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Segmentation by age of triathletes participating in Ironman South Africa

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Abstract

Triathlon organisers should focus on segmenting participants according to different age groups. Age was found to be a significant factor in commitment, motivational and loyalty levels in reviewed research material. The purpose of this research is therefore to categorise triathletes participating in the only Ironman event held on the African continent, the Ironman South Africa, based on their age. Ironman South Africa will resultantly gain continued participation from different age groups of triathletes and sustain the event in a competitive sport tourism industry. Self-administered questionnaires were distributed during the 2013 registration for Spec-Savers Ironman South Africa where 425 questionnaires were administered. Respondents were divided into four age categories and labelled according to their level of experience in the sport: <= 30 years (*Young triathletes*), 31-40 years (*Adept triathletes*), 41-50 years (*Mature triathletes*) and 51+ years (*Senior triathletes*). These four clusters differ significantly statistically and practically, in terms of their spending behaviour, their sport participation behaviour and their motives for competing. The results showed that age, as a segmentation variable, is a successful way to categorise triathletes, as different age groups typify distinctive segments, each with different sport and spending behaviour and participation motives. In addition to sustaining Ironman South Africa, these findings can be used to expand the event in the future as well as the sport in general.

Keywords: Market segmentation, triathlons, age-based segmentation, Ironman South Africa.

INTRODUCTION

A triathlon is a unique endurance sport combining the three disciplines of swimming, cycling and running (Smith, 2010; Lamont & Kennelly, 2012; Lepers, Knechtle & Stapley, 2013a). The Ironman triathlon is globally the most popular long distance triathlon. Since the event began in 1978, participation has increased and currently thousands of triathletes compete in about 28 Ironman races all over the world (Knechtle, Knechtle & Lepers, 2011). An Ironman triathlon consists of three legs occurring in the following order: a 3.8km ocean swim, a 180km bicycle ride and a 42.2km marathon. Ironman triathletes are unique in that they are the athletes that are the most efficient in turning effort into output (Sowell & Mounts Jr., 2005). A triathlon requires extremely concentrated training volumes and intensities (Lepers *et al.,* 2013a) and due to the nature of a triathlon event, most of the athletes perform to their maximum capacity, from mental and physical perspectives (Lepers & Maffiuletti, 2011). Bearing in mind the intense characteristics

of a triathlon, it is often assumed that fitness declines with age, but it is possible that many triathletes will actually get better with age. As Lobby (2012) so eloquently puts it: "Whether you're racing the finish clock or the calendar, in triathlons, the podium does not discriminate when it comes to age".

Myburgh, Kruger and Saayman (2013) found that triathletes are older than participants participating in the individual sports; for example, open-water swimmers, road-cyclists, marathon runners, mountain bikers and canoe participants (Streicher & Saayman, 2010; Kruger, Saayman & Ellis, 2011; Saayman & Kruger, 2013; Kruger & Saayman, 2013a; Kruger & Saayman, 2013b; Kruger & Saayman, 2013c). Hunter, Stevens, Magennis, Skelton and Fauth (2011) found that the peak performance age of swimmers was 20 years of age, while marathon runners peaked at approximately 28-30 years of age. The aforementioned studies reflect an important finding which implies that an endurance athlete could easily extend their competitive age, if they wished to, by competing in triathlons such as the Ironman competition (Myburgh *et al.,* 2013). Segmenting triathletes based on age or their age division will therefore give an indication whether level of experience influences participants (Myburgh *et al.*, 2013). Using age as a segmentation variable has been found as being viable for use with other demographic and/or psychographic methods in segmenting markets that will lead to the most effective results (Reisenwitz & Iyer, 2007). Lepers, Sultana, Bernard, Hausswirth and Brisswalter (2010) stress that studies which examine the changes in training volume and physiological characteristics of older triathletes are required in order to better understand age-associated changes in triathlon performance and also to provide vital information on the way to maintain physical capacity and performance with advancing age. Therefore, research should focus on categorizing participants according to different age (Gahwiler & Havitz, 1998; Mahony, Madrigal & Howard, 2000; Augaitis, 2005; Casper & Stellino, 2008; Myburgh *et al.,* 2013). The purpose of this research is thus to segment triathletes participating in the only Ironman event held on the African continent, Ironman South Africa based on their age. This will help Ironman South Africa gain continued participation from different age groups of triathlete's and sustain the event in a competitive sport tourism industry (Mullin, Hardy & Sutton, 2007; Casper & Stellino, 2008).

LITERATURE REVIEW

The literature review is presented in two sections with market segmentation discussed first, its focus specifically on age as a segmentation variable, while, secondly, the influence of age among triathletes is analysed.

Market segmentation and age as a segmentation variable

Previous segmentation studies have examined an array of consumer characteristics, which include demographic information, geographic locations, behavioural patterns, personality characteristics, spending, seasonality and motives (Slabbert, 2006). Demographic segmentation is the most general segmentation variable, which is relatively inexpensive to undertake and helps identify profiling characteristics associated with the consumer in each segment (McDonald & Dunbar, 2010). Segmentation of a market may be made with groups of people who exhibit similar demographic characteristics such as gender, age, household composition, ethnicity and educational level (Perreaults Jr & McCarthy, 1999; Walker & Walker, 2011). These demographic details are then applied to define markets; for example, predicting that people in the age group 30 to 35 years will respond to the same proposition (McDonald & Dunbar, 2010; McDaniel *et al.,* 2013). This information is crucial to sport marketing in identifying consumers who are most likely to consume the product or service being presented (Arnott, 2008). In economic decisions, a person's age has frequently

been used, due to the belief that it is a low cost proxy for ability (Sowell & Mounts JR, 2005).

In a sporting context, age as a demographic segmentation variable, entails categorizing participants who fall into the same age groups and who tend to have similar interests and experiences; this will influence their behaviour and participation patterns (Solomon, 2010; Howell, 2012). Specifically for triathlons, age may be regarded as an important segmenting tool as it will help underline the relationship between age and a triathlete's performance and behaviour (Sowell & Steward, Mount JR, 2005). In that triathlons involve successive swimming, cycling and running sessions, these categories will assist in examining age-related changes in endurance performance in different locomotion modes (Lepers *et al.,* 2010).

If correctly researched and accurately applied, using age as a segmentation variable is able to provide many benefits, achieved by selecting different target and segmentation strategies for each age group (Howell, 2012). Marketers will appeal and communicate to the specific participants in each age segment (Howell, 2012). Using age as a base for segmenting is moreover a more personal and well adapted method of correlating participants' attitudes and values (Howell, 2012). Shilbury, Westerbeek, Quick and Funk (2009) and Myburgh *et al.* (2013) emphasise the fact that a triathlete is such a unique sport participant, that it becomes necessary to identify which is the ideal variable for segmenting triathletes.

The influence of age among triathletes

The benefits of lifelong involvement in physical activity are well known and well researched and include decreased risk of cardiovascular disease, hypertension and diabetes (Katzmarzyk, Janssen & Ardern, 2003) as well as increased physical and mental health (Mazzeo, Cavanagh, Evans, Fiatarone, Hagberg, McAuley & Statzell, 1998). It is however, not surprising that despite the benefits of physical activity and participation in endurance events, participation in sport tends to be lower among older people and higher among younger people and that sport participation and the popularity of sport varies according to different age groups (Baker, Côte & Deakin, 2005; Jones, Millward & Buraimo, 2011).

Research has revealed that many older people do not have the intention of withdrawing from sport and leisure activities, which have been suggested as an important stimulator for better adjustment to old age (Carrigan, Szmigin & Wright, 2004). This is emphasised by Baker & Horton (2004) who found that high levels of competitive sport involvement could delay the onset of performance decline although this is inevitable with increasing age. Therefore it has become a trend that physical activity is higher throughout the lifespan of individuals; a goal that can be achieved by motivating individuals to take up triathlons (Hawkins, Wiswell & Marcell, 2003; Baker *et al.,* 2006).

An ultra-endurance triathlon presents an ideal opportunity for researching prolonged sport involvement (Baker *et al.,* 2006). Not only does a triathlon represent a rather extreme form of physical activity on the one hand, but on the other hand the general structure of the sport promotes continued participation across an individual's lifespan, unlike sports such as gymnastics and/or figure skating (Baker *et al.,* 2006). Triathlons may therefore be regarded as a "lifespan sport". This is evident from its inclusion in the World Masters Games that represents the pinnacle of achievement in this level of sport (Baker *et al*., 2006). The average age of triathletes was found in previous literature to be on average 36.7 years to 38 years of age, while other studies found that most triathletes are in their late 30's or early 40's (Reese, 2008; Tribe Group, 2009; Wicker, Hallmann, Prinz & Weimer, 2012). Calculation of the average age of Ironman South Africa triathletes indicated that they were between the ages of 36-40 years (Myburgh *et al.,* 2013). The fact that relative efficiency does not necessarily decline with age, supports the claim that

triathletes are considered to be the fittest of the fit and thus the most efficient in relationship to age (Sowell & Mounts Jr, 2005). Villaroel, Mora and González-Parra (2011) state that although it is inevitable that an athlete's triathlon performance will diminish with age, experience is an important variable with regard to performance in sports and especially in vital events. Frimmel (2012) confirms that experience plays a vital role by stating that previous experience of older participants, as well as their knowledge of what to expect, prove to be their sources of confidence and mental preparedness.

Recent studies have investigated how age influences **triathlon performance** (Lepers *et al.*, 2013ab) and there is evidence of a relationship between age, ability and performance; this is obvious in the physical abilities of athletes (Sowell & Mounts Jr, 2005). Age-related decline in endurance performance is also well documented; it was found that peak endurance performance is maintained until 35 years of age, after which it decreases until 50-60 years and then declines more rapidly (Tanaka & Seals, 2008). However, it is suggested that the participation period of triathletes can be extended well into the late 60s and into the early 70s for men and women (Sowell & Mount JR, 2005).

Furthermore, it was found that elite and professional triathletes' **peak age** may be higher than in single endurance sports (Lobby, 2012). The age of peak performance in Ironman triathlons is around 33-34 years for both males and females (Rüst, Knechtle, Knechtle, Rosemann & Lepers, 2012; Rüst, Knechtle, Rosemann & Lepers, 2012), which is older than the age of peak overall performance of other endurance athletes (Hunter *et al.,* 2011). Research by Lepers and Maffiuletti (2011) concurs with the findings regarding these peak ages. They discovered that the fastest men competing in Ironman World Championship are in the age groups of 30-34 or 35-39 years, while the slowest men were in the age group of 60-64 years, compared to the fastest women in the age groups 25-29 or 30-34 years, whereas the slowest women were in the age group of 60-64 years. These results suggested that the best age for fastest Ironman total performance is between 25 and 39 years for both men and women (Lepers & Maffiuletti, 2011). In a shorter, half-Ironman distance event, female triathletes were at their peak age at 25-39 years, while male triathletes peaked between 18-39 years of age (Knechtle, Rüst, Rosemann & Lepers, 2012). According to Baker *et al.* (2006), the mean age for elite triathletes was 32.8 years and they had competed in triathlons on average, for 12.5 years. The middle-of-the-pack triathletes registered a mean age of 33.0 years and had been competing in triathlons on average, for 7.4 years. The back-of-pack group had a mean age of 35.1 years and had competed in triathlons on average for 5.0 years.

When analysing the relationship between **age and performance,** it was observed that older triathletes could not be as highly efficient at their age as their younger counterparts (Sowell, Stewart Mount Jr, 2005) while **gender differences** were stable until 55 years of age and then increased significantly. The biggest declines in endurance and triathlon performance occur after the age of 70 years (Lepers & Maffiuletti, 2011; Rüst *et al.,* 2012b; Lepers *et al.,* 2013a). Further research revealed that male triathletes aged 65 are 44% slower than a male at 35 years of age, while female triathletes were 48% slower than there 35 years of age counterparts. Male triathletes aged 60 years were on average 27% slower than those of between 30 and 40 years of age, while the difference was 38% for females (Sowell & Mounts Jr, 2005; Lepers *et al.*, 2013a).

Age-related decline in triathlon performance is furthermore dependent on the **specific discipline** (Lepers *et al.,* 2010; Rüst *et al*., 2012a; Lepers *et al.*, 2013a). There is a lesser age-related decline in cycling performance compared to that of running and swimming for triathletes older than 55 years of age participating in Olympic distance triathlons and after 50 years of age for participation in Ironman distance triathlons (Lepers *et al.*, 2010; Rüst *et al.,* 2012b; Lepers *et al*., 2013a). Age-related decline in swimming

performance is however not dependent on the triathlon distance (Lepers *et al.,* 2010). Age-related declines in cycling and running performance for shorter distance triathlons are less pronounced than for longer Ironman distances (Lepers *et al.,* 2013a). Therefore it is clear that the type of triathlon also has an effect on age-related decline with off-road triathlon performances displaying less decrement with age than road-base triathlons; thus the type of discipline (road vs. mountain cycling and road vs. trail running) is an important factor in age-associated changes in triathlon performance (Lepers *et al.,* 2013a).

Commitment is a factor that also increases or decreases with age. Significant differences based on a participant's age were found for commitment where younger participants of 34 years and under 35-44 years reported significantly lower commitment levels than those in the groups aged 45-54 and 55 and older. Possible reasons for this may be that older participants have a higher involvement, have participated in the sport for longer and have thus had more time to develop deep-rooted commitment (Augaitis, 2005; Casper & Stellino, 2008).

It is clear from the afore-mentioned synthesis of the literature that age is a valuable segmentation variable as it influences different aspects of a triathlete's performance, characteristics and attitudes. Age, as a segmentation variable, has however, to the best of the authors' knowledge, not been applied in a South African triathlon context. If marketers of triathlon events understand the importance of different age groups better this should lead to more effective marketing due to their being able to determine what appeals to the majority of these participants, thereby narrowing down the target market drastically (Howell, 2012).

Greater triathlon satisfaction will lead to more participation and if marketers are able to identify what motivates older consumers to participate in leisure activities and are able to successfully communicate the perceived benefits and reduce perceived constraints, this will then lead to greater consumer satisfaction and participation will increase. However, the recruitment of new participants to endurance sport is not the sole issue of importance; the retention of existing, older participants is of major significance too (Casper, 2005). When younger participants become involved in triathlons, efforts must be made to increase commitment, as this will facilitate retention later on. Marketers must therefore look at the importance of psychological commitment and the ways in which it differs, based on age, and develop their marketing strategies accordingly, with a view to increasing the commitment of younger participants (Casper, 2005).

MATERIALS AND METHODS

Data collection was achieved by means of the application of a quantitative approach involving the distribution and collection of a structured questionnaire. The method used is discussed as follows: the presentation of the focus of the study is followed by an explanation of the questionnaire design, the survey manner and the sampling method. The section concludes with the statistical analysis of the data.

Focus of study

The Spec-Savers Ironman South Africa Triathlon (hereafter referred to as Ironman South Africa) is Africa's premier ultimate one-day endurance race event. As previously mentioned, this is a multi-discipline event integrating a 3.8km open-water swim, followed by a 180km cycle and lastly a 42.2km run (Ironman South Africa, 2013). Ironman South Africa attracts approximately 2000 triathletes from 50 nationalities to Nelson Mandela Bay, (Port Elizabeth), in the Eastern Cape each year (Ironman South Africa, 2013). The 2013 Ironman triathlon, which was the Ninth Ironman event in South Africa, attracted nearly 50 professional athletes and 426 registered international participating athletes (Ironman South Africa, 2013).

The questionnaire design

The questionnaire design that was applied to survey the participants at Ironman South Africa 2013 was adapted from the work of Streicher and Saayman (2010), Kruger, Saayman and Ellis (2011), Lamont and Kennelly (2012), Lovett (2011), McCarville (2007), Smith (2010) and Wicker *et al.* (2012) for the purpose of the specific event and the research objectives. The questionnaire had two sections. Section A captured demographic details (gender, home language, age, gross annual income, home province, country of origin, level of education, marital status, mode of transport) and spending behaviour (number of people in travelling group, number of participants/spectators paid for and expenditure). Section B depicted motivational factors, measuring 24 items on a five-point Likert scale where 1 = not at all important; 2 = slightly important; 3 = important; 4 = very important; 5 = extremely important. Section B gathered information specific to participants' behaviour before and during the event: entry details; previous participation in Ironman South Africa or internationally; number of sport events participated in annually; primary category; age when first exposed to the event; person who exposed (them) to the sport; other sporting events previously competed in; upcoming sport events to be participated in during 2013; initiator of participation and information sources used for being updated and notified for the event.

Survey and sampling method

Self-administered questionnaires were distributed at the Boardwalk Convention Centre and Spa throughout the registration period (11 to 13 April 2013). A destination based survey was implemented. Eight field workers had been trained to ensure that they understood the aim of the study as well as the questionnaire content and design. They were grouped in pairs and each group was required to work a two-hour shift each of the three days. Their aim was to hand out as many questionnaires as possible. The field workers approached participants after they had registered for the event to brief them on the purpose of the survey. This was to ensure that the registered event participants contributed of their free will to the survey. The field workers were directed to approach participants from different genders, ages and nationalities to ensure a representative sample. Proportional stratified sampling was applied and a total of 450 questionnaires were distributed over a period of three days. The 2012 participation statistics were used to determine the estimated population size (*N*). Approximately 1 744 triathletes participated in the 2012 Ironman South Africa event (Ironman South Africa, 2013). Applying Krejcie and Morgan's (1970) sample size formula, a total of 313 respondents needed to be sampled from a population of 1 744 triathletes. This was also necessary to obtain valid and credible results. To address concerns of inaccurate and incomplete questionnaires, the sample size was enlarged to 450 questionnaires. Field workers gathered a total of 425 fully completed questionnaires, representing more than the required sample of 313. In order to effectively apply age as a segmentation base, only questionnaires that completed this question, along with completed motivational information were included in further analysis. This resulted in collecting 410 fully completed questionnaires.

Statistical analysis

Data capturing was done on Microsoft Excel™ while SPSS™ (SPSS Inc, 2013) was utilised to analyse the data. The analysis comprised two separate stages: a factor analysis and the analysis of differences based on the age of the athletes participating in Ironman South Africa.

First, a principal axis factor analysis, using an Oblimin rotation with Kaiser normalisation, was performed on the 24 motivation items to explain the variance-covariance structure of a set of variables through a few linear combinations of these variables. The Kaiser-Meyer-Olkin measure of sampling adequacy was used to determine whether the covariance matrix was suitable for factor analysis. Kaiser's criteria for the extraction of all factors with Eigen values larger than unity

were used because they were considered to be able to explain a significant amount of variation in the data. All items with a factor loading greater than 0.3 were considered as contributing to a factor, and all items with loadings less than 0.3 as not correlating significantly with this factor (Steyn, 2000). Any item that cross-loaded on two factors with both loadings greater than 0.3, was categorised relating to the factor with the best interpretation. A reliability coefficient (Cronbach's alpha) was computed for each factor to estimate its internal consistency. All factors with a reliability coefficient above 0.6 were considered acceptable. The average inter-item correlations were also computed as a further measure of reliability. According to Clark and Watson (1995), these should lie between 0.15 and 0.55.

Secondly, participants were analysed and segmented based on their age. ANOVAs and Tukey's multiple comparisons were employed to investigate any significant differences between the different age segments. The study applied demographic and behavioural variables as well as motivational factors to examine whether statistically significant differences existed among the different groups. Effect sizes were used to further identify any significant differences between the participant groups. The purpose of effect sizes is to establish whether any differences existed between first time and repeat participants. Furthermore, these determined in which combination the averages of the socio-demographic and behavioural variables as well as the motivational factors had the smallest or largest effect. Cohen (1988) as well as Ellis and Steyn (2003) offer the following guidelines for the interpretation of the effect sizes; namely, small effect: d = 0.2, medium effect: d = 0.5 and large effect: d = 0.8. The next section offers a discussion of the statistical analysis.

RESULTS

The results and statistical analysis are presented in two sections. Firstly, the results of the factor analysis (motives to participate) are discussed, followed by the results of the ANOVA's and cross tabulations with Chi-square tests.

Factor analysis

The pattern matrix of the principal axis factor analysis, using an Oblimin rotation with Kaiser normalization, identified seven factors (motives) for participation. These factors accounted for 67% of the total variance. All the factors had high reliability coefficients, ranging from 0.68 (the lowest) to 0.89 (the highest). The average inter-item correlation coefficients with values between 0.35 and 0.80 also implied internal consistency for all factors. Moreover, all items loaded on a factor with a loading greater than 0.3. The relatively high factor loadings indicated a reasonably high correlation between the factors and their component items. The Kaiser-Meyer-Olkin measures of sampling adequacy of 0.87 also indicated that patterns of correlation were relatively compact and yielded distinct and reliable factors (Field, 2005). Bartlett's test of sphericity also reached statistical significance ($p< 0.001$) supporting the factorability of the correlation matrix (Pallant, 2007).

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Table 1: Results of factor analysis of motives for competing in Ironman South Africa

Motivational factors and items	Factor loading	Mean value	Reliability coefficient	Average inter item correlation
Factor 1: Event novelty		**3.57**	**0.75**	**0.38**
I do it annually	0.60			
It is an international event	0.56			
Because the event is well organised	0.53			
Ironman tests my level of fitness and endurance	0.37			
For the adventure of it	0.32			
Factor 2: Respect and Risk		**2.71**	**0.75**	**0.43**
To earn respect from peers	0.61			
Because of the risk involved	0.62			
To make friends and family proud of me	0.54			
To escape	0.42			
Factor 3: Inner vie		**3.80**	**0.71**	**0.39**
To push myself	0.75			
To improve my time and speed	0.62			
To compete with myself	0.54			
To compete with others	0.42			
Factor 4:Intrinsic achievement and control		**3.63**	**0.76**	**0.52**
To feel proud of myself and have a sense of achievement	0.65			
To improve my self-esteem	0.60			
To mentally control my body	0.54			
Factor 5: Group affiliation and socialisation		**3.02**	**0.84**	**0.72**
To share group identity with other triathletes	0.80			
To socialise with others	0.76			
Factor 6: Health and fitness		**3.77**	**0.89**	**0.80**
To improve my health	0.87			
To improve my level of fitness	0.84			
Factor 7: Challenge		**4.10**	**0.68**	**0.35**
Competing in Ironman is a personal challenge	0.63			
To test my skills against nature, others and myself	0.50			
It is a major challenge	0.46			
Because it is stimulating and exciting	0.32			

Factor scores were calculated as the average of all items contributing to a specific factor in order to interpret them on the original five-point Likert scale of measurement. As Table 1 shows, the following motives for Ironman participants were identified: *event novelty* (Factor 1), *respect and risk* (Factor 2), *inner vie*

(Factor 3), *intrinsic achievement and control* (Factor 4), *group affiliation and socialisation* (Factor 5), *health and fitness* (Factor 6) as well as *challenge* (Factor 7). *Challenge* obtained the highest mean

value (4.10) and is considered the most important motive for participating in the triathlon, with a reliability coefficient of 0.68 and an average inter-item correlation of 0.35. *Competition* had the second highest mean value (3.80), followed by *health and fitness* (3.77), *intrinsic achievement and control* (3.63) *event novelty* (3.57) and *group affiliation and socialisation* (3.02). *Respect and risk* had the lowest mean value (2.71) and is rated as the least important motive for participating in Ironman South Africa.

Age segments of participants in Ironman South Africa

Respondents were segmented into four age categories and labelled according to their level of experience in the sport: <= 30 years (*Young triathletes*), 31-40 years (*Adept triathletes*), 41-50 years (*Mature triathletes*) and 51+ years (*Senior triathletes*). Table 2 shows that 40% of the respondents were in the *Adept triathletes* category followed by respondents in the *Mature triathletes* group (30%). The age category, *Young triathletes,* accounted for 18% of the respondents while 11% of the respondents were in the *Senior triathlete* category. Looking at the profile of each segment, the demographic characteristics of each profile are similar. All four segments are predominantly: male; English-speaking; originate from Gauteng Province; have a high level of education (diploma, degree) and are in the high income group (R522 001 >). They initiated their participation in the event themselves and were influenced mainly by word of mouth recommendations. The main differences between the segments were marital status, province of origin and their primary sport discipline. The majority of the age segment *Young triathletes* were not married while the other three clusters were; more participants in the older age clusters travelled from abroad (outside RSA borders). With regard to the segments' primary sport disciplines, running seems to be the favoured discipline for the *Young triathletes*, *Mature triathletes* and *Senior triathletes* while cycling is the primary discipline for the *Adept triathletes* group. The youngest and oldest age group seem to have a clear affinity for running while the middle age groups appear to have an equal interest in running and cycling.

Table 2: Age segments of participants in Ironman South Africa (N=410)

Profile of age segments*	**Cluster 1 Young triathletes**	**Cluster 2 Adept triathletes**	**Cluster 3 Mature triathletes**	**Cluster 4 Senior triathletes**
	<=30 years N = 72 (18%)	**31-40 years N = 167 (40%)**	**41-50 years N = 126 (31%)**	**51+ years N = 45 (11%)**
Gender	Male (71%); Female (29%)	Male (77%); Female (23%)	Male (80%); Female (20%)	Male (89%); Female (11%)
Home language	English (57%); Afrikaans (33%); Other (10%)	English (56%); Afrikaans (29%); Other (15%)	English (60%); Afrikaans (21%); Other (19%)	English (67%); Afrikaans (20%); Other (13%)
Income	R552 001 > (19%); <R20 000 (17%); R221 001-R305 000 (17%)	R552 001 > (35%)	R552 001 > (57%)	R552 001 > (40%)
Province or origin	Gauteng (41%); Eastern Cape (23%)	Gauteng (39%); Outside RSA borders (25%)	Gauteng (30%); Outside RSA borders (36%)	Gauteng (27%); Outside RSA borders (34%)

Level of education	Diploma, degree (32%); Post-graduate (27%); Professional (30%)	Diploma, degree (37%); Post-graduate (21%); Professional (30%)	Diploma, degree (33%); Post-graduate (21%); Professional (35%)	Diploma, degree (44%); Post-graduate (16%); Professional (26%)
Marital status	Not married (single) (46%); Married (26%)	Married (53%)	Married (66%)	Married (80%)
Primary sport discipline	Running (50%); Cycling (39%); Swimming (21%)	Cycling (46%); Running (43%); Swimming (16%)	Running (48%); Cycling (45%); Swimming (25%)	Running (58%); Cycling (38%); Swimming (24%)
Initiator of participation	Self (70%); Friends (44%)	Self (76%); Friends (28%)	Self (85%); Friends (20%)	Self (82%); Friends (23%)
Heard about Ironman South Africa	Word of mouth (50%); Television (19%); Website (14%); Magazines (11%)	Word of mouth (53%); Website (23%); Television (19%); Magazines (18%)	Word of mouth (40%); Website (26%); Magazines (20%); Television (16%);	Word of mouth (49%); Website (16%); Magazines (125); Television (9%)

***Only the highest percentages are included in the table.**

Results of ANOVAs and Tukey's Post Hoc multiple comparisons

ANOVAs, Tukey's Post Hoc multiple comparisons and effect sizes were used to determine the differences between the respondents on the basis of their socio demographic and behavioural characteristics as well as their motives for competing in Ironman South Africa. As Table 3 demonstrates, there were statistically and practically significant differences between the four age segments based on their spending on accommodation (p = 0.003), transport (p = 0.011), meals (p = 0.014) and souvenirs (p = 0.012), times participated in Ironman South Africa (p = 0.000), times finished Ironman South Africa (p = 0.000), times finished internationally (p = 0.009), the number of cycling events per year (p = 0.012, although Tukey's post hoc multiple comparisons showed no significant differences), age first exposed to triathlons (p = 0.000) and the motive *respect and risk* (p = 0.039). Although not significant, Tukey's post hoc multiple comparisons also showed significant differences between the age segments based on the spending category entry fee and the motive *challenge*.

With regard to the socio-demographic differences, *Adept triathletes* differ significantly from the *Senior triathletes* in terms of entry fee spending. Compared to the other three clusters, *Adept triathletes* recorded the highest spending on entry fees while *Senior triathletes* had the lowest spending. The *Young triathletes* differ significantly from *Mature triathletes* in terms of spending on accommodation and transport. *Mature triathletes* reported the highest spending on these categories and the youngest segment the lowest. This could be explained by the fact that more respondents in this segment were international participants and therefore incurred higher travelling expenses as well as spending more nights in the area. *Mature triathletes* also differed significantly from *Senior triathletes* based on spending on meals and souvenirs.

Again, this segment recorded the highest spending in these spending categories while the oldest segment had the lowest spend. There were no statistically significant differences between the segments based on the other variables.

However, it may be seen that *Young triathletes* travelled in the largest group (an average of 2.99 persons) while the *Senior triathletes* travelled with the fewest people (an average of 2.18 persons). The *Senior triathletes* were financially responsible for the most participants in their group (an average of 1.63 persons) while the *Young triathletes* were responsible for the fewest participants (an average of 1.15 persons) and the *Adept triathletes* were financially responsible for the most spectators during the race (an average of 1.86 persons). The *Mature triathletes* spent the most nights in Port Elizabeth (5.71 nights), which could be ascribed to the fact that most of these participants travelled further, from other provinces or from abroad. The *Young triathletes* spent the fewest nights in the area (an average of 4.76 nights). Because of their longer length of stay and higher spending, the *Mature triathletes* reported the highest total and average spend per person while the *Senior triathletes* had the lowest total spending and the *Adept triathletes* recorded the lowest average spend per person.

With regard to sport participation behaviour, unsurprisingly, the *Young triathletes* and *Adept triathletes* segments have participated the fewest times in Ironman South Africa (an average of 0.96 and 1.37 times respectively) compared to the two older segments who have participated the most times (an average of 2.31 and 3.25 respectively). Corresponding with the times participated; the *Young triathletes* have finished Ironman South Africa the fewest times while the oldest segment (*Senior triathletes*) has finished the race the most times (an average of 3.06). The *Young triathletes* have finished an international Ironman race the fewest times (an average of 0.40 times) while the *Mature triathletes* segment has finished the most international events (an average of 2.70 times).

Corresponding with their affinity for cycling, the *Mature triathlete* segment participated in the most cycling events per year (an average of 4.20 events) while the *Young triathletes* segment participated in the fewest cycling events per year (an average of 2.44 events). All four age segments were exposed to triathlons at different ages. As the age of the segments increases, so does the age exposed. The *Young triathletes* segment was exposed to triathlons at the youngest age (23.14 years), followed by the *Adept triathletes* segment (28.49 years), the *Mature triathletes* segment (32.17 years) and the *Senior triathletes* segment (42.63 years). Although not statistically significant (p=0.066), the *Adept triathletes* and *Mature triathletes* segments participate in the most triathlons per year (an average of 5.93 and 4.23 respectively) while the *Young triathletes* and *Senior triathletes* participate in the least number of events. The *Adept triathletes* segment participates in the most cycling events (an average of 4.20 per year) while the two younger age segments participate in the most running events per year (6.64 and 6.88 respectively). None of the four segments participate in many swimming events per year; however the *Mature triathletes* participate in the most swimming events while the *Senior triathletes* group participates in the fewest swimming events annually.

With regard to the motives, the two youngest age segments (*Young triathletes* and *Adept triathletes*) were motivated more by *respect and risk* (mean values 2.85 and 2.84 respectively) compared to the older segments. The *Young triathletes* group was motivated more by *challenge* (mean value 4.25) compared to the oldest segment (*Senior triathletes*) (mean value 3.97). Looking at the other motives, the *Young triathletes* and *Mature triathletes* had the higher mean values for the motives compared to the other two segments.

Health and fitness (3.84) was also important for the *Adept triathletes* segment along with *event novelty* (3.65) and *intrinsic achievement and control* (3.64). *Inner vie* (3.78 and 3.67) was an important motive for the *Mature and Senior triathletes* along with *health and fitness* (3.67 and 3.62 respectively).

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Table 3: Results of ANOVS and Tukey's post hoc multiple comparisons for participant characteristics between different age-groups

Characteristics	Cluster 1 Young triathletes <=30 years N = 72 (18%)	Cluster 2 Adept triathletes 31-40 years N = 167 (40%)	Cluster 3 Mature triathletes 41-50 years N = 126 (31%)	Cluster 4 Senior triathletes 51+ years N = 45 (11%)	F-ratio	Sig. level	Effect sizes** Cluster 1 and 2	Cluster 1 and 3	Cluster 1 and 4	Cluster 2 and 3	Cluster 2 and 4	Cluster 3 and 4
Socio-economic												
Group size	2.99	2.88	2.69	2.18	1.600	0.214	0.04	0.11	0.29	0.09	1.60	0.26
Number of people paid for (participants)	1.15	1.25	1.28	1.63	1.269	0.285	0.12	0.14	0.16	0.03	4.71	0.11
Number of people paid for (spectators)	1.23	1.86	1.46	1.38	2.565	0.055	0.36	0.17	0.10	0.23	1.26	0.06
Nights in area	4.76	5.21	5.71	5.14	1.606	0.188	0.15	0.32	0.13	0.18	0.43	0.20
Spending categories												
Entry fee	R3261.46^{ab}	R3383.57^{a}	R3237.35^{ab}	R2724.47^{b}	2.046	0.107	0.08	0.02	0.34	0.09	0.06	0.33
Accommodation	R2132.31^{a}	R3197.14^{ab}	R4708.05^{b}	R2935.53^{ab}	4.804	0.003*	0.25	0.42	0.30	0.24	3.79	0.29
Transport	R2464.31^{a}	R2935.00^{ab}	R4253.89^{b}	R2786.84^{ab}	3.760	0.011*	0.14	0.34	0.08	0.25	1.36	0.28
Gear/equipment	R11795.38	R10571.43	R14617.50	R10434.21	0.179	0.910	0.05	0.04	0.07	0.05	0.87	0.06
Meals	R1455.38^{ab}	R1716.43^{ab}	R2676.55^{a}	R1279.47^{b}	3.612	0.014*	0.15	0.25	0.11	0.20	2.66	0.29
Medicine	R552.77	R255.71	R568.14	R227.63	2.052	0.106	0.26	0.01	0.28	0.18	1.32	0.19
Souvenirs	R621.54^{ab}	R551.79^{ab}	R921.24^{a}	R373.68^{b}	3.730	0.012*	0.07	0.21	0.26	0.26	4.19	0.38
Total spending	R20 286.18	R19 188.92	R27 973.57	R17 585.56	1.027	0.381	0.04	0.10	0.11	0.11	0.35	0.13
Spending per group	R10 695.67	R9530.77	R13 442.84	R10 446.95	1.183	0.316	0.08	0.12	0.02	0.17	0.13	0.13
Sport participation behaviour												

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Times participated in Ironman South Africa	0.96[a]	1.37[a]	2.31[b]	3.25[c]	13.395	0.000*	0.23	0.59	0.71	0.41	2.92	0.29
Times finished Ironman South Africa	0.61[a]	1.23[b]	2.05[b]	3.06[c]	12.480	0.000*	0.34	0.64	0.83	0.36	2.25	0.34
Times finished internationally	0.40[a]	1.47[ab]	2.70[b]	2.15[ab]	3.933	0.009*	0.29	0.50	0.50	0.27	0.23	0.12
Triathlon events per year	3.40	5.93	4.23	3.67	2.423	0.066	0.25	0.28	0.09	0.17	9.20	0.20
Cycling events per year	2.44	4.20	2.71	2.40	3.685	0.012*	0.31	0.10	0.01	0.26	4.96	0.10
Running events per year	6.64	6.88	4.94	3.57	2.546	0.056	0.03	0.21	0.37	0.24	7.61	0.21
Swimming events per year	1.04	1.12	1.27	0.90	0.404	0.750	0.04	0.11	0.08	0.07	2.33	0.18
Age first exposed to triathlons	23.14[a]	28.49[b]	32.71[c]	42.63[d]	55.186	0.000*	0.78	1.03	2.02	0.45	1.85	1.03
Motives to participate												
Event novelty	3.63	3.65	3.48	3.50	0.981	0.401	0.02	0.14	0.11	0.19	0.68	0.03
Respect and risk	2.85	2.84	2.60	2.44	2.809	0.039*	0.01	0.23	0.37	0.23	0.15	0.16
Inner vie	3.73	2.89	3.78	3.67	1.332	0.263	0.16	0.04	0.07	0.15	1.04	0.14
Intrinsic achievement and control	3.75	3.64	3.59	3.54	0.535	0.659	0.11	0.16	0.21	0.05	0.31	0.05
Group affiliation and socialisation	2.92	3.19	2.95	2.85	1.986	0.116	0.23	0.03	0.05	0.22	0.16	0.09

Health and fitness	3.70	3.84	3.76	3.62	0.742	0.527	0.13	0.05	0.07	0.09	0.18	0.15
Challenge	4.25[a]	4.14[ab]	4.02[ab]	3.97[b]	2.482	0.061	0.15	0.33	0.40	0.19	0.09	0.08

[o]Expenditure per person, which was calculated by adding the spending of the respondent on the various components asked, and dividing the total by the number of people respondents indicated they were financially responsible for.

* Statistically significant difference: p ≤ 0.05; Effect sizes: ** small effect: d=0.2; ***medium effect: d=0.5 and ****large effect: d=0.8

a Group differs significantly from type (in row) where b is indicated; c Group differs significantly from type (in row) where d is indicated

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DISCUSSION

The findings of this research were as follows: Firstly, triathletes should not be regarded as a homogeneous market. Four clusters of Ironman South Africa triathletes were identified based on their age: *Young triathletes* (<= 30 years), *Adept triathletes* (31-40 years), *Mature triathletes* (41-50 years) and *Senior triathletes* (51+ years). These four clusters differ significantly, both statistically and practically, in terms of their spending behaviour, their sport participation behaviour and their motives for competing. The challenge in most sport events is to convince participants to remain engaged in the sport for a long period of time; therefore each of these clusters should be regarded as a viable market and retained in such a way, that they will return and extend their participation to an older age. This can be done by taking note of each of the clusters' unique characteristics and marketing the event and sport accordingly.

Secondly, Ironman South Africa can be perceived as a life-span sport where previous experience plays a vital role not in performance alone, but also commitment to the event. This is supported by the finding that only 11% of triathletes participating in Ironman South Africa were older than 51 years of age. This corresponds with previously mentioned literature which states that peak endurance performance is maintained until 35 years of age, where after it decreases until 50-60 years and progressively declines thereafter (Tanka & Sealsm, 2008). It therefore becomes vital to convince participants older than 51 years of age (*Senior triathletes*) that they can extend their triathlon participation period well into their late 60s and early 70s.

Ironman South Africa must make the event accessible to this market. This can be done by charging discounted entry fees for participants older than 50 years or developing a special "senior" package which includes nutrition products, discounts on sport equipment and merchandise and a special training programme that is adapted to older triathletes in how they can train and participate, but still maintain their health and fitness. The *Young triathlete* segment (<= 30 years) is an interesting, noteworthy market for Ironman South Africa's marketers. Based on the low number of times participated and finished (one race respectively), it is clear that the *Young triathletes* group is only at the beginning stage of their triathlon careers. These triathletes need to be targeted because if these participants' needs are met, they will keep on taking part in Ironman South Africa and make the transition from a *Young* to *Adept* triathlete and through to the other age groups. From the results it is clear that most of these triathletes are not married (46%), travel in the largest groups (2.99 people), friends are seen as an important initiator of participation (44%) and *respect and risk* (2.85) is an important motive which states that these triathletes still want to earn respect from their family, friends and peers.

These findings correspond with those of Jones *et al.* (2011) who found that younger triathletes participate in a sport with their friends, while older participants normally participate alone. This is an important implication for marketers; in order to attract younger participants, they should emphasise that a triathlon is a sport in which one can compete with one's friends, but also a sport that is ideal for friends to witness as spectators. *Younger triathletes* were local South African residents travelling from the Eastern Cape and Gauteng Province; therefore, packages should be created for these triathletes to ensure that they travel with a large group of friends where each friend can carry their own expenses. This can be done by giving group discounts on accommodation and other expenses or highlighting the fun and motivation resulting from a large group of spectators (friends) around the triathlete's performance. *Younger triathletes* from overseas should also be targeted by highlighting that Ironman South Africa is an ideal event to qualify for Ironman World Championships and that South Africa's

weaker currency makes it an affordable international event to start out with.

Thirdly, corresponding to previous literature from Tribe Group (2009), who found that higher engagement in triathlons will lead to more money spend on the participation and preparation in terms of spending behaviour, the main differences are between the *Young triathletes* and the *Mature triathletes*, with the *Mature triathletes* spending more on almost all the spending categories. This higher spending may be ascribed to the fact that participants in this cluster were largely international athletes travelling from abroad with a longer length of stay in the area to adapt to the conditions and who, due to their experience, invest in more expensive gear/equipment. Therefore, *Mature triathletes*, along with the *Adept triathletes* (second highest spending overall) seem to be the most lucrative markets to attract from an economic point of view. In order to increase spending in all four clusters, Ironman South Africa organisers should market the Expo to all four, focusing on the newest and best equipment and gear for the three disciplines (highest spending category) which will be available for purchase at the Expo. Marketers could also divide the Expo into different sections for different age-groups of participants, making sure that the products sold are each adapted and marketed for each specific age. Entry fees might also be adapted according to age, giving older participants discounts, ensuring that they will have more money to spend on other spending categories such as medicine. Meals are regarded as an important spending category among *Mature* triathletes, from which marketers can benefit. This can be done by selling certain healthy foods, nutritional foods, protein shakes and other products that can enhance benefit a participant's performance during the Ironman event.

Fourthly, the study confirms the notion by Villaroel *et al.* (2011) and Frimmel (2012) that experience plays a vital role in a triathlete's success. When looking at the four clusters' triathlon participation, *Senior triathletes* have participated in and finished the most Ironman South Africa races followed by the *Mature triathletes*. *Mature triathletes* have finished the most Ironman events internationally followed by the *Senior triathletes*. Although athletes in the *Mature* and *Senior triathletes* clusters are not necessarily professional triathletes any more, the skills and expertise learned during the formative years as a *Young* and *Adept triathletes* play a major role in their performance. Taking the peak age of triathletes indicated in the literature review into consideration (30-39 years) (Tanaka & Seals, 2008; Hunter *et al*., 2011; Lepers & Maffiuletti, 2011; Knetchtle *et al*., 2012), we can assume that the *Adept triathletes* are the professional and serious triathletes. All four clusters are therefore viable triathlete target markets to attract, retain and expand. Ironman South Africa marketing messages should highlight that although performance declines with age in triathlons, it is less of a factor and that experience, which comes with age, can have a positive impact on performance. Seeing that *Adept triathletes* fall into the peak performance age category of triathletes, this can be marketed to younger triathletes by stating that the peak ages of triathletes are older; therefore they can extend their endurance competitive age by making the transition from other endurance sports to triathlons.

Lastly in terms of sport participation behaviour, some interesting findings arose from this research study. The youngest and two elder clusters (*Young, Mature and Senior triathletes*) regard running followed by cycling and swimming as their primary sport discipline while cycling (followed by running and swimming), is the primary discipline for *Adept triathletes*. Contradicting the findings by Lepers *et al*. (2010), Rüst *et al.* (2012) and Lepers *et al.* (2013), there appears to be a greater age-related decline in cycling performance compared to running and swimming. The four clusters' preferences for a particular discipline are also reflected in the number of cycling, running and swimming events they participate in per year, with the *Adept triathletes* competing in the most events annually, followed by the *Mature triathletes*. Participants in all four clusters

participate in the most running events while the *Adept triathletes* participate in the most cycling events and the *Mature triathletes* in the most swimming events. Because the *Adept triathlete* is at his/her peak age it becomes important that these triathletes spend enough time on each of the three disciplines. This supports the earlier finding of Sowell and Steward Mount Jr (2005) that most triathletes are "naturally" good in one event, but should learn the other events. This is an important finding as it shows that most *Adept triathletes* participate in cycling in order to learn/improve on this discipline (the longest distance discipline in an Ironman race). Seeing that swimming is the shortest distance discipline in a triathlon, it is clear that all four clusters regard this discipline as less important; this could be due to the fact that the event takes place at the beginning of the event and thus fatigue plays less of a role. Swimming can also be seen as a discipline which is difficult to learn, due to the lack of ocean swimming events held around the world, but also a lack of control over the weather conditions and environment where the swim takes place. Marketers should take notice of this finding by marketing at different endurance events and highlighting the point that in order to compete in a triathlon other endurance disciplines need to be learned; thus the more one participates in other endurance sports, the better one's triathlon skills will be. Triathletes should be made aware that participation in other endurance sport may not only lead to a triathlete career, but also to improving their triathlete abilities. The four clusters furthermore differed in terms of their motives to participate, with the *Young triathletes* and *Mature triathletes* having higher mean values for the motives compared to the other two segments. *Young triathletes* and *Adept triathletes* were motivated more by *respect and risk* compared to the older segments, whereas the *Young triathletes* were also motivated more by *challenge* as compared to the *Senior triathletes*. *Health and fitness* was also important for the *Adept triathlete* segment along with *event novelty* and *intrinsic achievement and control* while *inner vie* was an important motive for the *Mature and Senior triathletes* along with *health and fitness*. The abovementioned motives may play an important role in creating distinctive marketing messages for each of the four clusters. Marketing messages for *Young triathletes* should emphasise that competing in a triathlon is not only a major challenge, but is perceived as a risky event, that leads to respect being earned. The *Adept triathletes* are attracted by the fact that it is a well-organised international event, that may lead to qualification for the Ironman World Championships. *Mature* and *Senior triathletes* need to be reminded that physical activity in older age offers certain health benefits, will lead to a sense of achievement and will give these triathletes an opportunity to push themselves.

CONCLUSIONS

The purpose of this research was to segment triathletes participating in the only Ironman event held on the African continent, Ironman South Africa, according to their age. Based on the results, it is clear that age as a segmentation variable is a successful way to segment triathletes, seeing that different age groups lead to distinctive segments each with different sport participation behaviour, spending behaviour and motives to participate. The findings of this research furthermore support the notion that most endurance athletes peak at 35 years of age. However, the results also show that triathlon is a life-span sport and older participants can extend their participation into their late 60s and early 70s. Each of the four identified clusters is furthermore a viable market due to its members' unique characteristics and must be attracted, retained and expanded. This may be done by making triathletes aware that triathlons are the ideal sport to extend their endurance sport participation.

The findings from this research may furthermore be used not only to sustain Ironman South Africa, but also to expand the event in the future. The study may be used as basis for other triathlon studies too, in order to grow the sport in the country. This may be done by targeting

specific participants in specific age-groups. Future research should also focus on how experience influences commitment amongst triathletes seeing that there was a clear influence in previous research as well as the current study.

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