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TAKING MULTI MODE RESEARCH STRIDES DURING THE INNOVATION OF A CRICKET COMPETITIVE INTELLIGENCE FRAMEWORK

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─Abstract ─

This paper describes the multi-mode research methodological steps during the development of a competitive intelligence (CI) framework for cricket coaches. Currently no framework exist to guide coaches to gain a competitive advantage through competitor analysis. A systematic literature review (SLR) ascertained the similarities and differences between the business CI and sport coaching and performance analysis (PA) domains. The qualitative document analysis performed in ATLAS.TI^{TM} rendered a reputable inter- and intra-document analysis validity with $\kappa = 0.79$ and 0.78 respectively. The document analysis contributed towards the compilation of a semi-structured interview schedule to investigate the business-related CI process occurrence within the sport coaching context. The interview schedule was finalised after university-peers' interviews provided input on the proposed schedule. Thereafter data collection entailed semi-structured interviews with high-level cricket coaches and support staff on CI activities in their coaching practices. The coach interviews were verbatim transcribed and analysed with ATLAS.TI^{TM}. A codebook of the codes created in the analysis was compiled. The researcher established the inter- and intra-reliability with a Cohens' Kappa of 0.8. A constant comparative method of data analysis guided the analysis, which was performed until data saturation was reached. The 4338 interview code incidences were quantitized – the conversion of qualitative data to numerical data. A coefficient cluster analyses on all indices detected clusters with a linkage distance set at four was performed, from which five themes emerged. The 71 codes were conceptually concatenated into 28 categories, linked to the five different themes. The multi-method research design rendered a conceptual and applicable CI framework for cricket coaches.

Key Words: Multi-mode research, Competitive intelligence, Sport

JEL Classification: IJ-SSHS

1. INTRODUCTION

This study aimed to develop a competitive intelligence (CI) process framework for cricket coaches by using the business domain 4Cs CI process model by Weiss (2002) as theoretical underpinning. In the business realm CI is the term used to explain "a systematic and ethical program for gathering, analysing and managing external information that can affect your organization's plans, decisions and operations" (Weiss, 2002:41). The literature indicates limited processes or models used by coaches for gathering and analysing information in a controlled and systematic manner (Cushion, Armour & Jones, 2006). For this reason there is a need to investigate and develop a process framework for cricket coaches to perform CI activities to gain a competitive advantage (Cushion et al., 2006).

This study employed a combination of different research methods called mixed-method research or multi-mode research to achieve the research goal (Johnson, Onwuegbuzie & Turner, 2007). Multi-methods are explained as "in general, mixed-method research represents research that involves collecting, analysing and interpreting quantitate and qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon." (Leech & Onwuegbuzie, 2009:265). This approach enables a comprehensive understanding of a phenomena, adding contextual complexity (Cohen, Manion & Morrison, 2011). According to the Leech and Onwuegbuzie (2009) typology, the current study is categorised into the partially mixed sequential dominant status multi-mode design. The purpose of this paper is to describe the two qualitative and one quantitative methods used during the development of a CI framework for sport coaches. The qualitative research comprised the first sequential processes of multiple interviews, where after quantitizing of the qualitative data followed and quantitative analysis performed (Saldanha & O'Brien, 2013). The qualitative analysis is seen as the dominant status and Figure 1 denotes a diagrammatic representation of this papers' multi-mode steps and activities in the development of a CI framework for cricket coaches.

2. PHASE I: EXPLORATION

Qualitative data collection strategies can include *inter alia* interviews, observations or document analysis (Merriam, 2009). In this regard, the study employed a systematic literature review process for a detailed document analysis.

2.1. Systematic literature review

The first step of the exploration phase and qualitative research, involved the completion of a systematic literature review (SLR). The selection of expert authors' documents and evidence based research for inclusion in a SLR, provided information on the competitive intelligence (CI) phenomenon for the business domain. The SLR indicated that the business CI phenomenon is robust and transferrable to the sport performance analysis (PA) domain (Kitchenham, 2004). Similarly a SLR ensured rigor of the review as a crucial first step in compiling an interview schedule and for conducting the interviews (Hemmingway & Brereton, 2009). The SLR process is described in detail in working paper by the researchers (Van den Berg, Coetzee, Blignaut & Mearns, 2017). The SLR provided a strong theoretical foundation of the CI investigation of cricket coaches and guided the development of the interview schedule.

2.2. Preliminary interview schedule

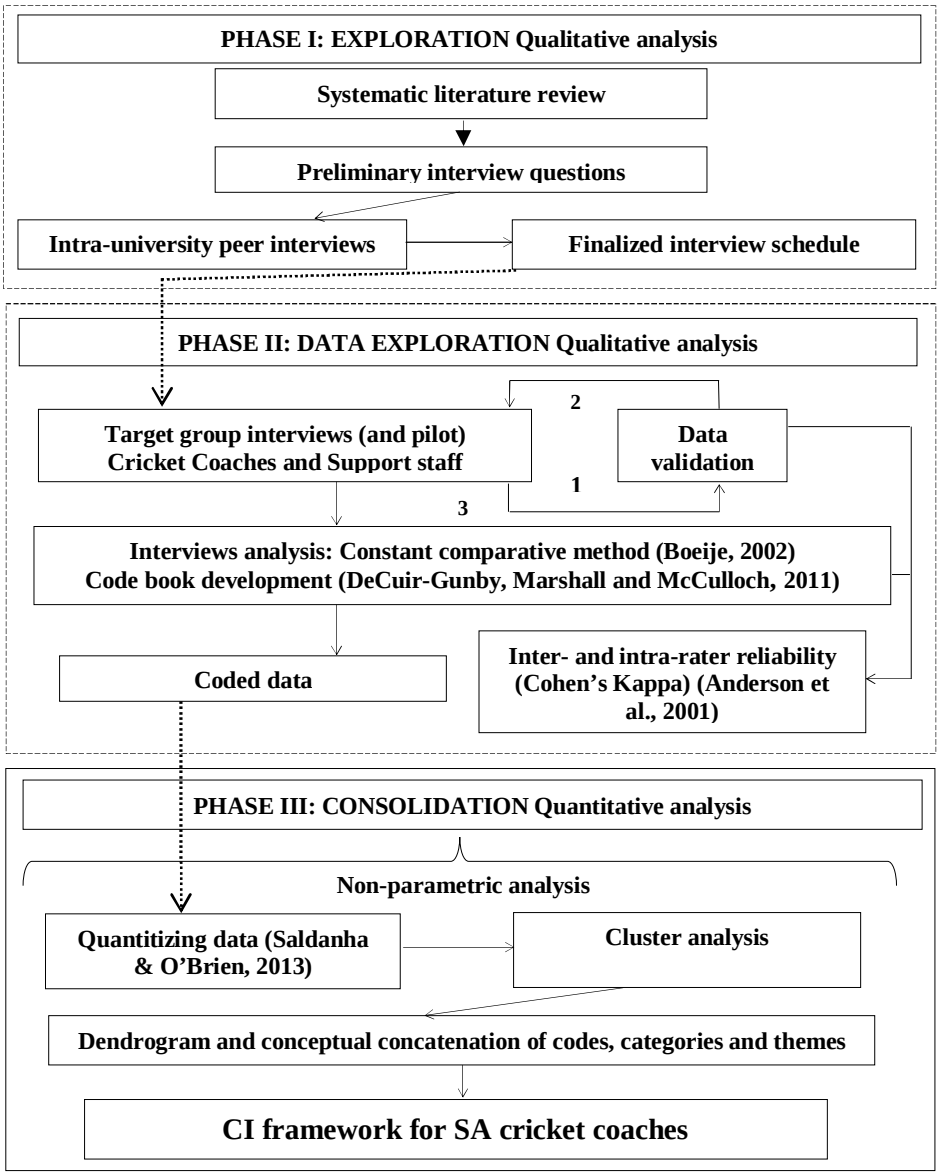
The interview schedule developed from the SLR addressed the research question under investigation. The proposed interview schedule contained questions related to the four steps of data collection, conversion, communication and countering of the CI process model from Weiss (2002) as well as CI planning and focus (the key intelligence topics). A semi-structured interview schedule was developed since it does not need to follow a specific order or be limited to the use of the exact words listed in the schedule (Cohen et al., 2011). An introductory section pertaining to information on the aim of the study, as well as an explanation of CI were included for the participants to familiarise themselves with the topic (Doody & Noonan, 2013). The interview schedule was emailed to intra-university peers for evaluation and feedback with the aim to adapt and finalise the schedule to be used with the main participant group of cricket coaches and support staff.

2.3. Intra-university peer interviews

New interview schedules need pilot testing and intra-university peers were employed for this evaluative task (De Vos, Strydom, Fouche & Delport, 2005). Intra-university peers refer to colleagues in a sport scientific or sport management

domain with at least three years of academic and research experience from the same university as the researcher, but who worked on a different campus. The university's research ethics committee granted ethical clearance (NWU Ethics number NWU-00185-15-S1). Written consent from the participants were obtained via a gatekeeper and according to the process of the World Medical Association Declaration of Helsinki regulations (World Medical Association, 2013) and the NWU Health Research Ethics Committee.

Figure 1: Partially mixed sequential dominant status multi-mode design



The preliminary interview schedule was emailed to the intra-university peers at least two days before the scheduled interview date. A Skype interview, a telephonic interview and a simultaneous face-to-face interview with two intra-university peers were conducted. The interviews were voice recorded and they provided an opportunity for the researcher to gain experience in conducting interviews. The researcher transcribed the recorded interviews and to ensure accuracy and validity, the researcher emailed the transcriptions to the participants. They were requested to validate the authenticity and correctness (Creswell, 2003). Thereafter the typed interviews were analysed.

2.3.1 Intra-university peers interview analysis

The validated transcribed interview documents were qualitatively analysed using ATLAS.TI^{TM}, computer-assisted qualitative analysis software (CAQDAS). The raw data were reduced to meaningful units through the creation of inductive codes (DeCuir-Gunby, Marshall & McCulloch, 2011). Inductive coding refers to the identification of meaning units or codes, which are defined as "tags or labels for assessing units of meaning to the descriptive or inferential information compiled during a study" (DeCuir-Gunby et al., 2011:137). The constant comparative method (CCM) from Boeije (2002) was followed, whereby the researcher performed the qualitative analysis sequentially until no new meaning units or codes emerged and data saturation was reached (Guest, Bunce & Johnson, 2006). The CCM of simultaneous comparing and contrasting during data collection and analysis enabled the researcher to make adjustments to the proposed interview schedule through codes and meaning units generated that have arisen from the interview analysis and reflection on previous data (Boeije, 2002). Data saturation was achieved since no new feedback indicated changes to be made.

2.4. Finalized interview schedule

During the data analysis through the CCM, changes were made to the initial interview schedule according to intra-university peer feedback as qualitatively analysed. With minor revisions, the interview schedule was finalized according to the feedback received from intra-university peers and the qualitative analysis (DeCuir-Gunby et al., 2011).

3. PHASE II: DATA EXPLORATION

The second phase of data exploration used the finalized interview schedule for semi-structured interviews with the target group of cricket coaches and support staff.

3.1. Target group interviews

Sport coaches are known to engage in activities of data collection, analysis, information communication and decision making – all of which are activities of the CI process. Cricket coaches specifically were selected, since researchers have already applied CI related activities such as data mining to a competitive cricket analysis environment (Schoeman, Matthee & Van der Merwe, 2006). Expert cricket coaches were selected through non-probability sampling methods, since researchers aimed to investigate a process and phenomenon within a specific group of individuals (De Vos et al., 2005).

3.1.1 Target group sampling

The criteria for cricket coach inclusion in the study were: the coach should have at least five years of coaching experience; must have coached at least at university or provincial level or have obtained a coaching certification from the national governing body. The inclusion criteria for support staff such as assistant coaches, analysts or sport scientists were: the person must have a tertiary qualification in the human movement science field or certification in strength and conditioning or applicable sport analysis field and a minimum of three years' experience in team coaching and analysis set-up (Cooper, Hughes, O'Donoghue & Nevill, 2007). The criteria aimed to exclude low-level coaches who may not have adequate experience and knowledge regarding CI related activities within their coaching domain (Cohen et al., 2011).

3.1.2 Target group recruitment

Coaches and support staff from surrounding provinces such as Gauteng, North West and Free State was contacted to participate in the study. Coaches willing to participate in the study, signed and returned the consent form to a research colleague, after which the researcher contacted the coaches to arrange a suitable date, time and place of convenience. Coaches were asked to identify colleagues and support staff members who were also contacted via email or telephonically, repeating the process of obtaining informed consent in a snowball sampling manner. Snowball sampling provides the identification of hard-to-reach

individuals, usually where little knowledge on few respondents is available (De Vos et al., 2005). Coaches and their support staff had the option of being interviewed together or separately. The demographic information of the participants is presented in Table 1 and 2.

Table 1: Demographic information of cricket coaches and support staff

N	Gender		Position			Coaches Experience (years)			Coaches CSA Level qualification			
	Male	Female	Coach	Assistant coach	Analyst	6-9	10-19	20 +	1	2	3	4
17	16	1	12	2	3	3	9	2	0	5	4	5

Table 2: Team involvement, coaching level and analyst information

	Coaching level and analyst involvement					Present team coaching / involved gender		Analyst experience (years)	
	University team	Premier league	Provincial team	Franchise level	National side	Male	Female	3-4	10+
n	3	2	4	6	2	16	4	2	1

3.1.3 Interviews

The finalized interview schedule was also tested on a small number of participants with similar characteristics as those of the target group of respondents (De Vos et al., 2005). The pilot study as pre-testing measurement of the instrument confirmed the suitability of the methodology, sampling, instrument and analysis within similar settings and individuals typical of the larger inquiry target group (De Vos et al., 2005). The researcher emailed the interview schedule, to the cricket coaches two days ahead of the arranged interview for the person to familiarize him-/herself with the CI questions that would be discussed, and the participant completed a demographic questionnaire (Doody & Noonan, 2013). The semi-structured interview and one-on-one setting allowed for a social interaction with a purposeful, but relaxed discussion on the participants' perceptions, experience and knowledge on the CI related aspects (Ryan, Coughlan & Cronin, 2009). The researcher transcribed the interviews herself, which allowed the data analysis to commence during data collection and allowed for initial concepts and understandings to emerge from the data at the onset of the study.

3.1.4 Data validation

Data verification is important, not only to the overall validity, but also the quality of findings, and to ensure no data loss during the transcription of the voice recorded interviews, participant validation was applied (Creswell, 2003). In this regard, the typed interview document was emailed to the participant who read through it and verified the correctness, acceptability and authenticity of the transcribed interview (Teddlie & Tashakkori, 2003). This two-step process completed the initial data validation process and the interview document analysis followed.

3.2. Interview analysis

Qualitative interview analysis needs to be performed with rigour and has to be clearly documented (Merriam, 2009). The constant comparative method and code-book development, increased the analysis rigour and is explained hereafter.

3.2.1 Constant comparative method

The constant comparative method aims to systemize the qualitative analysis process (Boeije, 2002). The CCM process involves open coding to take place first and, thereafter, axial coding, whereby open coding involves data exploration through the identification of units of meaning, actions and behaviour (Ezzy, 2002). The cricket coach interview data were evaluated and divided into units of meaning such as lines, paragraphs or sections, which were labelled or coded as part of the open coding through a deductive coding process. Deductive theme and subsequent code creation was possible because of the SLR, whereby the researcher formed an understanding of the primary activities within the CI process and a process as a whole. The familiar recurring concepts and statements about the four steps in the CI process and subject of enquiry were coded using ATLAS.TI™ as a tool for recording, indexing and storing volumes of typed interview documents (Leech & Onwuegbuzie, 2007). Additionally, new codes or meaning units were created inductively since specific occurrences were apparent within the data, which lead to the discovery of patterns (Babbie, 2001). Inductive code creation was employed to analyse interview data since it intended to observe a sample of specific instances and to draw conclusions about the entire subject matter of CI activities and processes used by these participants (Leedy & Ormond, 2001). Thereafter units of meaning or fragments were rearranged to produce new understanding that explored similarities and differences across cases (Cohen et al.,

2011). This process is referred to as axial coding, whereby new interview data with the second participant was analysed and compared with the previously analysed interviews (Boeije, 2002). The cycle whereby interview data code creation, addition and comparison is performed was repeated several times with new interviews conducted, transcribed and analysed when the completed interview data analysis indicated new fragments and codes (Boeije, 2002) The CCM embeds the fundamental element of qualitative research through simultaneous and continuous data analysis and collection (Cohen et al., 2011).

3.2.2 Codebook development

DeCuir-Gunby et al. (2011) appraise the development of a codebook to organise and guide the qualitative interview analysis. The first step in codebook development encompasses the creation of deductive or theory-driven codes, as well as inductive or data-driven codes (DeCuir-Gunby et al., 2011). With the creation of theory and data driven codes, special care is taken in producing code names and definitions and providing adequate examples (DeCuir-Gunby et al., 2011). During the second step of codebook development, the creation and interpretation of the created codes need to be verified, which is achieved through a critical analysis by another qualitative research colleague (De Vos et al., 2005). The research colleague evaluated the codes and definitions in light of the examples, as well as according to the interview context and judged the appropriateness of names, definitions and examples (DeCuir-Gunby et al., 2011). Through this process, the created codes and application to the data is scrutinized and new codes emerged or existing ones were adapted. The third step in the codebook development necessitates the calculation of intra- and inter-rater reliability, which indicates the consistency of code creation and application by the researcher and multiple raters (DeCuir-Gunby et al., 2011). This was achieved through the calculation of a Cohen's Kappa, which reflects the amount of actual agreement divided by the amount of agreement expected by change. The calculations the intra-rater were calculated at κ=0.79 with the researcher re-coding the pilot interviews on separate occasions more than a week apart. The inter-rater reliability calculated at κ=0.78 with the research colleague also performing an analysis on the two pilot study interview data documents. The three step calculation values are represented in Table 3 (McHugh, 2012). The process and the amount of agreement demonstrated that the codes were created and applied in a consistent manner and that the qualitative method employed is validated and

therefore, the researcher continued with interview data collection and analysis (Campbell, Quincy, Osserman & Pedersen, 2013; DeCuir-Gunby et al., 2011).

Table 3: Cohen's' Kappa calculation values (McHugh, 2012)

Cohen's Kappa calculations	Intra-rater reliability calculation	Inter-rater reliability calculation
Pr(a)	0.958175	0.97462
Pr(e)	0.806749	0.88114
κ	0.783571	0.78647

3.2.3 Coded data

The CCM of interview analysis and the creation and application of theory and data-driven codes with the development of a codebook, continued simultaneously with interviews conducted. The same process of recruitment, obtainment of informed consent, interview arrangement, interviews completed, transcription, participant validation and data analysis was followed until no new codes were created.

This implies that there were no new occurrences of additional information, cases, insights, properties, constructs, categories or dimensions after fifteen interviews, and the researcher conducted two more interviews and analysis to verify that nothing new was added (De Vos et al., 2005). After seventeen interviews and no new cases or information in created codes added, the researcher declared data saturation (Boeije, 2002; DeCuir-Gunby et al., 2011). The coded data were used within the third consolidation phase, which involved the quantitative analysis.

4. PHASE III: CONSOLIDATION

The multi-mode research approach aims that both the qualitative and quantitative processes and analysis reinforce data to generate new theory (Creswell, 2009). The quantitative data analysis was performed to increase the scope of analysis and to escalate confirmatory and exploratory findings in a visual manner (Kvale, 1996 in Cohen et al., 2011; De Vos et al., 2005).

4.1. Quantitizing data

The 4338 units created during the interview data analysis were coded under 71 codes which were quantitized – referring to the conversion of the qualitative data

analysis into numerical data by dichotomizing themes and categories and counting qualitative codes (Saldanha & O'Brien, 2013; Sandelowski, Voils & Knafl, 2009). A university statistician performed the quantitative analysis after the qualitative interview data were tabulated by assigning scores of either one or zero to each instance of a code (Saldanha & O'Brien, 2013). The quantitized data articulates the CI phenomenon's intensity, frequency and content, which enables further data exploration (Collingridge, 2013). The quantitized data was exported to a Microsoft Excel spread sheet, where after further analysis was performed.

4.2. Cluster analysis

The quantitized and tabulated data was entered into the multivariate procedure of cluster analysis to detect natural groupings of data (Wilkinson, Engelman, Corter & Coward, 2009). A single-linkage, 1-Pearson correlation coefficient cluster analysis of all indices was performed and indicated as a tree diagram or dendrogram (Figure2) (Wilkinson et al., 2009). The linkage distance to detect clusters was set at four, which rendered five themes.

4.3. Dendrogram

The five themes that emerged from the cluster analysis in the dendrogram were explored in terms of the individual and collective codes within its cluster.

Figure 2: Dendrogram

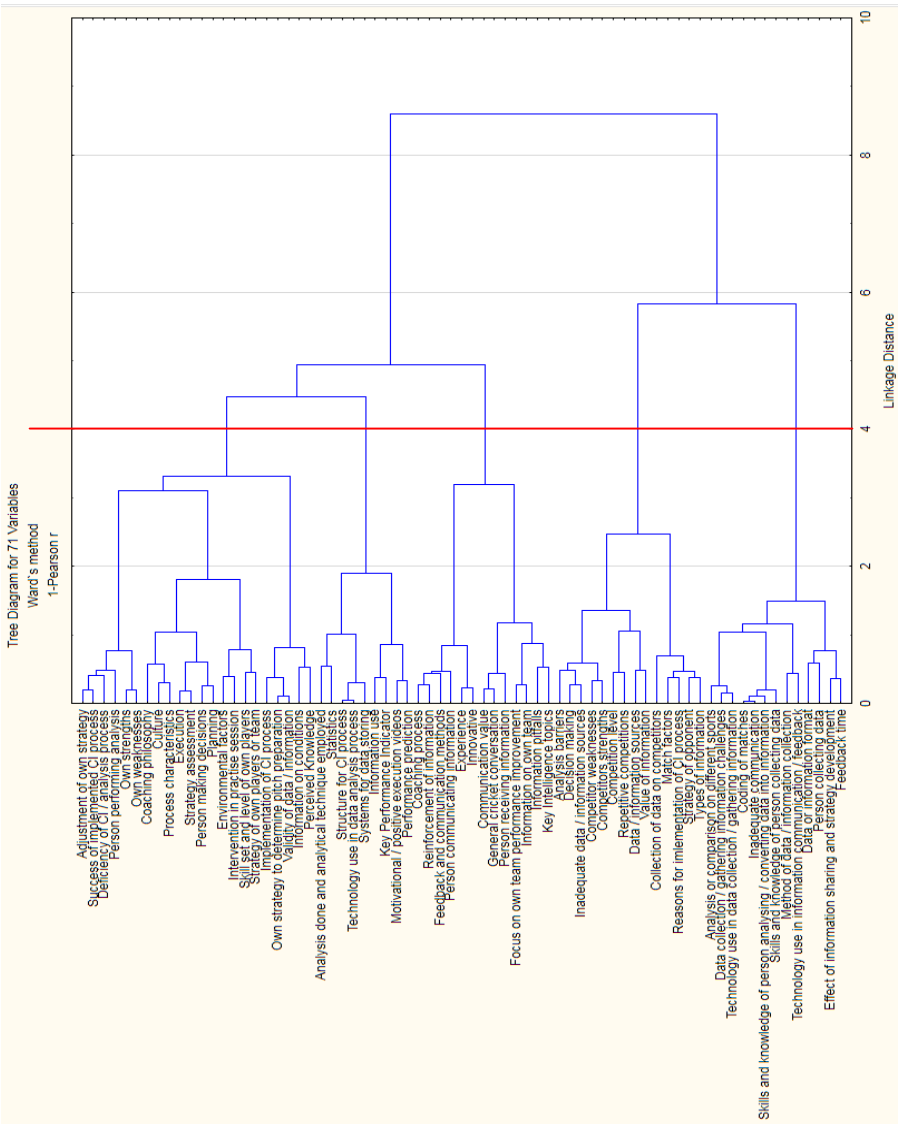
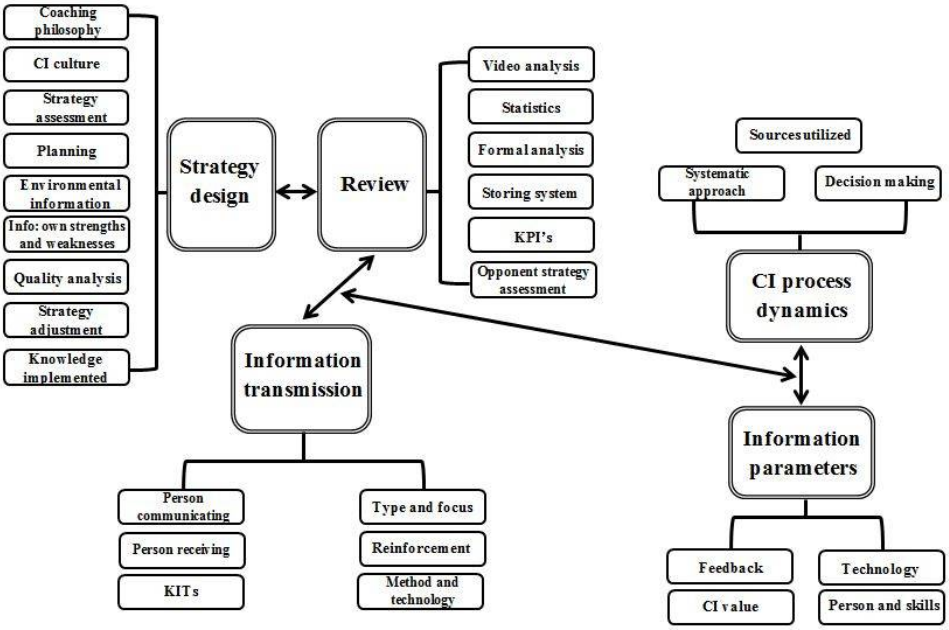


Figure 3: CI framework for cricket coaches



Each code was scrutinized for its individual meaning, cluster inclusion and relatedness to the overarching theme, where after themes were labelled according to the relational significance of clustered codes (Cohen et al., 2011). The clustered codes were conceptually concatenated to conceptualize the encompassing categories and themes (Cohen et al., 2011). The ideational five themes with concatenated categories provide the conceptual CI framework for cricket coaches (Figure 3).

4.4. Competitive intelligence framework for cricket coaches

As indicated, the themes were suitably titled according to the cluster incidence similarities and overarching meanings, which were conceptually concatenated into categories. The five themes that emerged empirically from the categories were: a*) Strategy design, b) Review, c) Information transmission, d) CI process dynamics and e) Information parameters.* The first theme of *Strategy design* relates to aspects and factors that contribute to the intended strategy developed by the coach and include the categories of: i) coaching philosophy, ii) CI culture, iii) strategy assessment, iv) planning, v) environmental information, vi) information on own strengths and weaknesses, vii) quality analysis, viii) strategy adjustment and ix)

knowledge implemented. The second theme of *Review* describes how the coach appraises information to confirm his strategy design and denotes categories of i) video analysis, ii) statistics, iii) formal analysis, iv) storing system, v) KPIs and vi) opponents' strategy assessment. The theme of *Information transmission* relates to the how and what information coaches communicate regarding their designed strategy and include categories such as i) person communicating, ii) person receiving, iii) KITs, iv) type and focus, v) reinforcement and vi) method and technology used. Specific *CI process dynamics* as the fourth theme are characterised by forces, which could stimulate the growth, development or change within the coaches' CI process and refers to factors, which the coach has to manage effectively for successful CI implementation. These include: i) systematic approach, ii) decision making and iii) sources utilized. The last theme of *Information parameters* refers to limitations that coaches experience or perceive which negatively influence the successful implementation of a systematic CI process. Categories within this last theme were i) feedback, ii) technology, iii) CI value and iv) person and skills.

5. CONCLUSION

The multi-mode design of this study established in depth knowledge through empirical evidence on the particular business domain phenomenon of CI activities which are similar to those performed by high-level cricket coaches. The two sequential qualitative analysis processes laid the foundation for the rational explanation of a business-related CI process model applied to a sport coaching context. The quantitative methodological step performed, increased the range of analysis and reinforced data to generate new theory in the form of the CI framework for cricket coaches. The interactive process allowed a hands-on and immersed research approach with the scope of knowledge drawn from experts in the sport coaching domain. The multi-mode research design that was followed, conceptualized a novel CI framework for cricket coaches. The inclusion of the CI framework in coach education programs will enhance the systematic process followed by coaches to gain a competitive advantage.

6. REFERENCES

Babbie, E. (2001). The Practice of Social Research. Belmont: Wadsworth/Thomson Learning.

Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quantity and Quality,* 36(391-409.

Campbell, J.L., Quincy, C., Osserman, J. & Pedersen, O.K. (2013). Coding in-depth semistructured interviews: problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research,* 42(3), 294-320.

Cohen, L., Manion, L. & Morrison, K. (2011). Research Methods in Education. 7th ed. London: Routledge.

Collingridge, D.S. (2013). A primer on quantitized data analysis and permutation testing. *Journal of mixed methods research,* 7(1), 79-95.

Cooper, S.-M., Hughes, M., O'Donoghue, P. & Nevill, A.M. (2007). A simple statistical method for assessing the reliability of data entered into sport performance analysis systems. *International Journal of Performance Analysis in Sport,* 7(1), 87-109.

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

Creswell, J.W. (2009). Mapping the field of mixed methods research. *Journal of mixed methods research,* 3(2), 95-108.

Cushion, C.J., Armour, K.M. & Jones, R.L. (2006). Locating the coaching process in practice: models "for" and "of" coaching. *Physical Education and Sport Pedagogy,* 11(1), 83-99.

De Vos, A.S., Strydom, H., Fouche, C.B. & Delport, C.S.L. (2005). Research at Grass Roots. Pretoria: Van Schaik Publishers.

DeCuir-Gunby, J.T., Marshall, P.L. & McCulloch, A.W. (2011). Developing and using a codebook for the analysis of interview data: an example from a professional development research project. *Field Methods,* 23(2), 136-155.

Doody & Noonan, M. (2013). Preparing and conducting interviews to collect data. *Nurse researcher,* 20(5), 28-32.

Ezzy, D. (2002). Qualitative Analysis: Practice and Innovation. London: Routledge.

Guest, G., Bunce, A. & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods,* 18(1), 59-82.

Hemmingway, P. & Brereton, N. 2009. What is a systematic review? [Electronic Version], April, 1-8. Date of access 30 June 2016 from http://docplayer.net/84335-What-is-a-systematic-review.html.

Johnson, R.B., Onwuegbuzie, A.J. & Turner, L.A. (2007). Toward a definition of mixed method research. *Journal of mixed methods research,* 1(2), 112-133.

Kitchenham, B. (2004). Procedures for Performing Systematic Reviews. Eversleigh, NSW: Software Engineering Group Department of Computer Science, Keele University.

Leech, N.L. & Onwuegbuzie, A.J. (2007). An array of qualitative data analysis tools: a call for data analysis triangulation. *School Psychology Quarterly,* 22(4), 557-584.

Leech, N.L. & Onwuegbuzie, A.J. (2009). A typology of mixed methods research designs. *Quality and Quantity,* 43(265-275.

Leedy, P.D. & Ormond, J.E. (2001). Practical Research: Planning and Design. 7th ed. New Jersey: Merrill Prentice Hall.

McHugh, M.L. (2012). Interrater reliability: the kappa statistic. *Biochemia Medica,* 22(3), 276-282.

Merriam, S. (2009). Qualitative Research: A Guide to Design and Implementation. San Francisco, CA: Jossey-Bass.

Ryan, F., Coughlan, M. & Cronin, P. (2009). Interviewing in qualitative research: The one-to-one interview. *International Journal of Therapy and Rehabilitation,* 16(6), 309-314.

Saldanha, J. & O'Brien, S. (2013). Research Methodologies in Translation Studies. New York: Routlage.

Sandelowski, M., Voils, C.I. & Knafl, G. (2009). On Quantitizing. *Journal of mixed methods research,* 3(3), 208-222.

Schoeman, J.H., Matthee, M.C. & Van der Merwe, P. (2006). The viability of bysiness data mining in the sports environment: Cricket match analysis as application. *South African Journal for Research in Sport, Physical Education and Recreation,* 28(1), 109-125.

Teddlie, C. & Tashakkori, A. (2003). Handbook of Mixed Methods in Social and Behavioural Research. Thousand Oaks: CA: SAGE.

Van den Berg, L., Coetzee, B., Blignaut, S. & Mearns, M. (2017). Relevancy of the business competitive intelligence process to sport performance analysis: A systematic literature review. Working paper.

Weiss, A. (2002). A brief guide to competitive intelligence: how to gather and use information on competitors. *Business Information Review,* 19(2), 39-47.

Wilkinson, L., Engelman, L., Corter, J. & Coward, M. (2009). Chapter 4: Cluster analysis. In Wilkinson, L. (Ed.) *Systat 13: Statistics I, II, II, IV.* (I71-I128). Chicago, IL: Systat Software Inc.

World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *Joural of American Medical Association,* 310(20), 2191-2194.