Organisational precursors

There are a variety of organisational factors that exist in supporting the successful collaboration between distributed workers. These are summarised into the following factors below:

- Formal Procedures and Structured Processes:
  It was found that the adoption of formal procedures and structured processes significantly increased the effectiveness of virtual teams (Rice, Davidson, Dannenhoffer and Gay, 2007). Convertino, Billman, Pirolli, Massar and Shrager (2008) also found that the design of collaborative systems benefits from an understanding of the component processes and their outcomes, at an individual and group level.

- Employee Empowerment:
  Gunasekaran and Youssef (1999) (in Gunasekaran, Kee-Hung and Cheng, 2008) highlighted the role of employee empowerment in improving cooperative supported work in a physically distributed team work. This is supported by Corvelloa and Migliarese (2007), who found that both networked and virtual teams rely on a decentralised decision system.

- Training and Education:
  Training and education also play a major role in using collaborative systems effectively (Gunasekaran, Kee-Hung and Cheng, 2008) especially if the team is comprised of differing languages and cultures.

  In this case, not only would each team member need to be sufficiently literate in the analysis and synthesis of computerised information, but would also need to understand the culture and a common language to be used within the team (Gunasekaran, Kee-Hung and Cheng, 2008).

- Management Support
  As leaders signal the importance of collaboration by working together among themselves, articulating the shared values related to teamwork and developing unifying goals, employees are more likely to be motivated to seek and provide help (Rice, Davidson, Dannenhoffer and Gay, 2007).

- Knowing Where to Collaborate

  Cross, Borgatti and Parker (2002) found that mapping the pattern of information flow across functional barriers can yield critical insight into where management should target efforts to promote collaboration that will provide strategic benefit. They also indicate that by targeting junctures in networks that hold strategic relevance for an organisation, it is much more feasible to intervene where investments in collaboration yield strategic payoff for the organisation. Moreover, by tracking changes in networks over time, management and network participants have a very real way of assessing the impact of interventions on both the informal network and organisational effectiveness.

- Compensating Collaborative Efforts

  A company needs to change its employee performance criteria by, for example, evaluating an employee's collaborative efforts across functions and business units in achieving predefined goals. (Hansen and Nohria, 2004).

- Organisational Culture

  Orlikowski (1992) found that the culture of the workplace, managerial ideology, and active bases of expertise and power significantly influence what technologies are deployed, how they are understood, and in which ways they are used.

2.3.3 Technological precursors

Firstly, information technology infrastructure and systems are needed in order to provide platforms through which organisational members may communicate and collaborate. Gunasekaran, Kee-Hung and Cheng (2008) suggest that in physically distributed team work, high-level communication systems such as the Internet, Electronic Data Interchange and ERP systems are needed to exchange information with members. These systems must conform to required standards, such as technological or quality standards, which would have a decisive role in facilitating co-ordination in collaborative work (Corvelloa and Migliarese, 2007).

Chituca, Toscano and Azevedoa (2008) also lay claim to the importance of operational infrastructures and standards, such as “B2B standards, industry-specific standards, frameworks (e.g., ebXML), technologies (e.g., semantic technologies, agents), reference models (e.g., PERA, GERAM)”, all of which address the needs of intra-enterprise operability. Of course, users should also be able to use the technologies presented to them – research by Padilla-Meléndez, Garrido-Moreno and Del Aguila-Obra (2008) shows that computer self-efficacy has a positive influence on intention to use such systems. Furthermore, the same research showed that the intention is also influenced by attitude towards the system, but not directly by perceived usefulness.

Lastly, Pearce and Doh (2005) suggest that collaboration via electronic communication technologies should be designed so as to be as user-friendly and accessible as what one would experience when physically walking into a room and conducting a face-to-face meeting.

2.3.4 Proposition 2

The precursors that may support meaningful workplace collaboration in physically distributed business teams include:

- Socio-psychological precursors: The type of people who would collaborate with each other, including dimensions such as age, gender, commitment, and various characteristics of the community; building and strengthening identity, mutual trust and shared knowledge among collaborators; and a set of moral values and principles that is rooted in a desire to serve and manage.

- Organisational precursors: Formal procedures and structured processes, employee empowerment, training and education, management support, knowing where to collaborate, and compensating collaborative efforts.

- Technological precursors: Presence of information technology infrastructure and systems, technological or quality standards, accessibility and user friendliness.

2.4 Barriers of successful collaboration

There may be several barriers which prevent the adoption or use of collaboration in physically distributed teams. Some of these barriers, as listed below, include the complexity in information technology systems, lack of system support, the nature and complexity of the task at hand, organisational barriers, social loafing, formalising collaborative consciousness, a mismatch between social and technological requirements, and a shift in organisational structure.

- Complexity in information technology systems
  Failures may result from unusable software with overly complex routines, organisational readiness, governance, and communicating value to the individuals (Fichter, 2005). Too many systems may also confuse employees: Employees do not necessarily want to learn how to use many different tools (e.g. one for each project team) (Fichter, 2005).

- Lack of system support
  Not knowing how to maintain or support tools: Many employees do not have the time, energy or knowledge of how to select, set up, and maintain collaborative tools (Fichter, 2005).

- The nature and complexity of the task at hand
  Rice, Davidson, Dannenhoffer and Gay (2007) found that tasks that lend themselves to a structured approach were effectively handled during physically distributed collaboration, whereas relatively unstructured and discussion-intensive tasks were more difficult to facilitate and more suitable to be dealt with via face-to-face interactions.

- Organisational barriers
  Companies may erect barriers that prevent individuals from engaging in collaborative activities that they might otherwise have undertaken – the results from a survey of managers in 107 companies (Hansen and Nohria, 2004) suggest that four barriers are prevalent:

- Unwillingness to seek input and learn from others: In such cases, employees either could not be bothered in learning from others or are too embarrassed or lack the time to approach others.
- Inability to seek and find expertise: Even when employees are willing to seek help in other teams, business units or country subsidiaries, they may not be able to find it easily or to search for it efficiently so that the benefits outweigh the time or costs of searching.
- Unwillingness to help in some cases. Here, the problem lies with the potential provider of help, not the seeker. Some employees are reluctant to share what they know, or refuse to help outright, leading to a hoarding-of-expertise problem.
- Inability to work together and transfer knowledge: Sometimes people are willing to work together but cannot easily transfer their knowledge to others because of the "stranger" problem. In this case, the nature of the knowledge in question requires that people already have relationships in order to understand each other.

- Social loafing

  This is an occurrence where employees display a decline in individual effort when performing in groups as compared to when they perform independently (Suleiman and Watson, 2008). Members of physically distributed teams are less visible than those of collocated teams, which can heighten social loafing (Suleiman and Watson, 2008).

- Formalising collaborative consciousness

  Mintzberg, Jorgensen, Dougherty and Westley (1996) point out that the best collaboration may be that least realised as collaborative: “In the best of such collaborations, people may not even realise they are collaborating, so that shifting their focus to formal techniques of collaboration may, in fact, reduce their capacity to collaborate. If successful collaboration for innovation is not terribly conscious, then explicating it through formal structure may, in fact, stifle creativity”.

- Mismatch between social and technological requirements
  Ackerman (2000) found that there is a fundamental mismatch between what is required socially and what is technically possible with information technologies. He states that while human activity is highly nuanced and contextualised, organisations lack the technical mechanisms to fully support the social requirements of computer supported collaborative work.

- A shift in organisational structure
  Structural shifts, such as changes in reporting relationships to job moves accommodating personal preferences, to the establishment of a new unit or shared service centres, occur relatively often in many organisations (Ashkenas, 2007), which may lead to collaboration becoming less effective or irrelevant to team members as their individual and organisational contexts change.

2.4.1 Proposition 3

The barriers to effective collaboration in physically distributed business teams include complexity in information technology systems, lack of system support, the nature and complexity of the task at hand, organisational barriers, social loafing, formalising collaborative consciousness, a mismatch between social and technological requirements, and a shift in organisational structure.

2.5 Conclusion of literature review

Collaboration is important to organisations because it has the potential to increase an organisation's flexibility and access to market share, which may lead to strategic differentiation and revenue enhancement for the organisation in the marketplace.

Effective collaboration can not only be used as a tool towards achieving productivity improvement, but also that of potentially reducing process costs too, which in turn serve as sources for competitive advantage over rivals.

Factors that facilitate successful collaborative efforts include identity, mutual trust, knowledge sharing, as well as having the right organisational and information systems in place.

Collaborative efforts may fail when systems are too complex, when there is a lack of support, rigid organisational barriers, changing organisational or team structures, or a mismatch between requirements.

It is therefore in management’s interest to understand the tools, precursors and barriers of meaningful collaboration, in order to realise that this could lead not only to improved workplace productivity, but also to compete for market share and competitive advantage more effectively.

2.5.1 Proposition 1:

Collaborative virtual spaces are used across physically distributed businesses by means of non-collocated participants working together via a computer network through various mechanisms including exchanging information (such as email) and for the purpose of creating and accessing knowledge repositories. The use of collaborative spaces across physically distributed businesses is primarily intended as a mechanism of task-related team work activity through a combination of technology tools (synchronous and asynchronous).

2.5.2 Proposition 2:

The precursors that may support meaningful workplace collaboration in physically distributed business teams include:

- Socio-psychological precursors: The type of people who would collaborate with each other, including dimensions such as age, gender, commitment, and various characteristics of the community; building and strengthening identity, mutual trust and shared knowledge among collaborators; and a set of moral values and principles that is rooted in a desire to serve and manage.
- Organisational precursors: Formal procedures and structured processes, employee empowerment, training and education, management support, knowing where to collaborate, and compensating collaborative efforts.
- Technological precursors: Presence of information technology infrastructure and systems, technological or quality standards, accessibility and user friendliness.

2.5.3 Proposition 3:

The barriers to effective collaboration in physically distributed business teams include complexity in information technology systems, lack of system support, the nature and complexity of the task at hand, organisational barriers, social loafing, formalising collaborative consciousness, a mismatch between social and technological requirements, and a shift in organisational structure.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter describes the methodology that was followed to address the propositions put forward as possible solutions to sub-problems in the previous chapter. The chapter commences with an overview of the selected research method and its implication for this research. The research design, case site and the processes that were used in data collection, analysis and interpretation are highlighted. The chapter is concluded with a discussion on the validity and reliability of the chosen research method.

3.1 Research methodology/paradigm

The research problem facilitated the need to focus on phenomena that occur in their natural settings and thus lent itself to qualitative research (Leedy and Ormrod, 2001).

As described by Peshkin (1993, in Leedy and Ormrod, 2001), qualitative research studies serve one or more of the following purposes:

- Description – They can reveal the nature of certain situations, settings, processes, relationships, systems or people.
- Interpretation – They enable a researcher to gain new insights about a particular phenomenon, develop new concepts or theoretical perspectives about the phenomenon, and/or discover the problems that exist within the phenomenon.
- Verification – They allow a researcher to test the validity of certain assumptions, claims, theories or generalisations within real-world contexts.
- Evaluation – They provide a means through which a researcher can judge the effectiveness of particular policies, practices or innovations.

The selected research method is a qualitative case study based on the interpretive paradigm. The need for a case study arises out of the desire to understand complex social phenomena and allows an investigation to retain the holistic and meaningful characteristics of real-life events, such as individual life cycles, organisational and managerial processes, international relations and the maturation of industries (Yin, 1994). Furthermore, the interpretive paradigm was selected because the case study method and the specific research that was conducted in the case suits the fundamental assumptions of the paradigm more so than the functional paradigm.

The research undertaken aimed to determine and investigate complex organisational occurrences from the view of organisational members, thus the researcher aimed to add to theory-building rather than to test existing theory.

3.2 Research design

A case study methodological approach has been adopted for this research report. It is appropriate to this study because a case study may answer “how” and “why” questions about a set of contemporary events over which the investigator has little or no control and, in particular, has the following benefits (Yin, 1994):

- It copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result,
- It relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as anther result, and
- It benefits from the prior development of theoretical propositions to guide data collection and analysis.

The following items will be included in the case study (Leedy and Ormrod, 2001):

- A detailed description of the facts related to the case (specific individuals, programmes or events studied, as well as the setting and any other uncontested facts about the case.
- A description of collected data (observations made, who was interviewed, what documents were examined, and so on)

- A discussion of the patterns found (trends, themes, personality characteristics, and so on, that the data suggest
- A connection to the larger scheme of things (comparing the case with previously reported cases noting similarities and dissimilarities, and/or arguing that the case either supports or disconfirms the propositions).

3.3 Population and sample

3.3.1 Case site

The case site is that of two subsidiaries, the South African Breweries Limited (SAB Ltd) and Amalgamated Beverage Industries (ABI), both of which operate from the same regional head office in Johannesburg, South Africa. Both companies are subsidiaries of a beverage manufacturing group of companies, SABMiller PLC, a company serving the Fast Moving Consumer Goods (FMCG) industry and listed on the London and Johannesburg Stock Exchanges.

SAB Ltd is South Africa's leading producer and distributor of alcoholic and non-alcoholic beverages and one of the nation's largest manufacturing firms (SABMiller, 2010a). Its portfolio of beer brands includes five of the country's top six most popular beer brands (SABMiller, 2010a) namely Carling Black Label, Hansa Pilsener, Castle Lager, Castle Lite and Castle Milk Stout. ABI, the soft drink division of SAB Ltd, is one of the largest producers and distributors of The Coca-Cola Company brands in the southern hemisphere (SABMiller, 2010a). SAB Ltd and ABI have combined operations entailing close to 9,000 employees across 13 manufacturing plants and over 50 distribution centres across many South African cities and towns.

SAB Ltd and ABI's head offices are physically located at the same premises in Johannesburg, South Africa, and share common back-office support structures, including a shared business information services department that service both entities.

As such, these two SABMiller subsidiaries are treated as a single case site.

The research instruments and procedure for data collection

Several research instruments were used in collecting data for the case study and include documentation, archival records, interviews and direct observation. A semi-structured interview prompt sheet is listed in Appendix A. Moreover, multiple research instruments were used as opposed to a single research instrument, because the various sources are highly complementary (Yin, 1994).

The research instruments included are:

- Documentation (letters, memoranda, agendas, announcements, minutes of meetings, written reports, proposals, progress reports, news clippings, articles appearing in the internal and external media)
- Archival records (service records, organisational records, maps and charts, lists of names and commodities, survey data, personal records, such as diaries, calendars and telephone listings)
- Semi-structured interviews (interviews were broadly based on the research propositions posed, but departed from the structure where opportunities arose to explore issues raised by the participants in more depth). Interviews were conducted in person and recorded and subsequently transcribed to become a source of data.
    - Initially, a pilot interview round was conducted by selecting two random participants to assess the suitability of the questions and the understanding of the meaning of the question of the participant. The interview prompt-sheet was modified during each of these interviews, taking into account the findings from these first two interviews.
    - Subsequent to the pilot interview round, the interview process commenced with a total of 8 interviews being completed. Interviews were held with participants that would include respondents who were involved with the project roll out, with end-users who use the elements of the system as well as those who do not frequently use the system. Table 1.1 below shows a list of respondents:

Table 3: Interview respondent list

	Job Title
Respondent 1	Demand Planner: SAB
Respondent 2	Tactical Planner: ABI
Respondent 3	Commodity Analyst
Respondent 4	Demand Planner: ABI
Respondent 5	Training Specialist: Business Information Systems
Respondent 6	E-Learning Consultant
Respondent 7	Project Manager: Information Systems and Technology
Respondent 8	Management Information Systems Analyst

- Direct observation (involves field visits to the case study site, assuming that some relevant behaviours or environmental conditions will be available for observation. Observations can involve observations of meetings, sidewalk activities, work, classrooms, appearances, conditions of work spaces, location, design, ergonomics, and the like).

3.4 Data analysis and interpretation

Miles and Huberman (in Yin, 1994), suggest various analytical techniques, some of which are used in this research:

- Putting information into different arrays
- Making a matrix of categories and placing the evidence within such categories
- Creating data displays – flowcharts and other devices – for examining the data
- Tabulating the frequency of different events
- Putting information in chronological order or using some other temporal scheme

Creswell (2003) also refers to ‘clustering’ as a method for the analysis of case study data. During this process, the researcher organises material in clear segments while identifying groups of core themes. Themes in the data in this research were identified through a combination of this approach as well as the use of the theoretical propositions proposed as a structure for themes.

3.5 Validity and reliability

3.5.1 External validity

External validity refers to the extent to which a research study's results apply to situations beyond the study itself and the extent to which the conclusions drawn can be generalised to other contexts (Leedy and Ormrod, 2001).

An area of concern about case studies is that they provide little basis for scientific generalisation (Yin, 1994). In addressing this concern, a case study may be generalised to theoretical propositions and not to populations or universes. Seen in this way, a case study does not represent a sample whereby statistical generalisation may be enumerated, but merely serves to expand and generalise theories (Yin, 1994).

3.5.2 Internal validity

The extent to which a research study's design and the data it yields allows the researcher to draw accurate conclusions about cause-and-effect and other relationships within the data is referred to as the research study's internal validity (Leedy and Ormrod, 2001).

Validity was maximised in this research report through:

- The triangulation of the data collected through the research instruments listed in section 3.4 above.
- Spending time in the field and through seeking information that contradicted tentative findings (negative case analysis techniques) so that the findings could be revised and enriched to mitigate negative cases.
- Obtaining feedback from others within the organisation check on the meanings of the interpretation of phenomena and conclusions drawn.

3.5.3 Reliability

Reliability refers to the certainty that “if a later investigator followed the same procedures as described by an earlier investigator and conducted the same cases study all over again, the later investigator should arrive at the same findings and conclusions” (Yin, 1994: 36).

Another area of concern in respect of a case study method is the lack of rigour of case study research by previous case study investigators who have allowed equivocal evidence or biased views to influence the direction of findings and conclusions (Yin, 1994). The research conducted in this study relied heavily on collected data from within the organisation, from interviews and from direct observation, all of which may be influenced by personal opinion and interpretation and thereby potentially bringing the external reliability of the research into question.

Reliability was improved by documenting the procedures of the research process and by developing a case study database (Yin, 1994). Furthermore, the strength of the chosen research methodology is the observational and analytical depth that can be brought about by detailed recordings of collected data.

CHAPTER 4: PRESENTATION OF RESULTS : CASE

Introduction: Collaboration in SABMiller

SABMiller is one of the world's largest brewers with brewing interests or major distribution agreements in 75 countries spread across six continents and owns over 200 brands, brews more than 210 million hectolitres of lager in a year and employs almost 70,000 employees. In the year ended 31 March 2010, the group reported revenue of US$26,350 million. The company is listed on the London and Johannesburg stock exchanges.

The company's strategic focus is based on four priorities, which includes creating a balanced and profitable global reach of businesses, developing solid, appropriate brand portfolios within each local market in which the company operates, lifting the performance of local businesses, and making use of the company's global presence and size to grow the business.

Without the ability of employees across SABMiller to work together and collaborate with each other effectively, the reality of achieving each of the four strategic priorities is severely compromised. Knowledge and experience constantly needs to be captured and codified as best practice ways of working. These, in turn, need to be transferred and embedded to develop and expand SABMiller's global strategic capability.

As such, collaboration has been identified as one of SABMiller's key internal thrusts – to become a learning and self-refreshing organisation. The company's collaboration vision is for all employees being able to search for all information content in the company by means of information systems. This means potentially avoiding have to redo work that may have already been started in another region or by a predecessor. The vision includes being able to find people across the SABMiller organisation by job title. For example, a process engineer's view of brewery operations from Russia may add value to an employee in South Africa.

SABMiller's aim in this regard is that employees should not have to worry about in which system they can find information in or in which to log in to in order to get their work done, but simply accessing one information area or "Portal" where their information world can be managed through content sharing and collaboration.

Opportunity identification: The birth of the Collaboration Project

SABMiller recognises that resources are scarce and that knowledge is an important organisational asset which needs to be codified, made accessible, applied, improved and refreshed. Through the use of collaboration tools, the company aims to provide single and credible points of content references on how to operate, manage and leverage a defined area of strategic capability that is clearly linked to the SABMiller's strategic focus.

Towards the end of 2005, a global collaboration project was launched following the need to transform the business's collaboration vision into reality. The collaboration project was born through the ever growing business need of providing a common platform across which the implementation of business projects can be supported, to work collaboratively, to share information and learning within the group, to re-utilise process or systems investments and to support the governance of business standards.

A collaboration model "Collaboration as a Tool to Win" was developed which was subsequently used as a framework for business drivers and from which a collaboration project team was born. This model is illustrated in figure 1 below.

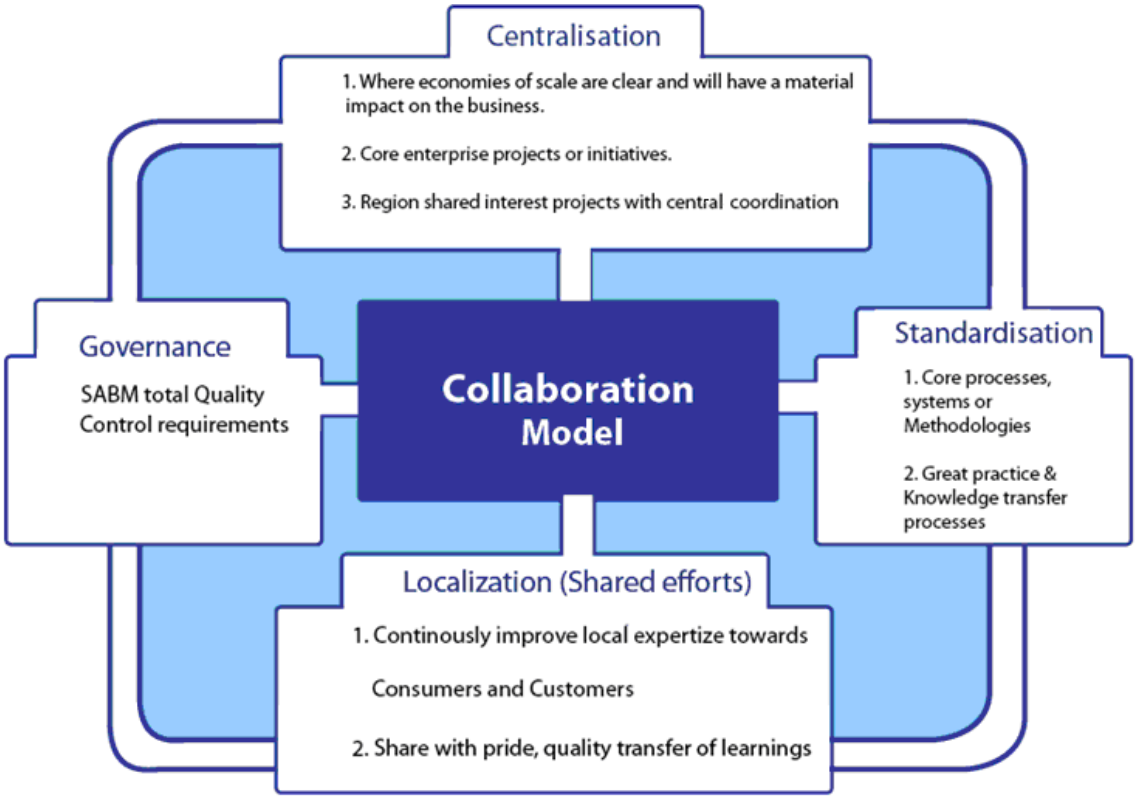

Figure 1: Collaboration as a tool to win
(Adapted from SABMIller : 2009a)

Centralisation includes providing for a regional strategy framework, knowledge management strategy, and information content delivered through portal technology. These need to interface with regional associations and the company's ethics policy and governance requirements.

Collaboration efforts also need to be localised where shared efforts are created to align market and volume share aspirations, brand communications and corporate social initiatives

Collaborative efforts also need to be standardised in terms of sales and distribution best practices, reputation management, media relations, crisis control, reputation risk management, regional key performance indicators, organisational structures, people competencies and stakeholder engagement plans.

A Collaboration Project team was formed and given the mandate to develop and deploy an enabling platform for Collaboration within SABMiller. By 2006 the chosen solutions and architecture were endorsed which ultimately resulted in the provision of a Global Collaboration Toolkit to employees.

The envisaged purpose of the Collaboration Toolkit is to bring together the key stakeholders for SABMiller and related projects whereby a community of subject matter experts can be built through the sharing of knowledge, best practice, and lessons learned across a common information technology platform. It was developed to enable SABMiller to collaborate globally, in order to better leverage its global scale and to enable the SABMiller to work across geographic boundaries more effectively.

Members would be provided with visibility and ongoing progress updates within their collaboration space and also be given the opportunity to provide and share end user feedback on behalf of his/her function, business unit or region. The Toolkit would also facilitate the identification, review and prioritisation of new business projects or business process enhancements, as well as allow for the monitoring of the implementation status of new or improved business functionality.

The targeted end users of the Collaboration Toolkit are business project sponsors (forum chairs), information technology application owners, site owners (or project managers during project implementation, business subject matter experts, and business end users.

Project build and deployment

The project started off with the project team validating and developing business use cases, policies and user propositions and gathering business user feedback on the previous and proposed collaboration methods. Once the chosen solutions and architecture had been agreed upon based on business requirements, the development of a Collaboration Toolkit commenced within the scope of technologies illustrated in figure 2 below:

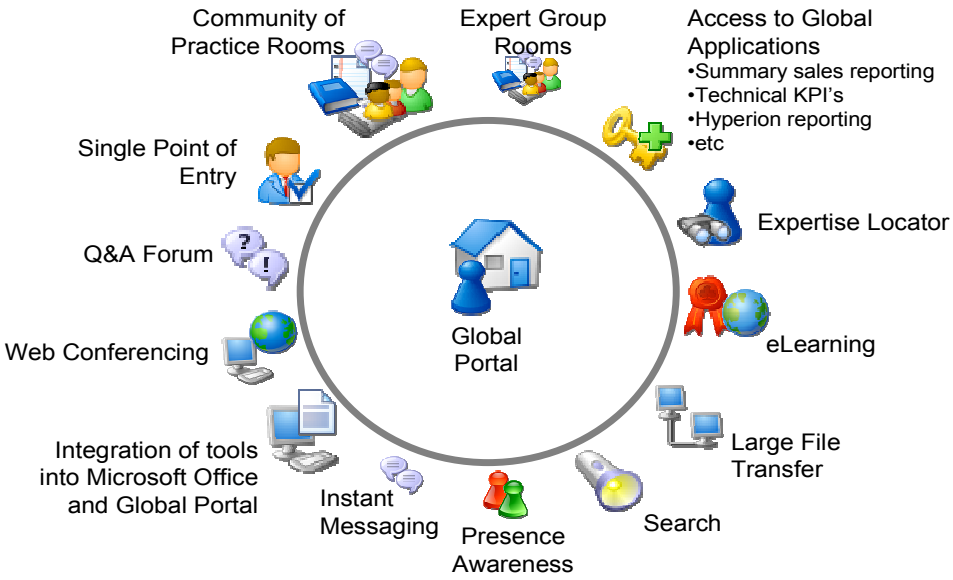

Figure 2: Scope of project – Collaboration Toolkit
(Source: SABMiller: 2007)

A phased approach of solutions deployment was followed, whereby each technology area listed in figure 2 above was rolled out separately. Deployment plans included the briefing of senior management and regional information technology (IT) departments concerning deployment plans and reviewing and revising baseline user documentation as a foundation for tailored material.

When the completed Collaboration Toolkit was rolled out to global SABMiller business units in 2007, a dedicated project team was established to provide training events delivered via web and audio conferencing. In addition, a Collaboration Reception Room was built specifically for new users of any elements of the Collaboration Toolkit and which explains how users may access, register for, and use the various functionalities of the tools within the Collaboration Toolkit. The Collaboration Reception Room provides users with information such as Quick Start Guides, User Guides, Hints and Tips and Etiquette Documents in the room. For local exploitation of the Toolkit in each SABMiller hub and region, the training documentation was translated into the local language of each country and provided in a separate area of the reception room to assist users.

During the roll out phase of the Collaboration Toolkit, change management was completed by the project team and included user communications, stakeholder engagement, training, co-ordinating deployment and sharing of best practices. For in-country roll out, the project team worked with the country teams to share materials, knowledge and best practices to develop a roll out plan suitable for each country.

The end result: The Collaboration Toolkit

The SABMiller Collaboration Toolkit provides the tools and infrastructure to support common and best practice SABMiller ways of working. In 2007, the toolkit was rolled out to SABMiller companies in order to encourage and help facilitate collaboration.

These tools include:

- LiveMeeting – PowerPoint presentations can be presented from an employee's computer workstation and viewed by his/her colleagues from their desks anywhere in the world. This can also include people from outside the company.
- Large File Transfer – this is a solution that allows employees to upload large files for other employees to download in other locations. This can include suppliers with whom large files need to be shared with.
- Instant Messenger – allows employees to "instant message" people whereby brief and often more informal messages are sent.
- Collaboration Rooms – bring people together in a communal area, giving them the ability to share information in different and flexible ways.
- My Site – a place where an employee can store all the information about himself/herself, their skills and experience.
- People Locator – finding employees across the SABMiller globe within specified search criteria.

Live Meeting

Live Meeting is web conferencing software, allowing people in any geographical location to combine different methods of communication. For example, employees can communicate with each other through a document (such as Word, PowerPoint or PDF) and everyone can discuss it and then amend it online. Employees can also share their desktops with attendees, giving them the ability to see any program. It is cheaper than a video conference and no special equipment is required – all that is needed is for each attendee to have his/her own computer connected to the company network.

Live Meeting has two components. Firstly, it is a teleconferencing tool called "Meet Me" where many people can dial into the same phone call. Secondly, online meetings can be held where participants can see and share the same presentation, document or programme accessible on your business computer. Employees can share their computer programs with attendees, enabling them to observe work in progress.

Attendees can share or amend documents, replay meetings that they may have missed, ask the presenter questions, and meet with many people from different geographical areas without travelling.

In order to set up a Live Meeting, the potential participant needs to be set up as an account holder which can be requested in the Collaboration Toolkit's reception Room. Live Meeting software must be installed on the participant's personal computer (PC) which in turn can be done through requesting this to be done through SABMiller's IT helpdesk. To create a meeting, the meeting creator needs to access Microsoft Outlook and follow the steps to set up a meeting, inviting attendees and then selecting the 'Make this a Live Meeting' button.

With regards to access, if an employee has been invited to a meeting, he/she will be informed by email. A link within the email can be followed to join the meeting. Alternatively, a Web Console exists whereby a meeting may also be joined once a participant code has been confirmed. One person in the meeting needs to be designated as a presenter whereby the navigation of content such as Word or PowerPoint documents are controlled, and where the other

participants have audio and visual connections. More than one person can be made a presenter. Live meetings can be recorded and watched at a later date.

If an employee wants to set up a live meeting then an account can be created on the Collaboration Toolkit portal. With regards to training, the Live Meeting number on the SABMiller's Live Meeting website may be called to arrange training.

Large File Transfer

Large file transfer is a service designed to help share large files – several people may view a file so and thereby also ensures that all members work from the same document version. Transferral of data is quicker than email, taking less time to move files. Large file transfer allows employees to move single files up to 500MB from one location to another. All that an employee needs to make use of this facility is an account and an internet connection.

This means that files can be sent that would otherwise be too big to either email or share on collaboration rooms. Files can be downloaded and saved on the local PC and then opened or edited manually, or they can be opened directly. A disadvantage, however, is that changes made subsequently will not be saved. This service is not for storage and files may be deleted after a certain period of time.

Instant Messenger

Instant Messaging is an integrated communications client, enabling users to communicate in real time and gives employees the ability to have spontaneous real-time communication with other colleagues within SABMiller. A person can easily see who is "online" or present (illustrated in figure 3 below) – just as if in a real room, and then ask them a quick question.

Figure 3: Example of Instant Messaging Status
(Source: SABMiller, 2010b)

When first embarking on the use of Instant Messenger, an employee needs to add one or more SABMiller contacts to communicate with. Instant Messages are not intended to be used to transfer any formal business information (business records), because Instant Messages are not stored and are not retained or saved. Instant Messaging is used for quick transitory messages similar to a quick phone call or a quick in-person verbal communication. The messages are not logged or saved once the computers or devices involved are powered down.

An employee's phone may work worldwide, but it does not indicate whether the present moment is a good time to call or not. A major perceived benefit of Instant Messaging (IM) is that it can signal an employee's availability for different kinds of interaction.

Collaboration Rooms

Collaboration Rooms are SABMiller's version of Community of Practice Rooms. This provides the ability to collaborate regarding special interests or projects, and to create, manage and share information over a globally accessible virtual space from within the company's Global Portal.

Collaboration rooms enable people from many different geographical locations to share information and work together. They bring people together in communal online areas, giving them the ability to share information in different and flexible online ways.

The purpose of a collaboration room is for an employee to be part of a community of people interested in the same subject or working on the same project and have a shared work space.

A collaboration room has a facility which provides a single place for sharing and building documents, preventing version confusion and missing out on discussions. It also indicates if people are online whereby a 'chat' can be started and questions may be asked as if the people would when sitting face-to-face.

The intended benefits of using collaboration rooms include: Improved team productivity with easy-to-use collaborative tools, version controlled documents, rooms can be tailored to business needs, and that file sharing can be taken to a new level with larger storage capabilities.

A basic collaboration room has a document library, links section and discussions list. Within this framework, there are three types of rooms:

- Type 1: Community of Practice Room – additional features include a frequently asked questions section, a community calendar, and relevant announcements.
- Type 2: Standard Development Room – additional features include a Wiki, task lists, a project calendar, and relevant announcements.
- Type 3: Ad-hoc Project Room – additional features include an issues and risks section, discussions form, a project calendar, and relevant announcements.

Because the features of a collaboration room are in a shared environment, the whole team can access them and obtain the most up to date information. Features include:

- Document and image sharing. This ensures version control, allowing documents to be checked out for editing – integrated with MS Office.
- Discussion rooms – enabling an audit trail of discussions.
- Project calendar and tasks – everyone can see project dates and tasks.
- Project issues and risks log.
- Announcements – an announcement can be made, which everyone can see.
- Surveys – to collect people's views.
- Wikis

The front page of a room is structured in zones as illustrated on figure 4 below.

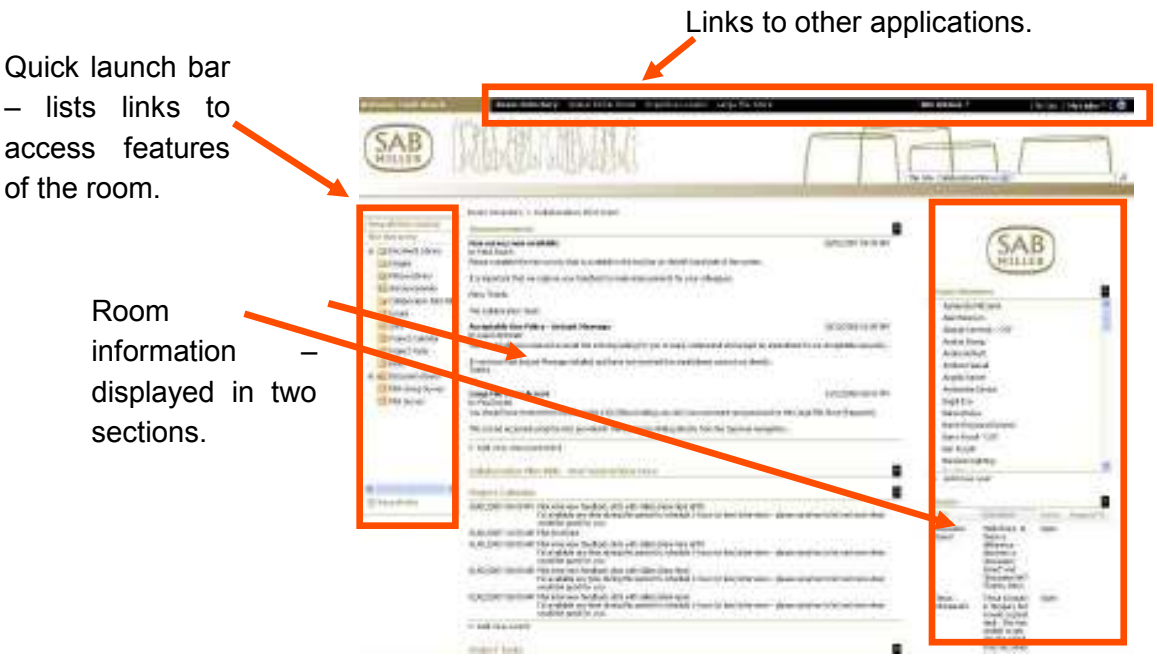

Figure 4: Typical front page of a Collaboration Room
(Source: SABMiller, 2009b)

Whenever a Collaboration Room is created, a set of guidelines is followed to assist with creating a room that provides value. These guidelines encourage Collaboration Room creators to consider the purpose of the room, the expected outcome, the type of room required, the identification of members who require training, the identification of members who are super users and can be approached for assistance, an agreement on change notification (do users want to be subscribed or will they subscribe themselves), document hierarchy and naming conventions, responsibilities for room administration, regularity of room audits, ensuring that information of all members is correct and up to date, room permissions, and responsibility for room closure and archiving if rooms have a defined life cycle.

My Site

My Site is a place for employees to store summary information about themselves, their skills and experience. These details of employee's skills and experience allow other employees in SABMiller to find each other. Pictures of employees may also be uploaded as people sometimes find it useful to be able to see each other's pictures when working together in instances where they have perhaps never met one another personally. The look and feel of My Site may also be edited and changed to an employee's preference by opting for a theme from a selection of SABMiller templates from the Site theme.

People Locator

People Locator can be used to find details of employees within SABMiller and to find people with relevant experience. The data which entered in My Site by each employee is used in this search, hence the more information added to My Site by employees, the better the search functionality.

Future aspirations: Tying it all together…

The implementation of the Collaboration Toolkit has allowed SABMiller to start putting processes in place to introduce services that are intended to make it easier for employees to find information, manage it, share it and collaborate around it. The benefits envisaged by deploying a set of tools such as these include having a single place for sharing and building documents, preventing confusion over versions or missing out on discussions, knowing if people are online for a chat and asking a quick question as if sitting face-to-face, discussing and amending a document without having to travel to be physically together, and sending large files round the world quickly rather than incur the cost and time of couriering.

Although some of these benefits have become daily realities within the SABMiller way of working, there is still some way to go for the envisaged benefits to further progress and mature as evident in the case results presented in the section below.

CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Discussion pertaining to Proposition 1 – The use of the Collaboration Toolkit in SABMiller

5.1.1 Examples of the use of the Collaboration Toolkit across SABMiller

The Finance Excellence Function (SABMiller: 2009c) collects large amounts of data from business units around the world as part of a global benchmarking project. The collaboration tools within the Collaboration Toolkit facilitate data collection and allow for accurate traceability. Information and training packs are accessible to help answer people's questions. As the project covers many time zones, the innovative use of collaboration technology ensures that people do not miss out on important meetings. A collaboration room was set up specifically for this initiative and the use of the room ranges from data gathering through project management to communication and knowledge sharing.

The room has approximately 400 users situated in 18 countries across Africa, Europe and Latin America. Before the creation of the room, data would have been emailed around the world, making it much more difficult to manage and coordinate all the information created by 400 team members. The collaboration room owner, who also facilitates the coordination and administration of the room, has found the collaboration facilities quite useful and remarked that "if you think about it... if I receive one email from each person with a single attachment everyday, that would be 400 emails with attachments... everyday... I don't think I would have been able to cope alone if that were the case!" (SABMiller: 2009c).

Extensive use of discussion forums within the collaboration room facilitates questions being posted to the whole team, giving rise to a number of points of views and enriching the answers. For common questions there is a more formal Frequently Answered Questions (FAQ) section.

Live Meeting is also used by the team to share and explain methods of work. The collaboration room owner records each Live Meeting and uploads them to the Collaboration Room. Members who are unable to attend or want clarification are able to use the recorded video of the meeting in their own time. The room owner also used the survey functionality to create a quiz in a monthly letter that he posts in the collaboration room, thereby attempting to make the room more interactive and interesting.

In another example of the use of the Collaboration Toolkit across SABMiller, Project Leonardo (SABMiller, 2009d) manages the design, testing and roll out of an optimised global management process applicable to new product developments, packaging upgrades or equipment investment. The Collaboration Toolkit helps Project Leonardo to run more efficiently and enables the project members to work better as a global team. They use the tools effectively to track project information, such as actions and issues and use innovative tools to help new starters to get up to speed and manage resources.

A collaboration room pertaining to Project Leonardo (SABMiller, 2009d) was set up and has close to 130 users situated in South Africa, North and South America, and in Eastern and Western Europe. The room is used for all project documentation and information sharing and contains lists for project actions and risk logs. In the past, keeping track of project actions and risks was often managed in Excel and stored on someone's computer. However, using a list in the collaboration room means everyone can see the most recent information.

According to the room owner, Instant Messenger and My Site also proved to be "an instant hit" (SABMiller, 2009d). It removed some of the discomfort of not knowing a person initially. Due to the international nature of the project, Live Meeting was put into practice as it proved to be an effective method of conducting meetings remotely. Announcements and press releases are communicated to the room members on the front page of the room, which keeps members up to date with the project's progress. A central calendar is also made use of and holds information of meetings or holidays, visible to all room members, and makes project life quite visible when planning meetings and events.

5.1.2 Usage report of the Collaboration Toolkit

The targeted end users of the Collaboration Toolkit across SABMiller's total employee base of nearly 70,000 employees are: Business project sponsors (forum chairs); information technology application owners; site owners (or project managers during project implementation; business subject matter experts; and business end users. The targeted end-users are therefore only a fraction of the total employee base.

SABMiller's South African operations (the case site) contributes 22% of the group's earnings and is the second largest earnings contributor to SABMiller's group earnings behind Latin America, which contributes 31% of earnings (SABMiller, 2010a). Seen in this light, it is interesting to note from figure 5 below (the use of the Collaboration Toolkit's Collaboration Rooms across SABMiller's operations globally over one month during 2009) that the case site only constitutes 12% of the Collaboration Toolkit's global user base across the SABMiller group.

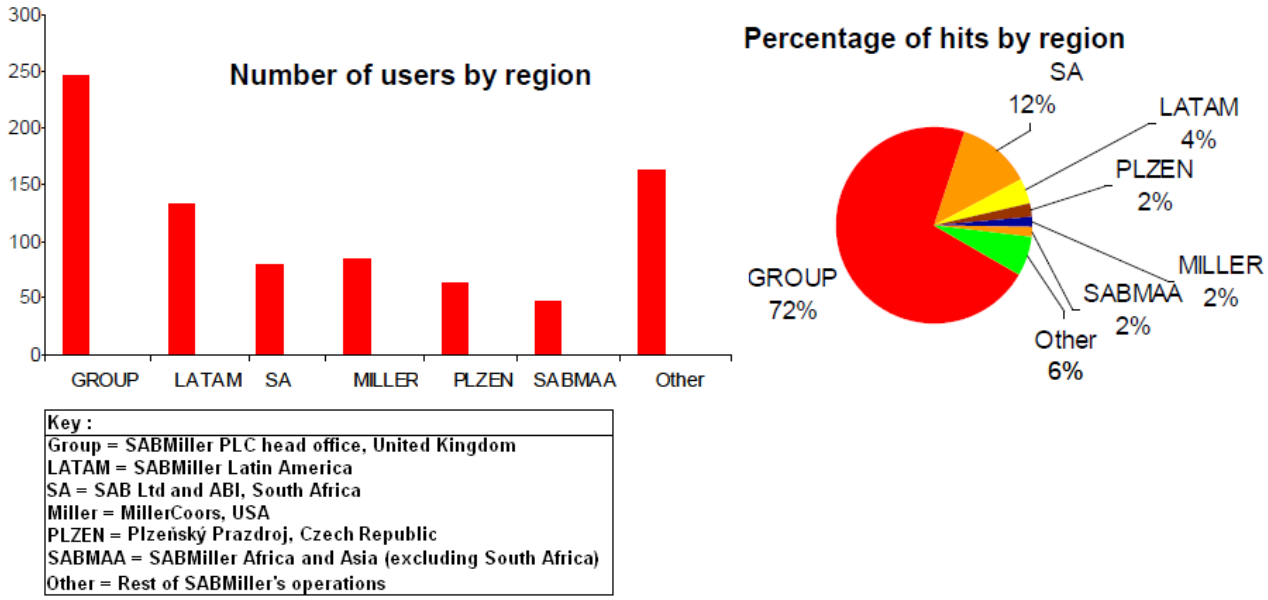

Figure 5: Collaboration Toolkit: Collaboration Rooms usage report
(Source: SABMiller, 2009e)

Although the South African operations' usage is ahead of all other country operations within the SABMiller group, it is only a fraction compared to the group's usage (SABMiller's head office in the United Kingdom). This suggests that, being a SABMiller head office initiative, there may be a greater awareness or user buy-in of the Collaboration Toolkit at the project source whereas users in other countries appear to be more apathetic to the use of the Toolkit.

Putting this into perspective in terms of the case site, it is noteworthy that one of the interview respondents, a management information systems specialist involved in the South African leg of rolling out the Collaboration Toolkit, felt that not a lot of effort was made in creating awareness of the Toolkit upon implementation and rollout: "It was very low key, so it was definitely just for people who want to use it and try it out. There was no big bang roll out".

5.1.3 Other end-users: Findings from employees interviewed at the case site

In interviews of participants based at the case site, all of the interviewees indicated that they work with people in their working environment who are not collocated with them. Typically they work with people based in the various operations bases including finished goods warehouses, manufacturing plants, regional offices and employees situated in the same office campus but in a different section of the building (such as a different floor or different building, for example).

They work with various functional members and regard them as internal customers. Collaboration is undertaken on topics within and across the employee's functional role of responsibilities and is dependent on the nature of the employee's job – topics collaborated on range from sales forecasting to raw materials ordering to training and human resource development.

Although they communicate with each other through various communication mechanisms or technologies, the most common means are through telephone and email.

Less frequent methods mentioned include some of the tools within the Collaboration Toolkit including Instant Messenger and video-conferencing. Table 4 below illustrates which of the tools users have made use of in the Collaboration Toolkit. The table indicates that Instant Messenger and Collaboration Rooms are used by far more users compared to the rest of the tools within the Collaboration Toolkit.

Table 4: Usage of collaboration tools in the Collaboration Toolkit

Respondent	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Used	Not Used
Instant Messenger	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100.0%	0.0%
Collaboration Rooms	No	Yes	Yes	No	Yes	Yes	Yes	Yes	75.0%	25.0%
Large File Transfer	Yes	No	No	No	Yes	Yes	No	No	37.5%	62.5%
Live Meeting	No	No	No	No	No	Yes	No	Yes	25.0%	75.0%
People Locator	No	No	No	No	No	Yes	No	Yes	25.0%	75.0%
My Site	No	No	No	No	No	Yes	No	No	12.5%	87.5%

The subsequent paragraphs provide a brief discussion of the use of each tool within the Collaboration Toolkit at the case site.

Instant Messenger

All of the respondents interviewed use Instant Messenger. Table 5 below summarises the use of Instant Messenger by respondents: While respondents 1, 4, 5, 6, 7 and 8 find occasions where using Instant Messenger is more beneficial than using other collaboration tools, respondents 2 and 3 prefer to not use Instant Messenger for work-related purposes.

Table 5: Summary of Instant Messenger usage

Respondent	Heard of	Uses tool	Key finding
1	Yes	Yes	Quick and reduces the need to physically travel to meet with stakeholders.
4	Yes	Yes	Easier to see messages rather than an email where you need to go look in your inbox; an easy way to contact without disrupting a present meeting. Difficult to interpret messages conveyed correctly, because of a lack of face-to-face and non-verbal communications.
5	Yes	Yes	Uses when it is not necessary to keep track of with whom communication takes place with. Used more for social purposes with colleagues at work.
6	Yes	Yes	Occasions where the tool is more beneficial than using emails and telephones. Urgent matters may be dealt with concurrently if participants are logged into Instant Messenger.
7	Yes	Yes	Important to set up a working relationship with participants first before using Instant Messenger
8	Yes	Yes	Likes using the tool for certain purposes. No traceability (does not use for formal communication purposes).
2	Yes	Yes	Used as a social form of communication tool to ask quick questions and not for official communication.
3	Yes	No	Not useful for communication involving complicated issues that require detailed explanations.

Respondent 1, an SAB demand planner responsible for one of five sales regions in the country finds Instant Messenger particularly useful for instant communication: “It’s instant and it’s quick… if I need (stakeholder feedback) on a Monday, Tuesday type of thing… then I get it like straight away. You just ask for what you need once and you just get it straight quite quick”. He finds that the advantage of using Instant Messenger as a collaboration tool is that it reduces the need to physically travel to meet with stakeholders. He also enjoys finding it is possible to communicate with stakeholders, colleagues and management immediately through Instant Messenger, even though they may be busy in a meeting or on a telephone call.

Respondent 4, an ABI demand planner, uses Instant Messenger for business decision making only with one person. He is based at the ABI head office in Sandton and uses Instant Messenger with the warehouse manager in Midrand. “I’m actually happy to use it because it makes it easier to see messages rather than an email where you need to go look in your inbox. One big advantage for me is sometimes you are busy with something else; basically in a meeting where you have other important things, but you have time to multitask and where you have an easy way to contact without disrupting a present meeting”.

In contrast, he finds that the disadvantage of using Instant Messenger is that it is difficult to interpret messages conveyed correctly, because of a lack of face-to-face and non-verbal communications: 'If you are not talking to someone... you can misjudge a person's tone, so misunderstanding can happen". He also does not use Instant Messenger when he needs to keep a record of correspondence.

Respondent 5, a business information systems training specialist, uses Instant Messenger most frequently out of the tools available in the Collaboration Toolkit and finds he uses it when he does not need to keep track of with whom he communicates to otherwise he would prefer to use email if needs to keep a record of communications. He uses Instant Messenger in an informal way and email in a more formal way. Mostly he may not even use Instant Messenger for work purposes, but more for social purposes with colleagues at work: "Well everyone I've seen using it just chat with… whoever they want to and it's normally not work related. Anyway, email is normally your more formal way".

Respondent 6, an e-learning consultant, finds occasions where using Instant Messenger is more beneficial than using emails and telephones: "If it's something urgent then I can see who's online, and if there were issues and it was urgent then I could just use it".

Respondent 7, an information systems and technology project manager, emphasises the importance of setting up a working relationship with people first before using Instant Messenger: "Before we can use those kind of things you need to build up a rapport, build up a relationship… it could sound quite rude to someone to just say to somebody you don't know, 'look at this now'… who does he think he is? But if you have a relationship with him then you can say 'please have a look at this, it is urgent' ".

Respondent 8, a management information systems analyst likes using Instant messenger, except that he finds there is no traceability: "So it's not for formal communication, which people forget sometimes. Approving a spec (sic) via Instant Messenger, for example, is not exactly going to work".

Respondent 2, an ABI tactical planner interviewed uses Instant Messenger as a social form of communication tool to ask quick questions and not for official communication.

Respondent 3, a commodity analyst, found that she preferred not to use Instant Messenger and rather communicate with stakeholders directly: “I think the people that I have that I would give quick questions to are sitting around me, so I always prefer to turn around and chat to people rather than the electronic versions, and then also I mean it’s also often more complicated questions, so it’s not just a quick ‘are we out of stock’ or something; It seems to be more involved or complicated issues that I’m dealing with, you know, most often it’s not a simple yes or no. So that’s why I’m not really using it now”.

Collaboration Rooms

As summarised in table 6 below, respondents 2, 3, 5, 6, 7 and 8 had all made use of Collaboration Rooms, but found areas where the tool could be improved, notably better information content administration and control, and the speed or performance of the tool. Respondents 1 and 4 had not used the tool before.

Table 6: Summary of Collaboration Rooms usage

Respondent	Heard of	Uses tool	Key finding
2	Yes	Yes	Uses Collaboration Rooms because instructed to do so, not because of value-gain through the use of the tool. Used for electronic document storage whereas a shared drive is an adequate substitute.
3	Yes	Yes	More useful than sharing documents through emails. Could be improved if there were prompts that informed members of updates.
5	Yes	Yes	Lack of purposeful Room maintenance and administration.
6	Yes	Yes	Useful, as long as they are driven and controlled.
7	Yes	Yes	Works well for information and knowledge sharing compared to email. A collaboration room in isolation to other collaboration tools is not effective for knowledge sharing. The amount of information in collaboration rooms which does not get monitored is problematic.
8	Yes	Yes	Used to share, review and edit documents. Found the speed (slowness) to be an issue and now uses shared folders instead.
1	No	No	-
4	Yes	No	-

Respondent 2, an ABI tactical planner, uses Collaboration Rooms more frequently than other tools in the Collaboration Tool, generally because he feels that he is instructed to do so by group members and team leaders and not because he gains much value through the use of the tool: “I’ve never actually been able to find any useful information on them, so I use them when I have to. Collaboration Room we use for storing documents where it would be perfectly easy just to put them onto a shared drive… we save a weekly report there which I doubt anyone ever looks at”.

Respondent 3, a commodity analyst, uses Collaboration Rooms to make sure stakeholders can get to certain documents that are shared online, although she does not really use Collaboration Rooms all that often, because she does not find it more useful than sharing documents through emails: “… you know for me it’s better if someone emails me the minutes, because that will prompt me to say ‘oh yes, I need to follow up on the minutes’, otherwise I have to go find stuff or look in my calendar… whereas if you get an email prompting you… you can quickly open and see if there is anything for you and if not then it’s fine otherwise you action it there and then, but that’s my personal preference to the way I work.”

She did find, however, that Collaboration Rooms are useful for referencing documentation that may have been done earlier. Collaboration Rooms could therefore be improved if there were prompts that informed members of updates.

Respondent 5, a business information systems training specialist, used Collaboration Rooms in previous projects to upload files and read information and “because everyone else used it there”. However, he finds that he tends to make less use of it than what he could do because of a lack of user friendliness and the way it was displayed – the structure of it: “Well I suppose we could make it good and logical, like any file system we could have made it logical, but they should have thought of that… before we started using it”. He found that it is quite easy to check a document in and check it out, but no-one maintained or administered the Collaboration Room purposefully enough:

“I think what happened in the end is we all had duplicates of the same document on all our networks, like on my network drive and the guy next to me, so it takes up a lot of space. So you duplicate some information.”

Respondent 6, an e-learning consultant, uses Collaboration Rooms for Operations Training, where different discussions are encouraged with different courses of work. She finds Collaboration Rooms useful as long as they are driven and controlled.

Respondent 7, an information systems and technology project manager, prefers making use of Collaboration Rooms over other tools in the Collaboration Toolkit: “Email works when you’re sending a report you email someone, but Collaboration Rooms work for information and knowledge sharing”. He highlights, however, that a collaboration room on its own will not be effective and finds the amount of information in collaboration rooms which does not get monitored is problematic:

”No one manages the stuff to see the actual information and it’s not monitored. Everyone can just dump stuff in. No one manages that information. So it has to be managed by somebody that goes to the collab room. If I need information I just go into the room, look at the report and it is fine. See I prefer the collaboration room, but information can just be dumped in it. I think we need to have specific people from different levels making sure that the information in the collab room is fine. Well look at it this way, collab is part of our strategy, part of the memory of the organisation, part of the knowledge sharing so you need someone just dedicated to looking after the collab room to make sure that the information is integrated and that it has a purpose. So if I dump information in the collab room then I must be held accountable for that. If someone uses my information and makes a decision then I must make sure that I account for it. If we just send emails and nobody keeps track of it then it becomes a problem. So the way to improve collab rooms is quite effective by managing the rooms properly and to integrate what is there”.

Respondent 8, a management and information systems analyst tried making use of Collaboration Rooms before, but was not very enthusiastic about it as a collaboration tool: “I built a collaboration room for our team and we did some collaboration there, but it was really slow, because it was based in Woking in the UK, so the speed (from the UK to South Africa) was ridiculously slow and we stopped using that. We have a public folder now that we use. It (Collaboration rooms) was more used to collaborate around documents, to review and editing documents, document sharing between the team and to do version control”.

Large File Transfer

Table 7 below summarises the respondents’ use of Large File Transfer at the case site. Respondents 1, 5, 6, 7 and 8 had used Large File Transfer, but not very often. Respondents 7 and 8 found they could achieve the same purpose (that of sending a large file to targeted recipients) through alternative methods such as through the use of shared electronic folders, email, or Collaboration Rooms. Respondents 2, 3 and 4 had never heard of Large File Transfer before.

Table 7: Summary of Large File Transfer usage

Respondent	Heard of	Uses tool	Key finding
1	Yes	Yes	Helps with facilitating some of work tasks
5	Yes	Yes	Not used often
6	Yes	Yes	Not used often
7	Yes	No	Does not need the tool – adequate substitute methods of sending large files. Not all team members and employees readily had ready access to Large File Transfer.
8	Yes	No	Does not really need it - extra effort to get the same result
2	No	No	-
3	No	No	-
4	No	No	-

Respondent 1, a demand planner, makes use of Large File Transfer to send sales analysis reports that are too large to email to stakeholders and finds that it helps with facilitating some of his work tasks. Respondents 5 (Business Information Training Specialist) and 6 (E-Learning Consultant) also use Large File Transfer, but “not very often”.

Respondent 8, the management information systems analyst finds that he does not really need Large File Transfer as a tool, because he makes use of shared public folders: “I don’t really see the need for it. It’s extra effort to get the same result”. Respondent 7, an information technology and systems project manager, had similarly also come across Large File Transfer, but felt that he did not need to use the tool: “Either you upload (a file) to a collab room and just send people a link...”.

Another criticism that he had is that he had found that not all team members and employees readily had ready access to Large File Transfer: “Some of them don’t have access to this thing so I don’t like using it…. I only use it if I actually know that people are on it which I know we all have the same access… otherwise I just ensure that they get access to the collab room and then it is easier to share…”.

Live Meeting

Table 8 below outlines the respondents’ use of Live Meeting at the case site.

Table 8: Summary of Live Meeting usage

Respondent	Heard of	Uses tool	Key finding
6	Yes	Yes	Uses tool to train others, for presentations, for projects and to run courses. Feels that employees in the business do not use enough of it because of a lack of understanding of the technology involved as well as a lack of awareness of the tool’s existence. Compared to the cost of flying stakeholders in from various destinations to one meeting point, it is a significant cost avoidance device for the business to use a tool such as Live Meeting.
8	Yes	No	Found no problem in using the tool, but had not found it necessary to use the tool again.
2	Yes	No	Might have been inclined to use Live Meeting had it not been for predecessor technology (video conferencing) that is still used by some stakeholders.
1	No	No	-
3	No	No	-
4	No	No	-
5	No	No	-
7	No	No	-

Two of the 8 interviewees have made use of Live Meeting as a collaboration tool. Respondent 6, an e-learning consultant uses it from a training perspective; she has used it for presentations, for projects and to run courses. She finds that Live Meeting as a collaboration tool adds value to the way she works with others, but that it depends on what the need of collaboration is and the purpose of the presentation. She feels that employees in the business do not use enough of it because of a lack of understanding of the technology involved as well as a lack of awareness that the tool is available for use. She feels that there is scope for employees to be exposed to the tool and get used to using it as a tool for collaboration. She also points out the cost factor of using Live Meeting may put some people off from using it as a tool over other collaboration tools, but that when compared to the cost of flying stakeholders in from various destinations to one meeting point then it is a significant cost avoidance for the business to use a tool such as Live Meeting. This supports what Convertino, Billman, Pirolli, Massar and Shrager (2008) found in that computer support for groups, whether collocated or distributed, synchronous or asynchronous, can reduce some of the process costs.

Another interviewee, respondent 8, a management information specialist who had been involved with the roll-out of the Collaboration Toolkit across SAB Ltd, has used Live Meeting twice and found no problem in using the tool, but had not found it necessary to use the tool again: “It was just a way to meet with the guys and that’s it”.

Respondent 2, an SAB Demand Planner, makes use of video conferencing which entails the use of a television monitor and camera feeding live images to a monitor located at another site. He feels that he might have been inclined to use Live Meeting had it not been for the predecessor technology that was previously entrenched as a tool for collaborating with stakeholders: “They still use video conferencing in the breweries…. I don’t know why they still use that instead of Live Meeting; I don’t think there’s enough information around Live Meeting or enough training around Live Meeting on how to actually use it and the benefits of it”.

My Site

Only one of the respondents interviewed, respondent 6, an e-learning consultant, had used My Site, but feels that it is not used enough within the company. Respondent 8, a management information specialist, had heard of the tool but not used it: “I haven’t used My Site, I don’t know what the need is”. The other respondents had neither heard of nor come across My Site.

People Locator

One respondent interviewed, respondent 6, an e-learning consultant, had used People Locator, but felt that it was not used enough across the business: “I don’t think we use it or make enough use of it”.

Respondent 5, a business information systems training specialist, had heard of People Locator, but had never used it before.

As with My Site, the other respondents had also neither heard of nor come across People Locator.

5.1.4 Findings – The use of the Collaboration Toolkit in SABMiller

From the literature review it was found that collaborative virtual spaces are used across physically distributed businesses by non-collocated participants working together across a computer network through various mechanisms including exchanging information (such as email) and for the purpose of creating and accessing knowledge repositories. The Collaboration Toolkit at SABMiller conforms to this description of how a virtual collaborative virtual space is used.

The literature review also found that the use of collaborative spaces across physically distributed businesses are inevitably used as mechanisms of task related team work activity through a combination of technology tools (synchronous and asynchronous).

From the interviews conducted, the collaboration tools in the Collaboration Toolkit are used to engage with stakeholders involve both synchronous and asynchronous communication. Both communication methods are recognised as having an important role to play in collaboration, depending on the situation at hand and the information required during collaboration. Certain work situations call for immediate information prompting and feedback, while other situations may demand an analysed yet delayed form of reply.

Face-to-face communication is also important to end-users. In terms of considering whether face-to-face is more or less useful than another, more separate, form of communication and what the benefits of one method over another are, face-to-face communication was found to be an important feature of working together, even if only once off, so that people can put "a name to a face".

Respondents feel that it is important to meet a fellow collaborator at least once. Respondent 7, an information systems and technology project manager, sums it up succinctly by saying that "the physical expression says a lot about people… body language". He remarked that "how I collaborate is I actually walk up to you. You see if you are in the same space then I'll walk up to you and just talk to you face-to-face. That's the preferred one".

This supports what Kimble et al. (in du Plessis, 2008), found: "Certain types of knowledge such as lessons learned can only really be shared and learned through face-to-face contact and not through a technology system".

Respondent 3, a commodity analyst, places emphasis on beginning a work relationship with non-collaborated colleagues through meeting them face-to-face initially and then relying on collaboration tools to continue with the working relationship, "… I tried to meet my key stakeholders and once I had met with them then there was no real need for me to go see them again. You know, it is always nice starting off a relationship by meeting with them personally: It's easier to pick up the phone and email them then". The same respondent also felt that it is not as effective to use a collaboration tool without having set up that relationship first:

“If you haven’t met with that person then they might not go as much out of their way to help you, but if you’ve met with that person and you’ve explained... then I find you get a better response.” He finds that interpersonal, face-to-face communication is necessary to ground working relationships and cannot be solely substituted with collaboration tools alone, although he is of the opinion that collaboration tools help and enhance the working relationship when face-to-face communication may not possible.

Another finding is that non-face-to-face methods work well enough when quick decisions need to be made, but when in depth discussions and decisions take place, it is better to have face-to-face discussions over different options. Furthermore, the social and cultural aspect of meeting face-to-face is an important part of collaborating together rather than having just the pure technological tools at an end-user’s disposal. There may be cultural and social issues in the environment and the like, because people require interaction whereas a report can tell you only so much.

However, due to time and distance constraints, it was found that with the type of decisions that have to be made within the time expected to make those decisions, it is often not possible to meet collaborators face-to-face and that collaboration tools as a means of working together and communicating are sufficient in those instances.

5.2 Discussion pertaining to Proposition 2 – The precursors that support meaningful workplace collaboration in physically distributed business teams

A review of the literature shows that the precursors that may support meaningful workplace collaboration in physically distributed business teams include socio-psychological precursors, organisational precursors and technological precursors.

5.2.1 Socio-psychological precursors

In the literature review it was inferred that socio-psychological precursors include (i) the type of people who would collaborate with each other, including dimensions such as age, gender, commitment, and various characteristics of the community; (ii) the building and strengthening of identity; and (iii) the mutual trust and shared knowledge among collaborators and a set of moral values and principles that is rooted in a desire to serve and manage.

(i) The type of people who collaborate with each other

It is important to consider what type of people are part of the collaborative process – organisations need to consider various dimensions, such as age, gender, commitment, and various characteristics of the community, since these dimensions may have an impact on the success and attainment of collaborative objectives (Tremblay, 2008).

In this regard, table 9 below summarises the key findings from respondents interviewed at the case site.

Table 9: The type of people who collaborate with each other

Respondent	The type of people plays a role in collaborative objectives	Key finding
1	Yes	Younger collaborators are more prone to using Instant Messenger, whereas older, more senior managers prefer to use telephones and to meet face-to-face.
2	Yes	Job position is an important factor in the way other employees are collaborated with.
3	Yes	Plays a minor role.
5	Yes	Age is a determinant of what collaboration tools are used.
8	Yes	The younger a person, the easier it is to adopt new technology.
4	No	Does not influence the way he works with people, but it does influence the type of communication technology he uses to work with them.
6	No	The PC literacy level and skills of fellow collaborators do play a role.

Respondent 1, an SAB demand planner, finds that younger collaborators are more prone to using Instant Messenger, whereas older, more senior managers prefer to use telephones and to meet face-to-face.

Respondent 2, the ABI tactical planner, found that the type of person plays a minor role in the success and attainment of collaborative objectives, although he feels that their job position is an important factor in the way he collaborates with other employees: “If they are much higher than me, it would definitely influence the way I communicate with them”.

Respondent 3, a commodity analyst, feels that the type of people plays a minor role in the success and attainment of collaborative objectives: “I mean some of the people I work with I haven’t met so I wouldn’t know how old they are, you know, like people in Polokwane, I don’t actually know. Like one name I thought was man for quite a while and then after a while I realised it was a woman, like the name wasn’t telling me like an Anna or a Peter, so you just see the people on the email and you don’t actually know if it’s a man or a woman, but you do know if it’s a helpful person because I keep on getting replies from them. So therefore I would address my issues to that person again”.

She does, however, customise her way with working with employees if she thinks it will improve the quality of work output: “Well there are people that still don’t like using emails, but you pick up those preferences when you start dealing with people... you know I will not pick a preference, but I will pick up from what that individual prefers. Like there are people that will never answer my emails, but then after that I’ll email and then I’ll phone, because they’ll have the data in front of them while I speak to them on the phone”.

Respondent 5, a business information systems training specialist, feels that the demographics of people plays a role in how users work together: “I think when it comes to age, it will be more telephone and email, while some of the guys not even email, depends on the how good the guys is on technology, because I know there are still some guys in the business that you can’t even communicate properly by email. Ok, that’s like a small percentage – most of the guys, we do communicate by email”.

Respondent 8, a management information systems analyst, supports that feeling: “Because if you get a real old guy that isn’t used to technology, he might even print out the email, whereas a younger guy… that won’t really happen. I think the younger (he is), the easier it is to adopt new technology”.

Respondent 4, an ABI demand planner, feels that it does not influence the way he works with people, but that it does influence the type of communication technology he uses to work with them: “If I know a person is not that technologically advanced then maybe I’ll use a telephone to communicate with them, but if I know that if that’s not an issue then I’ll try to use a communication method that is the easiest to facilitate work between us”.

Respondent 6, an e-learning consultant, feels that it does not play a role, but that the PC literacy level and skills of fellow collaborators do play a role: “I also don’t try to overlook that there are some people out there that we think haven’t got the ability and they really have. I mean it’s just the way that you target it and put it out there”.

(ii) Building and strengthening identity

Table 10 below summarises the key findings from respondents interviewed at the case site.

Table 10: Building and strengthening identity

Respondent	Tools used lead to a sense of identity and teamwork or team spirit	Key finding
1	Yes	"…it works quite well in terms of team spirit type thing" "…if I can't see these people and we were communicating and they put it up on a portal, at least I know that they're looking at something or we're having that sort of communication type thing so the more communication methods that are there, it will help us…"
4	Yes	"…it helps you to gain trust later on so it facilitates better communication, better work relations, and it optimises your performance."
5	Yes	"…especially when the guys start sharing expertise."
6	Yes	"…if you just put something out there and let it go then nobody is ever going to bother and you've got to have that drive and you've got to have the need for it and you've got to have consequences depending on what you do."
2	No	"I think they do very little for it. The only time they'll ever bond you together is when they don't work and you share frustration together."
3	No	"No not really."
7	No	"They are people at the end of the day. I can give you highly competent people, highly qualified, but you need to, in terms of managing them… you use a style individually."

Respondents 1, 4, 5 and 6 find that the collaboration tools they use lead to a sense of identity and teamwork or team spirit. Respondent 4, an ABI demand planner feels that collaboration tools facilitate better communication, better work relations and helps optimise team performance, while respondent 5, a business information systems training specialist feels that collaboration tools promote a sense of team identity in situations where a core group of users or specialists collaborate in work forums to share expertise.

Respondents 2, 3 and 7, however, think that the collaboration tools they use do not really lead to a sense of identity and teamwork or team spirit. They prefer face-to-face communication.

Respondent 6 feels that collaboration tools, depending on how they are used and managed, will lead to a sense of identity and teamwork or team spirit: "…if you just put something out there and let it go then nobody is ever going to bother and you've got to have that drive and you've got to have the need for it and you've got to have consequences depending on what you do".

(iii) Mutual trust

Table 11 below summarises the key findings from respondents interviewed at the case site.

Table 11: Mutual trust

Respondent	Trust amongst those collaborated with plays a role in using tools	Key finding
1	Yes	"…you have to build the trust first with the credibility of what you're doing first."
2	Yes	"…if there's low trust you'd pick a more trackable and more... I'd still give you the example of emails: You'd use written email to send to somebody and you'd copy people because you want it to be official."
3	Yes	"…if it was something critical then... or I need it, then I'll ask to have it sent in an email so that I can go back to it." "I do have to trust the person that I'm dealing with. I will sometimes look at if I've been requesting information and if it's not making sense then I will send things back and ask about it, but I have to assume that what they're giving me is true."
4	Yes	"I think it's a very very important factor when choosing your communications technology." "I would use email, because then you have evidence of what was said."
5	Yes	"…if you don't have a lot of trust in the guy then he's going to turn around and say I don't know that, you need to keep track of what was said and you can't use Instant Messenger obviously." "…I suppose if I don't trust them then I'll just email."
7	Yes	"…how you collaborate with people depends on how they socialise and their age in the industry and their experience counts a lot."

Respondents 1, 2, 3, 4 and 5 find that the presence of trust allows for a more informal way of corresponding and therefore promotes the use of synchronous collaboration tools such as Instant Messaging. However, if the level of trust is less than desirable then they would prefer to use asynchronous collaboration tools in order to have proof of communication. They are all of the opinion that trust influences which collaboration tools are used.

As pointed out in the literature review, Matychak (2008) discusses the concept of tacit knowledge, where tacit knowledge is defined as "the knowledge communicated independently of words; it is the information we disseminate and gain by way of body language, facial expressions, subtle joking, and any other form of nonverbal gesturing" (Matychak, 2008). The author points out that tacit knowledge is a form of communication that is critical to acquiring trust within a group and that trust is necessary for successful collaboration.

This was also found to be the case from the research conducted. Respondent 7, an information systems and technology manager: "For me, from project management, what I do is I always start building the team up, because that is how I see each individual play. I come from a background where you form a trust. People who have been in the industry for long – they say 'we've seen it all, I will cover my back'. Someone who comes from a background who just wants to work, and they trust you, you can't bore them with everything; you need to tell them to leave the meeting and go and write programmes. Now you're sending them a lot of emails detailing things, but if I write minutes of a meeting I just need to tell them these are the issues and these are the action items by this date and so forth. I won't give them the details, these guys are supposed to know what to do. But other people like to say, 'this is what was said and so and so will do it'. So how you collaborate with people depends on how they socialise and their age in the industry and their experience counts a lot. So in project management people always think, I always believe I manage processes, but actually I manage people in this project".

5.2.2 Organisational precursors

Table 12 below summarises the key findings from respondents interviewed at the case site.

Table 12: Organisation precursors

Respondent	Key finding
1	"…I think if they had more awareness about it then I think a lot of people…if they know about it they will be using it and collaboration would be much better, I think, in dealing with people…"
2	The organisation should consider the purpose of driving employees to make use of the Collaboration Toolkit as opposed to just encouraging collaboration for the sake of perhaps meaningless collaboration. If end-users of the Collaboration Toolkit found the tools to be useful then they would naturally gravitate more towards the use thereof.
4	"You don't need an advanced or specific support, but you do need a problem-shooting type of support or a helpdesk where you can phone, especially if you don't understand the tool." "…I think the company can do more in communicating what the advantages of these tools are".
5	The organisation should facilitate training or workshops about the advantages of using the tools.
6	"At the end of the day it's just a facility – it's not going to drive itself; you're not going to use it if there's no value or have a use for it." "To have it as a nice to have, it's not going to work. It goes back to that, to needing value. It needs to have a purpose".
7	Employees need to be made aware of developments and events within the company, because if employees do not know where they fit into the company's structure or whether they contribute towards company goals then they will not know how to most effectively contribute towards achieving those goals.
8	"People will start using it if they get value out of it – you won't see if senior management is using it or not, but if your work colleagues use it then you will too. Viral is the best way to grow."

Respondent 1, an SAB demand planner feels that the Collaboration Toolkit would be used more frequently if the organisation had implemented better organisational procedures, processes, training, education, the creating of awareness of collaboration techniques, and other management support. These elements would in turn lead to an awareness of the Toolkit and therefore perhaps an increase in the usage thereof. He also feels that initially training plays an important role in getting up to speed with new system offerings and that the associated business information systems support requirements are necessary.

Respondent 2, an ABI tactical planner, feels there have been certain organisation initiatives put in place that promote the use of the Collaboration Toolkit : “With the cost cutting and the drive to decrease travel budget, there was a push to use video conferencing in place of physical meetings”. However, he feels that the organisation should consider the purpose of driving employees to make use of the Collaboration Toolkit as opposed to just encouraging collaboration for the sake of perhaps meaningless collaboration: “I don’t think they should be encouraging just for the sake of encouraging”. He does feel though that if end-users of the Collaboration Toolkit found the tools to be useful then they would naturally gravitate more towards the use thereof.

Respondent 6, an e-learning consultant, not only feels that organisational support and procedures are necessary to promote the use of the Collaboration Toolkit, but the potential benefits that employees may achieve through the use of the toolkit need to be made known too: “At the end of the day it’s just a facility – it’s not going to drive itself; you’re not going to use it if there’s no value or have a use for it”. She also feels there are pockets within the business where collaboration tools are used frequently: “It goes back to the need and value and I think there are certain pockets where we should be driving it and more. Then it goes back to manpower and time and the nature of the work. Certainly from a social learning perspective there’s a lot that can happen and should happen and that we need to move towards. Even from an information perspective – the fact that we need the information so much quicker and easier. Across projects, where we’ve launched it across projects it has (added value) in some places and in some places not. Again it goes back to how it’s been used and the purpose that it’s been used for. To have it as a nice to have, it’s not going to work. It goes back to that, to needing value. It needs to have a purpose”.

Respondent 4, an ABI demand planner, feels that at a basic level of support is required: “For the more normal communication methods like email and that kind of stuff, you do need a basic level of support. You don’t need an advanced or specific support, but you do need a problem-shooting type of support or a helpdesk where you can phone, especially if you don’t understand the tool. So there’s a lot of broad based stuff needed or a basic structure to help”.

He also thinks that the company could do more to encourage collaboration amongst people that that they work with who are not physically collocated with each other. “I think that first they must investigate how we communicate with each other to see what’s actually going on in day to day communications within the company, especially between the regions and head office, and try to understand what’s going on and proving that these forums where we can learn on how using the different tools available can make your job 10% easier or 20% easier. So I think the company can do more in communicating what the advantages of these tools are”.

Respondent 5, a business information systems training specialist feels that the organisation should facilitate training or workshops about the advantages of using the tools. He also feels that “You need to have support. Even for me, even if it’s a new environment I need to have someone that I can quickly contact so that they can come and help”.

Respondent 7, an information systems and technology project manager, is of the opinion that employees need to be made aware of developments and events within the company, because if employees do not know where they fit into the company’s structure or whether they contribute towards company goals then they will not know how to most effectively contribute towards achieving those goals.

Respondent 8, a management information systems analyst, feels that one of the precursors of a collaborative space’s success is that employees need to feel that the use of collaboration tolls adds value to their work output. He also raises the issue of top management driving collaboration for the sake of collaboration and feels rather than senior management encouraging employees to use the Toolkit or attempting to drive the use thereof using a ‘top-down’ approach, the use or lack of use of the Collaboration Toolkit is influenced through a viral effect: “People will start using it if they get value out of it – you won’t see if senior management is using it or not, but if your work colleagues use it then you will too. Viral is the best way to grow.”

5.2.3 Technological precursors

From the literature review it was noted that information technology infrastructure and systems are needed in order to provide platforms through which organisational members may communicate and collaborate.

Table 13 below summarises the key findings from respondents interviewed at the case site.

Table 13: Technological precursors

Respondent	Key finding
1	"It can't be something that falls over and that you set it up and you battle to get communication out of the guys and now it doesn't work for a week or something like that; then you're just going to drop it completely".
2	"It impacts me very... big time. Like the ease of access to the portal and the Collaboration Rooms are difficult to get to which detracts from/prevents many people using it".
5	"If you have to wait for five minutes to upload a document then you're not going to use that. You'd rather just email it to the guy. Or save it on the shared drive…"
6	"I think that bandwidth issue plays a large part and if I can't connect and I keep getting pushed off then I'm not going to go on because it's not going to help me."

When interviewees were asked whether technology is a precursor to and how it affects collaboration, respondent 1, an SAB demand planner, indicated that he feels information technology structures needs to be stable and reliable and intuitive for end users to use. This supports what Pearce and Doh (2005) suggested in that collaboration via electronic communication technologies should be designed so as to be as user-friendly and accessible as one would experience when physically walking into a room and conducting a face-to-face meeting.

Respondent 2, an ABI tactical planner also touched on this facet of user-friendliness and accessibility as being important factors: "It impacts me very... big time… actually accessibility is one of the big ones – like the easy of access to the portal and the Collaboration Rooms are difficult to get to which detracts from/prevents many people using it. And I don't really know what's on the portal: You can't ask for access if you don't know what's there to ask access for. The reliability would be one – again if the system is down half the time then people aren't going to use it".

Respondent 5, a business information systems training specialist, finds the speed and performance is an important factor of technology: “In the beginning in the portal it took quite a bit of time to upload and download documentation. It’s not that huge a problem. I don’t think it’s a major critical factor, but it would be for some users. If you have to wait for five minutes to upload a document then you’re not going to use that. You’d rather just email it to the guy. Or save it on the shared drive, because I think people in the breweries are either working on the shared network drive against the collab rooms and that. So you’d rather say go to that shared network drive and get the document there, instead of saying go to the collaboration room. As long as you’ve got an alternative to the collab room then people will use the alternative because it’s easier to use. That’s what we’re doing...”.

In other words, the speed of a collaboration tool is an important factor to consider when designing and implementing a collaboration space. Respondent 6, an e-learning consultant, concurs on this point: “Absolutely, ja I think that bandwidth issue plays a large part and if I can’t connect and I keep getting pushed off then I’m not going to go on because it’s not going to help me”.

5.3 Discussion pertaining to Proposition 3: The barriers of successful collaboration across the business within a case study setting

The reasons why users do not make use of some or all of the collaboration tools in the Collaboration Toolkit are due to employees either not being aware of these tools at their disposal, or not finding a need to use the tools in their daily working environment due to substitute communication and collaboration methods such as email and telephone which they are accustomed to using. This is summarised in table 14 below.

Table 14: Barriers of successful collaboration

Respondent	Key finding
1	"Lack of awareness I would think right now…"
2	"…awareness would be one. If reports are out there but people don't know where they are, it's not going to be helpful." "…with speed, generally the Portal/Collaboration Room uploads and downloads slower than the network drive; that is the reason I'm quite against them."
3	"I haven't heard of any of them". "…in the end I don't think anyone actually ever looked at those documents that we had to load on these specific places…so it was double work."
4	"Other people don't know the capabilities of it so I think that if there was a way for people to learn what the facilities are then they will use it" "Basically the majority of people are scared of change so one must manage change and tell people the benefits of that change".
5	"…I've probably never had the opportunity to actually or have been forced to use it. You know, like that's the only way to collaborate; there wasn't a set of rules saying that you have to use these methods to communicate or that portal room or whatever, so I was never really part of a forum so that we can share information."
8	"I think people probably don't really know about it." "…a lot of people put in these fancy systems and then there's no change management and people don't know how to use it."

Respondent 1, an SAB demand planner, had not used some of the tools in the Collaboration Toolkit because he was not aware of them: "I think a lot of people would be willing to know about this stuff. Lack of awareness I would think right now, but I would probably use it… it can be quite useful…".

Respondent 2, an ABI tactical planner, as with respondents 1, 2 3 and 4, also found that he was not aware of some of the tools in the Collaboration Toolkit: "Um, awareness would be one. If reports are out there but people don't know where they are, it's not going to be helpful, but I think there's a lot of... it should be a push not a pull, as opposed to 'now here's some tools', but you don't know what to use them for, as opposed to people have been asking for tools. Perhaps it's difficult, because you don't know what to ask for if you don't know it exists, but I mean I think currently the tools are being pushed out there – I don't see many people using them".

The same respondent also touches on the speed of the tools available on the Collaboration Toolkit as being less than desired: "Similarly with speed, generally the Portal/Collaboration Room uploads and downloads slower than the network drive; that is the reason I'm quite against them".

Respondent 3, a commodity analyst, when asked why she had not used some of the tools in the Collaboration Toolkit also responded that she was not aware of these tools. She also highlights the effort and complexity involved in using the information technology systems: "… There was Collaboration Rooms, there was various sites that you had to put your documents on and it had to be loaded in the right file and in the right name and in the end I don't think anyone actually ever looked at those documents that we had to load on these specific places. I mean I had my versions which I had to upload onto the site as well, which is fine, but then I was still asked 'which is the latest version and won't you email it to me', so it was double work".

She also suggests that collaboration tools should be implemented in the organisation to suit specific business processes and not simply for the sake of having a tool: "To me, a lot of these efforts are done, but they are not being utilised fully, and then you don't... they didn't have my buy-in… and I think that's a problem. Not that I didn't want to, there was just no need for me to... why should I, you know, and I think that's something perhaps to think about... don't do things for the sake of it. There should be a use for it or a need for it that would make you say 'why would I do it', or 'would I do it this way rather than that way'. Try find out what people want first and then develop something around those needs. And also to change things, like once you've uploaded a document you can't change anything there. I just don't feel it was useful for me".

Similarly, respondent 4, an ABI demand planner, found a lack of awareness to be problematic: "… Other people don't know the capabilities of it so I think that if there was a way for people to learn what the facilities are then they will use it".
He also broaches the subject of change management. He feels that one of the barriers to making collaborative spaces work successfully is that people are inherently scared of changing the way they work with other people: "Basically the majority of people are scared of change so one must manage change and tell people the benefits of that change and not just dive in there and make change and take telephones away and emails away. Rather tell them enough information and tell them that they can still use their basic communication methods".

Respondent 5, a business information training specialist, also alludes to collaboration needing to have a purpose, but moreover, feels that one of the barriers to successful collaboration is a lack of standardising collaboration tools as a way of working within the organisation: “It needs to be driven – it can’t just be an alternative. Or it must become the law. That’s it. You know, you don’t have a choice – then only will it work, because I know in the collab rooms you’ve got… you can have discussions and quite a lot of things you can do in a collab room, but the problem with me is that I’ve probably never had the opportunity to actually or have been forced to use it. You know, like that’s the only way to collaborate; there wasn’t a set of rules saying that you have to use these methods to communicate or that portal room or whatever, so I was never really part of a forum so that we can share information”.

Respondent 8, a management information systems specialist, also concurs that the lack of awareness and systems speed and performance are the over-arching barrier to the successful use of the Collaboration Toolkit within SABMiller: “I think people probably don’t really know about it… it was never communicated in that way. Small things like speed and performance – if you can’t get to a document then definitely you won’t use it”.

He does, however, provide some insight as to why there might be a lack of awareness of the Collaboration Toolkit. He was involved in the South African leg of rolling out the Collaboration Toolkit and felt that there was not a vast effort in creating awareness of the tool upon systems implementation and rollout: “It was very low key, so it was definitely just for people who want to use it and try it out. There was no big bang roll out”.

Furthermore, he also feels that the lack of active change management may cause a lack of use of the tools within the Collaboration Toolkit: ”… get a formal change management process and get them on board; show them why. It will help… a lot of people put in these fancy systems and then there’s no change management and people don’t know how to use it”.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions of the study

6.1.1 Sub-problem 1: How a collaborative virtual space tool is used in a physically distributed business

Proposition 1 concluded that collaborative virtual spaces are used across physically distributed businesses by means of non-collocated participants working together via a computer network through various mechanisms including exchanging information (such as email), and for the purpose of creating and accessing knowledge repositories. The use of collaborative spaces across physically distributed businesses is primarily intended as a mechanism of task-related team work activity through a combination of technology tools (synchronous and asynchronous).

The case study illustrates that SABMiller's Collaboration Toolkit is indeed used as described in Proposition 1. Although the SABMiller employees interviewed predominantly use telephone calls, emails and face-to-face meetings as their main tools of communication, they do use at least some of the tools in the Collaboration Toolkit for various purposes, including knowledge sharing and team-work activity. The implementation of the Collaboration Toolkit has thus allowed SABMiller to start putting processes in place to introduce services that are aimed at making it easier for employees to find information, manage it, share it and collaborate around it.

Although it is recognised by interview respondents that there are value adding aspects of using the Collaboration Toolkit, such as travel reduction and its usefulness as a centralised information repository, not many users are aware of the tools within the Collaboration Toolkit.

As such, respondents interviewed indicated they would not really miss the Collaboration Toolkit had they only had emails, telephones and shared network drives, although they are all of the opinion that a collaboration space facility such as the Collaboration Toolkit does add value to individual and teamwork output.

6.1.2 Sub-problem 2: The precursors of successful collaboration across the business within a case study setting

Proposition 2 proposed that the precursors that may support meaningful workplace collaboration in physically distributed business teams include:

(i) Socio-psychological precursors: The type of people who would collaborate with each other, including dimensions such as age, gender, commitment, and various characteristics of the community; building and strengthening identity, mutual trust and shared knowledge among collaborators; and a set of moral values and principles that is rooted in a desire to serve and manage.

(ii) Organisational precursors: Formal procedures and structured processes, employee empowerment, training and education, management support, knowing where to collaborate, and compensating collaborative efforts.

(iii) Technological precursors: Presence of information technology infrastructure and systems, technological or quality standards, accessibility and user friendliness.

The findings from of each of these sub-points are summarised below:

(i) Socio-psychological precursors

Respondents 1, 2, 5 and 8 find that the demographics of people who collaborate with each other play at least some sort of role in how users work together, while respondents 4 and 6 feel that it does not play a role, although they do feel that the PC literacy levels and skills of fellow collaborators do play a role in what communications technology they use to collaborate with them.

This alludes to the fact that when designing and implementing collaboration processes within an organisation, the processes should allow for tacit knowledge to be shared according to individual needs. Paying attention to these individuals' needs may therefore elicit additional commitment from individuals.

Respondents 1, 4, 5 and 6 find the collaboration tools that they use do lead to a sense of identity and teamwork or team spirit. Respondents 2, 3 and 7, however, think that the collaboration tools they use do not really lead to a sense of identity and teamwork or team spirit. They prefer face-to-face communication. Most respondents interviewed indicated that when working in collaborative spaces they prefer to meet collaborators face-to-face at least once, preferably at the commencement of a collaborative work affiliation, in order to promote relationship-building.

Respondents 1, 2, 3, 4 and 5 find that the existence of trust allows for a more informal way of corresponding and therefore promotes the use of synchronous collaboration tools such as Instant Messaging. However, if the level of trust is less than desirable then they would prefer to use asynchronous collaboration tools, specifically email, in order to have proof of communication. They are all of the opinion that the level of trust influences the extent to which collaboration tools are used. These findings support what Rasmussen and Wangel (2007) articulated in that the successful outcome of teamwork in virtual enterprises depends on how well the members are able to share and create knowledge across disciplinary, spatial and/or cultural boundaries either asynchronously or in real-time communication.

(ii) Organisational precursors

All the respondents interviewed indicated that at least some sort of organisational support (including formal procedures and processes, training, education, creating awareness of collaboration techniques, or other management support) is an essential precursor to effective collaboration. Moreover, all of them feel that the organisation should place more effort into encouraging collaboration amongst employees, although this encouragement of collaboration should fall within the framework of a task or goal-related purpose relevant to an employee's expected job output.

A common theme from respondents interviewed is a lack of awareness of some or all of the collaboration tools available within the Collaboration Toolkit and thereby, quite simply, not knowing where to collaborate.

This could be overcome by following Cross, Borgatti and Parker's (2002) advice that if an organisation maps the pattern of information flow across functional barriers, critical insight will be yielded into where management should target efforts to promote collaboration that will provide strategic benefit. It appears therefore that knowing where to collaborate is an important precursor to effective collaboration.

(iii) Technological precursors

Respondents interviewed confirmed the literature review finding that information technology infrastructure and systems are needed in order to provide platforms with which organisational members may communicate and collaborate. Amongst others, users emphasised that information technology structures need to be stable, reliable and intuitive for end users to use, as well as being operated within a reasonable speed and performance expectation.

6.1.3 Sub-problem 3: The barriers of successful collaboration across the business within a case study setting

From the literature review, proposition 3 proposes that the barriers to effective collaboration in physically distributed business teams include complexity in information technology systems, lack of system support, the nature and complexity of the task at hand, organisational barriers, social loafing, formalising collaborative consciousness, a mismatch between social and technological requirements, and a shift in organisational structure.

From the case study, evidence of the following barriers in proposition 3 were found: Complexity in information technology systems, lack of system support, organisational barriers, formalising collaborative consciousness, a mismatch between social and technological requirements, and a shift in organisational structure.

No evidence in the case study was found to support the nature and complexity of the task at hand or social loafing.

Three emergent barriers of successful collaboration from respondents interviewed which are not stated in proposition 1 are: (i) Users not being aware of collaboration tools at their disposal, (ii) not finding a need to use the tools in their daily working environment due to substitute communication and collaboration methods (such as email and telephone which they are used to using), and (iii) a lack of active change management within the organisation in promoting the use of the collaboration tools in everyday work life.

6.2 Recommendations

In light of the case findings, the recommendations proposed to organisations wishing to attain the successful accomplishment of collaborative objectives are broadly categorised under three sub-headings:

- Gather business user feedback on collaboration needs;
- Develop a change management and awareness drive approach incorporating communications and training; and
- Set up structures and processes for ongoing maintenance and control.

These recommendations are clarified as follows:

6.2.1 Gather business user feedback on collaboration needs

In designing, implementing and using collaborative spaces, organisations need to understand what collaborative space tools and processes employees need and how they will add value to the way they work. Research should be conducted within the organisation to determine the purpose for which end-users utilise employ collaboration tools, when they would use them and why they use them. Once an understanding is developed concerning how and why non-collocated employees work together, a collaborative space solution can be designed from there.

It is also imperative for organisations to understand what they themselves want and what is required to create value and how a collaborative space tool may assist with these objectives.

A collaborative space tool should also be easy and intuitive for end-users to use – organisations should be weary of overloading people with information and providing too many collaboration tools or functionality that may detract from employee productivity. Furthermore, organisations should not introduce collaboration tools merely for the sake of collaborating, but rather that of collaborating within a shared framework or set of objectives.

6.2.2 Develop a change management and awareness drive approach incorporating communications and training

An organisation involved with collaborative spaces could create a collaboration strategy outlining purposes and scope of intended collaboration and then use that strategy to promote knowledge sharing linked to the collaboration tools, together with assigning expected roles and responsibilities to appropriate users. After collaboration change roles and responsibilities have been clearly defined, an organisation wanting to drive collaboration needs to plan on how it will engage collaboration end-users and point out to them all the advantages of why the use of collaborative spaces should be promoted.

Employees should be shown what additional value may be added to their work productivity by being part of a collaboration space and thus understanding how the utilisation of collaboration tools within their working environment will improve their work productivity. From the case study, it is evident that if employees are not aware of the collaboration tools available to them or how they may add value to their work productivity, they will not be likely to make use of collaboration facilities. Collaboration use-cases and working methods as examples of how to collaborate could be developed to illustrate these likely benefits to employees.

In terms of implementing collaboration initiatives aimed at promoting collaboration, collaboration groups by function could be set up, for example, by new product development, manufacturing, operational finance, brand or product or service marketing, distribution and procurement. In this regard, functional leads and/or collaboration functional administrators could be delegated to individuals who are delegated to take ownership of promoting collaboration within their functional area.

6.2.3 Set up structures and processes for ongoing maintenance and control

Collaborative efforts need to be standardised in terms of key performance indicators, organisational structures, people competencies and stakeholder engagement plans. Information within a collaboration space needs to be organised and stored in a systematic way and should fit with employee job requirements and align with organisational structures. The collaborative spaces should be designed in such a way so as to be conducive to building and sharing the organisation's knowledge base amongst its members.

Collaboration area 'owners' or administrators could be appointed and tasked with controlling and maintaining their respective functional work areas. Collaborative spaces need to managed by the appropriate people – people who need to be trained and up-skilled where necessary.

Ideally there should be constant communication between collaboration facilitators or administrators and collaboration end-users so as to entrench what are aimed to be new and improved ways of working together. End-users should also be given the responsibility of making use of the system effectively according to their needs.

6.3 Suggestions for further research

- Business needs and requirements of collaboration end-users.
- New forms and tools of collaboration.
- More efficient forms of collaboration.
- Change management and awareness creation in collaborative spaces.
- Knowledge management in collaborative spaces.
- Holistic views on communication needs in distributed working environments.
- The integration and inter-operability of collaboration technologies and services.

REFERENCES

Ackerman, M.S. (2000) The Intellectual Challenge of CSCW: The Gap Between Social Requirements and Technical Feasibility, *Human-Computer Interaction*, 15(2/3), last accessed 30 December 2008.

Amin, A. and Roberts, J. (2008) Knowing in Action: Beyond Communities of Practice , *Research Policy*, 37(2), p. 353-369.

Ashkenas, R. (2007) Simplicity-Minded Management, *Harvard Business Review*, 85(12).

Benford, S., Greenhaigh, C., Rodden, T.and Pycock, J. (2001), Collaborative Virtual Environments, *Communications of the ACM*, 44(7) p. 79-85.

Chetty, S., Greyling, L. and van Zyl, G. (2000) *Fundamental Economics: Micro and Macro*, Johannesburg.

Chituca, C.M., Toscano, C. and Azevedoa, A. (2008) Interoperability in Collaborative Networks: Independent and Industry-Specific Initiatives – the Case of the Footwear Industry, *Computers in Industry*, 59(7), p741-757.

Ciolfi, L., Fitzpatrick, G. and Bannon, L. (2008) Settings for Collaboration: The Role of Place, *Computer Supported Cooperative Work*, 17(2/3), p. 91-96.

Cohen, S. and Roussel, J. (2004) *Strategic Supply Chain Management: The 5 Disciplines for Top Performers*, McGraw Hill, New York.

Convertino, G., Billman, D., Pirolli, P., Massar, J.P. and Shrager, J. (2008) The CACHE Study: Group Effects in Computer-Supported Collaborative Analysis , *Computer Supported Cooperative Work*, 17(4), p. 353-393.

Corvelloa, V. and Migliarese, P. (2007) Virtual Forms for the Organization of Production: a Comparative Analysis, *International Journal of Production Economics*, 111(1/2), p. 5-15.

Creswell, J.W. (2003), *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 2nd ed, Sage Publications, Thousand Oaks.

Cross, R., Borgatti, S.P. and Parker, A. (2002) Making Invisible Work Visible: Using Social Network Analysis to Support Strategic Collaboration, *California Management Review*, 44(2), p. 25-46.

Denning, P.J. and Yaholkovsky, P. (2008), The Profession of IT: Getting to 'We', *Communications of the ACM,* 51(4) p. 19-24.

Derr, C.B. (1978) Managing Organizational Conflict: Collaboration, Bargaining, and Power Approaches, *California Management Review*, 21(2), p. 76.83.

du Plessis, M. (2008) The Strategic Drivers and Objectives of Communities of Practice As Vehicles for Knowledge Management in Small and Medium Enterprises, *International Journal of Information Management*, 28(1), p. 61-67.

Ferranti, M. (1997), Automaker Aims for Companywide Collaborative Standards, *Computing*, Dec(11).

Fichter, D. (2005) The Many Forms of E-Collaboration: Blogs, Wikis, Portals, Groupware, Disoussion Boards, and Instant Messaging, www.Qnlinemag.net last accessed on 29th December, 2008, from http://pm440.pbwiki.com/f/ many+forms+of+ecollaboration+blogs+wikis+portals.pdf

Fowler, F.G. (ed.), Fowler H.W. (ed.) and Thompson, D. (ed.), (1992) *The Pocket Oxford Dictionary*, Clarendon Press, 8th Edition, Oxford.

Gunasekaran, A., Kee-hung, L. and Cheng, T.C.E. (2008) Responsive Supply Chain: A Competitive Strategy in a Networked Economy, *Omega*, 36(4), p. 549-565.

Hall, J. (1994) Americans Know How to Be Productive If Managers will Let Them, *Organizational Dynamics*, 22(3), p. 33-47.

Hamblen, M. (1998), Netmeeting Cuts Dow Travel Expenses, *Computer World*, March(20).

Hancock, M.Q., John, R.H. and Wojcik, P.J. (2005) Better B2B Selling, *The McKinsey Quarterly*, June 2005, p. 1, last accessed 16 September, 2008.

Hansen, M.T. and Nohria, No. (2004) How to Build Collaborative Advantage, *MIT Sloan Management Review*, Fall, p. 22-31.

Haskins, M.E, Liedtka, J. and Rosenblum, J. (1998) Beyond Teams: Toward An Ethic of Collaboration, *Organizational Dynamics*, 26(4) p. 34-51.

Hinds, P.J. and Bailey, D.E. (2003) Out of Sight, Out of Sync: Understanding Conflict in Distributed Teams, Organization Science, 14(6), p. 615 – 632.

Leedy, P.D. and Ormrod, J.E. (2001) *Practical Research: Planning and Design*, 7th ed. Merrill Prentice Hall, Upper Saddle River.

Majchrzak, A., Rice, R.E., King, No., Malhotra, A. and Ba, S. (2000) Development And Adaptation Of Inter-Organizational Virtual Team Norms Using Collaborative Technology, last accessed 17 September, 2008, from http://www.cogtech.org/CT99/Rice1.htm.

Manyika, J.M., Roberts, R.P. and Sprague, KL. (2007) Eight Business Technology Trends to Watch, The McKinsey Quarterly, December 2007, p. 1, last accessed 14 September, 2008, from http://www.mckinseyquarterly.com/ Information _Technology/ Eight_business_technology_trends_to_watch_2080

Matychak, X. (2008) Knowledge Architecture that Facilitates Trust and Collaboration, *Interactions*, 15(4), p. 26-30.

McAfee, A. and Brynjolfsson, E. (2008) Investing in the IT that Makes a Competitive Difference, *Harvard Business Review*, 86(7/8).

Mintzberg, H., Jorgensen, J., Dougherty, D. and Westley, F. (1996) Some Surprising Things About Collaboration – Knowing How People Connect Makes It Work Better, *Organizational Dynamics*, 25(1) p. 60-72.

Nachira, F., Nicolai, A., Dini, P., Le Louarn, M. and Leon, L.R. (2007) Digital Business Ecosystems, European Commission Information Society and Media, last accessed 16th September, 2008, from http://www.digital-ecosystems.org/ book/de-book2007.html

Olson, G.M. and Olson, J.S. (2000) Distance Matters, *Human Computer Interaction*, 15 (2), p. 139-178.

Orlikowski, W.J. (1992) The Duality of Technology: Rethinking the Concept of Technology in Organisations, *Organization Science*, 3(3), p. 398-427.

Orlikowski, W.J. (2002) Knowing in Practice: Enacting a Collective Capability in Distributed Organizing, *Organization Science*, 13(3), p. 249-273.

Oshri I., Kotlarsky, J. and Willcocks, L. (2008), Missing Links: Building Critical Social Ties for Global Collaborative Teamwork, *Communications of the ACM*, 51(4), p. 76-81.

Padilla-Meléndez, A., Garrido-Moreno, A. and Del Aguila-Obra, A.R. (2008) Factors Affecting E-Collaboration Technology Use among Management Students, *Computers and Education*, 51(2), p. 609-623.

Pearce, J.A. and Doh, J.P. (2005). The High Impact of Collaborative Social Initiatives. *Sloan Management Review*, 46(2), p. 30-39.

Rasmussen, L.B. And Wangel, A. (2007) Work in the Virtual Enterprise – Creating Identities, Building Trust, and Sharing Knowledge , *The Journal of Human-Centred Systems*, 21(1/2), p. 184-199.

Rice, D.J., Davidson, B.D., Dannenhoffer, J.F. and Gay, G.K. (2007) Improving the Effectiveness of Virtual Teams By Adapting Team Processes , *Computer Supported Cooperative*, 16(6), p. 567-594.

SABMiller (2007) Presentation on Special Interest Group Collaboration.

SABMiller (2009a) Presentation on Proposed Scope for Co-shared Strategic Platform on Reputation Strategy.

SABMiller (2009b) Collaboration Room Quick Start Guide.

SABMiller (2009c) Global Benchmarking Success Story.

SABMiller (2009d) Project Leonardo Success Story.

SABMiller (2009e) Collaboration Toolkit Usage Report.

SABMiller (2010a) www.sabmiller.com

SABMiller (2010b) Screenshot of Instant Messenger Status.

Suleiman, J. and Watson, R.T. (2008) Social Loafing in Technology-Supported Teams, *Computer Supported Cooperative Work*, 17(4), p. 291-309.

Thompson, K. and Good, R. (2005) A Conceptual Framework For The Successful Management Of Physically Distributed Collaborative Business Networks And Highly Mobile Virtual Teams, last accessed 14 September, 2008, from http://www.bioteams.com/2005/04/06/bioteaming_a_manifesto .html

Tremblay, D. (2008) Virtual Communities of Practice: Do They Work, Where and Why?, *Organizações e Sociedade*, 15(44).

Yin, R. (1994) *Case Study Research: Design and Methods*, 2nd ed. Sage Publications, Thousand Oaks.

APPENDIX A

Interview Outline

The questions that were used for prompting are listed below. These questions are open-ended and various prompting was done during the interviews to ensure that the research propositions were comprehensively tested.

A. How a collaborative virtual space tool is used in a physically distributed business:

- Do you work with anyone in your working environment who is not collocated with you, ie colleagues or team members who reside in different buildings, cities, countries, or continents? With who? How? With what? How often?
- How do you communicate with these people – through what communication mechanisms or technologies? Why?
- What form of media do these communication methods offer (eg audio, voice, video, graphics and/or text)?
- Which of the methods of communication/knowledge sharing that you engage with involve real-time/instant communication, and which of the methods involve delayed, asynchronous communication (like posting a comment on a wall, or file sharing)? Which do you prefer?
- Have you used any of the tools Collaboration Toolkit in your working experience at SAB, from the following list:
    - Collaboration Rooms
    - Live Meeting
    - Instant Messenger
    - Large File Transfer
    - People Locator
    - My Site

- Which tool out of the tools in the toolkit do you use most frequently? Why?
- What leads you to use the selected tool(s) out of the toolkit – how do you use it? What don't you like about it?
- What are the advantages of using this tool over other tools or forms of communication?
- Which of the tools in the Collaboration Toolkit haven't you used? Why?
- Why do you think the Collaboration Toolkit was developed? (What challenges do you think business faced that would have prompted the need of such a tool, and what value would you think is envisaged to be gained through the use of this tool)?

B. Precursors and barriers of successful collaboration across the business through the use of the virtual space tool:

- Do you find that the demographics of people who collaborate with each other, (dimensions such as age, gender, commitment, experience, etc) play a role in how users work together? How?
- Do you think, when it comes to working together in a non-collocated way with colleagues, that level of trust amongst those you collaborate with plays a role in using the tools that you mentioned before? How important is trust is trust in working together with people that you don't physically sit with?
- Are there any tools that you use over others (say, email over telephone) because of trust issues?
- Do you find that the tools that you use create or lead to a sense of identity and teamwork or team spirit? How, why, why not?
- Which working method do you prefer/find more productive – working in a collocated (face-to-face) environment of using technologies and

communications with non-collocated people? Why? Are there times when one form has its benefits over the other or vice versa?

- Regarding the collaboration tools that you've mentioned that you've used (or are used by the company), do you think that the implementation and use of these tools has benefited or suffered from any organisational support or lack thereof (such as formal procedures and processes, training, education, the creating of awareness of collaboration techniques, or other management support)?

- Should SAB do something more to encourage collaboration amongst people that that you work with who are not physically collocated in the same office as you/ with each other?

- When it comes to factors such as the presence of information technology infrastructure and systems, technological speed, performance, quality, reliability, standards, accessibility and user friendliness, etc, what were/are the types of technological precursors that are important to use/implement the tool?

- What are the support requirements like, both from a technical view and an end-user/business view?

- In your view, has the tool been of help/added value to your job/ other employees' jobs? In what way, or why not?

- If the company (or other companies) were to consider implementing a collaboration toolkit solution again or for the first time, what advice would you give a project team interested in implementing such a solution, based on your experience?

- What are the risks / pitfalls to look out for in implementing the tool? What has not worked/bothered you through the use of these tools?

APPENDIX B

Consistency matrix

The purpose of this research is to assess how a collaborative virtual space tool is used in a physically distributed business, particularly in the South African business context, and to clarify why, in terms of precursors and barriers of successful collaboration across the business, the use of the tool is successful or not.					
Sub-problem 1	**Literature Review**	**Propositions**	**Source of data**	**Type of data**	**Analysis**
How a collaborative virtual space tool is used in a physically distributed business.	• Benford, Greenhaigh, Rodden and Pycock (2001) • Chituca, Toscano and Azevedoa (2008) • Ciolfi, Fitzpatrick and Bannon (2008) • Cohen and Roussel (2004) • Convertino, Billman, Pirolli, Massar and Shrager (2008) • Cross, Borgatti and Parker (2002) • Denning and Yaholkovsky (2008) • Derr (1978) • Ferranti (1997) • Gunasekaran, Kee-Hung and Cheng (2008) • Hamblen (1998) • Hansen and Nohria (2004) • Hinds and Bailey (2003) • Majchrzak, Rice, King, Malhotra and Ba (2000) • McAfee and Brynjolfsson (2008) • Mintzberg, Jorgensen, Dougherty and Westley (1996) • Olson and Olson (2000) • Orlikowski (1992) • Orlikowski (2002 • Oshri, Kotlarsky and Willcocks (2008) • Pearce and Doh (2005)	Collaborative virtual spaces are used across physically distributed businesses by means of non-collocated participants working together via a computer network through various mechanisms including exchanging information (such as email) and for the purpose of creating and accessing knowledge repositories. The use of collaborative spaces across physically distributed businesses is primarily intended as a mechanism of task-related team work activity through a combination of technology tools (synchronous and asynchronous).	• Site of study: The Organisation • Primary source: Direct observation • Secondary sources: In-depth interviews, documentary analyses	Qualitative	• Putting information into different arrays • Making a matrix of categories and placing the evidence within such categories • Creating data displays – flowcharts and other devices – for examining the data • Tabulating the frequency of different events • Putting information in chronological order or using some other temporal scheme

Sub-problem 2	Literature Review	Propositions	Source of data	Type of data	Analysis
Indicate the precursors of successful collaboration across the business within a case study setting.	• Chituca, Toscano and Azevedoa (2008) • Convertino, Billman, Pirolli, Massar and Shrager (2008) • Corvelloa and Migliarese (2007) • Cross, Borgatti and Parker (2002) • Gunasekaran and Youssef (1999) (in Gunasekaran, Kee-Hung and Cheng (2008) • Hansen and Nohria (2004) • Haskins, Liedtka and Rosenblum (1998) • Matychak (2008) • Mintzberg, Jorgensen, Dougherty and Westley (1996) • Orlikowski (1992) • Padilla-Meléndez, Garrido-Moreno and Del Aguila-Obra (2008) • Pearce and Doh (2005) • Rasmussen and Wangel (2007) • Rice, Davidson, Dannenhoffer and Gay (2007) • Tremblay (2008) • Wenger (1998),in Amin and Roberts (2008)	The precursors that may support meaningful workplace collaboration in physically distributed business teams include: • Socio-psychological precursors: The type of people who would collaborate with each other, including dimensions such as age, gender, commitment, and various characteristics of the community; building and strengthening identity, mutual trust and shared knowledge among collaborators; and a set of moral values and principles that is rooted in a desire to serve and manage. • Organisational precursors: Formal procedures and structured processes, employee empowerment, training and education, management support, knowing where to collaborate, and compensating collaborative efforts. • Technological precursors: Presence of information technology infrastructure and systems, technological or quality standards, accessibility and user friendliness.	• Site of study: The Organisation • Primary source: Direct observation • Secondary sources: In-depth interviews, documentary analyses	Qualitative	• Putting information into different arrays • Making a matrix of categories and placing the evidence within such categories • Creating data displays – flowcharts and other devices – for examining the data • Tabulating the frequency of different events • Putting information in chronological order or using some other temporal scheme

Sub-problem 3	Literature Review	Propositions	Source of data	Type of data	Analysis
Indicate the barriers of successful collaboration across the business within a case study setting.	• Ackerman (2000) • Ashkenas (2007) • Fichter (2005). • Hansen and Nohria (2004) • Mintzberg, Jorgensen, Dougherty and Westley (1996) • Rice, Davidson, Dannenhoffer and Gay (2007) • Suleiman and Watson (2008)	The barriers to effective collaboration in physically distributed business teams include complexity in information technology systems, lack of system support, the nature and complexity of the task at hand, organisational barriers, social loafing, formalising collaborative consciousness, a mismatch between social and technological requirements, and a shift in organisational structure.	• Site of study: The Organisation • Primary source: Direct observation • Secondary sources: In-depth interviews, documentary analyses	Qualitative	• Putting information into different arrays • Making a matrix of categories and placing the evidence within such categories • Creating data displays – flowcharts and other devices – for examining the data • Tabulating the frequency of different events • Putting information in chronological order or using some other temporal scheme