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**African Journal of Business Management**

*Full Length Research Paper*

# Competitive action-response strategies of mobile network operators in sub-Saharan Africa

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**Mobile telecommunication firms have increasingly found Sub-Saharan Africa to be a favorable location for business and investment. We explore the competitive actions and responses of the multinational MNOs in three of the leading sub-regional markets: Kenya, Nigeria, and South Africa based on the conventional content analysis of online-sourced data from the time the first major competitive move was made in each market until 2015. Our findings suggest that smaller, later-entrant operators seeking enhanced subscriber bases and competitive positions often initiated competitive rivalries. Defensive responses from mainly the main market leaders only resulted in further attacks, with response speed and intensity depending on the pervasiveness of the initial attack and firm strategy. The ability to preempt rivals' potential moves offered a competitive advantage whereas price undercutting, new technologies and government protection served as the main competitive weapons. Neither the initial attackers nor market defenders emerged as the absolute winner in the aggressive competitive rivalries, which also negatively affected the subscribers.**

**Key words:** Competition, Competitive rivalries, Actions and responses, Mobile network operators (MNOs), Sub-Saharan Africa.

## INTRODUCTION

Global System for Mobile Association (GSMA, 2017) reports that Sub-Saharan Africa (SSA[1])has consistently been the world's fastest-growth mobile telecom region over the past few years, in terms of both SIM (mobile) and unique subscriptions[2], which is attributable to improving economic conditions and rising affordability of mobile services. Tagged the world's fastest-growth regional market (Robb and Paelo, 2020), the fast

penetration of mobile telecommunication (telecom) in SSA has been mainly attributed to the improving economic situations fostering a fast-growth middle-class economy, falling device prices, and rising affordability. The multi-purpose usage of mobile phones for calling, text messaging, social networking, and similar internet-related activities has also heightened the demand for mobile services in SSA. Accordingly, mobile network operators (MNOs[3]) have increasingly sought to invest and do business in SSA to exploit the availability of the

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[1] SSA comprises a total of 49 African countries, including the 43 mainland countries lying below the Sahara Desert and six island countries in both the Atlantic and Indian Oceans

[2] Note that SIM (mobile) subscriptions refer to the number of SIM cards in use, while unique subscriptions denote the number of individually registered mobile phone users.

[3] An MNO is a telecom firm that owns and controls both radio spectrum licenses and the network infrastructure capable of delivering wireless voice and data communications to subscribed users.

large mobile-hungry market. Several of the firms entered and commenced operations in the region for international consolidation and sustainability. With its status as the world's most untapped regional mobile market, having the least mobile penetration (45%) and 5G adoption (3%) (GSMA, 2020), SSA has become a very attractive investment location for MNOs – with the perception that it offers a strong potential for enhancing their growth and broadening the future sustainability of the wider telecom industry.

With the underlying assumption that competitive advantages and enhanced performances accrue from taking competitive initiatives or exploiting first-mover advantages (Rehman and Al-Raqom, 2020; Lieberman and Asaba, 2006), some of the MNOs are incentivized to become the first to enter new markets, launch new products or innovations, or introduce competitive prices. Yet, as value is derived by countering the competitive moves capable of arrogating prolonged competitive advantages to others (Hsieh and Hyun, 2016), rival MNOs tend to have the obligation to respond to such actions. The two opposing standpoints often spur competing firms to engage in aggressive rivalries, as they seek dominance in their commonly-shared industry or market space.

As interfirm rivalry is central to firm strategy and performance (Zhang, 2017; Kilduff, 2019; Luoma et al., 2020), there has been an explosion of interest among academic scholars seeking a deeper understanding of industry competitive dynamics. However, such studies had traditionally focused on the more mature industries in the developed market regions, including airlines (Albers and Heuermann, 2013; Ciliberto and Williams, 2014); automobile manufacturing (Rose and Ito, 2008), banking (Stiroh and Strahan, 2003), hotels (Wang, Tsai and Fu, 2022; Li and Srinivasan, 2019), insurance (Schimmer, 2012), mobile telecommunication (Robb and Paelo, 2020), software (Iansiti and Lakhani, 2020). Due to this insignificant attention, comprehending the competitive behaviours of rival firms in the new or newly-emerging industries in the less-developed regional markets has often been difficult, creating an academic challenge that needs to be solved.

Against this backdrop, we adopt Sub-Saharan Africa (SSA), as a geographic context to investigate the competitive interactions of MNOs, considering how they initiate and respond to competitive actions. With the rapid growth and outstanding contributions of the mobile telecom industrial subsector in the economic growth of SSA over the past few decades (GSMA, 2017), we see a need to explore the action-response competitive interactions of the MNOs that are embedded in the region.

Our research has implications for both academic theorization and managerial practice, as well as for policy implementation. By creating new insights relating to how rival MNOs initiate and respond to competitive attacks, we advance the competitive dynamics literature from the perspective of the mobile telecom industry. With SSA as the locational context, our effort has the potential to generate nuanced insights to complement the findings of the extant developed-market-focused research efforts. MNO managers and strategists are expected to convert the new theoretical insights into a practical resource that could be utilized when dealing with rivals. The findings of the paper also have potential value for policymakers and industry regulators, who could adopt them in enhancing the extant standards for industry and market competition in mobile.

We set the theoretical background of the study in the next section by reviewing the literature on competitive dynamics, with an emphasis on competitive actions and responses. This is followed by the materials and methods section where we explain our data collection process and the adopted technique for the data analysis. Finally, we review the findings and put them in the context of the overall research before concluding and offering suggestions for future research in the domain.

## THEORETICAL BACKGROUND

### Competitive dynamics framework

Firms in the same market or industry competitively interact, engaging in competitive actions (attacks) and responses (counterattacks) as a strategy for improving their performances or defending their competitive positions overtime against rivals (Li et al., 2010). This is summarized in Chen and Miller's (2012) submission that dynamism, interactivity, and action-response dyads are the three main building blocks defining the framework of competitive dynamics. An action is any observed move made by a firm to defend its current competitive position or to attain a new one, whereas a reaction is a corresponding response by a rival firm (Smith et al., 2001; Kilduff et al., 2016). Through engaging in competitive actions and responses, rival firms act creatively to develop competitive advantages (Smar et al., 2021). Entry into new foreign markets, new product introductions or advertisement campaigns, changes in pricing policy, deployment of new technologies, and relocation or redesign of facilities are among the key competitive weapons often adopted by rival firms in a

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market or an industry (Rehman and Al-Raqom, 2020).

Previous research has shown that a performance-enhancing action undertaken by a firm can trigger reactions from its rivals (Kilduff et al., 2016; Zhang, 2017). Such competitive responses should naturally be more expected if the initial attack is capable of altering the competitive *status quo* by way of jeopardizing the rivals' market shares or displacing them from their present competitive positions (Smar et al., 2021; Keil et.al., 2013). Against this backdrop, firms in the same market or industry should be most aware of each other's competitive moves (Kilduff et al., 2016), so as to be ready to take retaliatory actions if attacked. Oligopolistic reaction, which refers to the tendency of firms to follow rivals' investment and competitive moves, could therefore be an established reason for inter-organizational mimetic behaviour (Gardberg et al., 2017; Dike and Rose, 2019).

The competitive dynamics framework is generally concerned with both the firm initiating the competitive rivalry and the responding rival firm. Smith et al. (2001) identify magnitude (size), scope (broad/narrow) and type (temporary/tactical or strategic) as three attributes of a competitive attack that must be considered before a rival could launch a response. An action requiring high financial or resource input to implement could be described as being of high magnitude while one that affects multiple rivals is considered to be more threatening than that that has an impact on just one rival (Hsieh and Hyun, 2016). A strategic attack, the one capable of creating a long-lasting impact, should be of more concern to rivals than a tactical attack aimed at realizing a temporary competitive advantage. The ultimate effectiveness of every competitive action is rather on the nature of the responses posed by the defenders. The likelihood of a rival to respond and the frequency and timing of such responses are among the attributes of competitive reaction considered important for the competitive dynamics model. An attack that requires a longer response time has the potential to yield a greater competitive advantage (first-mover advantage) to the initiator and is, thus, expected to attract more responses (Hsieh and Hyun, 2016).

Moreover, the nature of an attack influences the likelihood of rival responses (Hou and Yao, 2022; Kilduff et al., 2016). The potential impact of an attack on rivals' performances and the strategic importance of the attacked market are among the other issues considered by rivals before responding to a competitive action (Hsieh and Hyun, 2018; Li et al., 2010). Essentially, an attack that took less time and resources to plan and execute may trigger swift responses, especially if launching a response does not pose any major disruptions to the responder's competitive position (Hou and Yao, 2022). Such an attack may not create worry to rivals. On the contrary, a pervasive attack, the type that significantly threatens rivals' performances and competitive positions, tends to attract fierce responses (Kilduff et al., 2016; Keil

et al., 2013), especially if undertaken in a market that is of strategic importance to the rivals (Sengul and Dimitriadis, 2015). Given the huge number of resources and the longtime requirement for their planning and implementation, competitive attacks undertaken in key markets often attract fewer and slower responses (Hsieh and Hyun, 2018; Iriyama et al., 2016). Such attacks that attract long response lag tend to offer long-term sustainable competitive advantages to the firms that initially launched them (Assala et al., 2021). As such, an attack of such nature constitutes a major source of worry to rivals.

A competitive attack capable of sustaining competitive advantages and enhancing organizational performances minimizes rivals' incentives to respond and maximizes response lag (Hou and Yao, 2022). Such impactful and sustainable attacks should be stealthy, complex, and oblique (or indirect) (Kilduff et al., 2016). It is important to note that, as one rival responds to a competitive attack, others may be compelled to join the fray, creating a "snowball effect", thereby diminishing the supposed competitive advantage accruing to the initial attacker (Hsieh and Hyun, 2018). Some studies suggest that real incentives could also accrue from adopting the avoidance and nonresponse or "do nothing" strategy (Andrevski and Miller, 2022). In general terms, the ability to respond to a competitive attack depends on the awareness, motivation, and capability of the responder. A rival can only respond to a competitive attack only if it is aware of such an attack, motivated to react to it, and capable to do so (Qi et al., 2023; Gao et al., 2017).

While some rivals respond promptly to certain competitive attacks, strategically signalling their readiness to fight back in the case of further actions (Kilduff et al., 2016; Assala et al, 2021), others, especially the larger and more organizationally complex firms, prefer to tread cautiously and respond slowly to competitive attacks (Kilduff et al., 2016; Assala et al, 2021). Rivals hardly respond to competitive moves that were not targeted at them or do not seem to create any harm to their competitive positions (Kilduff et al., 2016; Hou and Yao, 2022).

Understanding the actions and responses of rival firms would have strong implications for firm strategy (Smar et al., 2021). Initiating competitive attacks enhances performance (Sengul and Dimitriadis, 2015); albeit some studies (Hou and Yao, 2022) caution that a competitive attack that triggers multiple intense responses may be detrimental to performance. In the same vein, (early) responders to competitive attacks have a higher likelihood of better performance, relative to non-responders (Hou and Yao, 2022; Andrevski and Miller, 2022; Zenaide and Castro, 2015). The expectation of retaliations from rivals should be an important element to be considered by the firm initiating a competitive rivalry (Assala et al, 2021).

## MATERIALS AND METHODS

### Research design

Being home to some of the world's fastest-growing economies and with some major regulatory improvements in the business environment in recent times, Sub-Saharan Africa (SSA) has become the toast of many investors, including those in the mobile telecom industry, and has been adopted as the geographic setting for this study.

The adoption of Sub-Saharan Africa as the geographic context for the study derives from the great value the region offers, given the rapid uptake of mobile services that has continued unabated over the past three decades that has offered incentives for MNOs to invest and do business (form articles). In addition to providing the most preferred form of telecommunication services to the people, mobile devices offer an easy replacement for computers in the region, where low income and abject poverty drastically minimize affordability (GSMA, 2017). The three countries – Kenya, Nigeria, and South Africa – employed as the empirical settings for this study are of very strategic importance to mobile telecom business in SSA, given their relatively large populations and market sizes, strong economic growth potentials, rising income bases and purchasing power, and openness to competition for the delivery mobile services that enhance the propensity of investment in the subsector. Without a doubt, the three countries are among the major flourishing grounds for mobile telecom business in the region and, thus offer a sound contextual basis for exploring competitive rivalries among mobile operators (MNOs).

With respect to Kenya, the three MNOs that actively delivered mobile telecom services at the time of this study are Airtel, Orange, and Safaricom. Safaricom, which has maintained leadership in the East African market (66% share in 2015) was officially launched in 2000 as a 60-40% shareholding arrangement between the government of Kenya and Vodacom (Vodafone). Airtel, the second largest operator (27% market share in 2015 with 8% from Yu-Mobile[4]), was launched in 2010 as part of the landmark entry of Bharti Airtel India into SSA (Note that Airtel on entry in 2010 acquired Zain, which previously acquired Econet Kenya). Orange (France Telecom), with a 12% market share in 2015, started operations in 2008 after acquiring 51% shares in Telkom Kenya. With the authorities allowing full competition, the Kenyan mobile market has been one of the most hotly contested in SSA, with Safaricom clearly ahead of the catch-up Airtel and Orange.

Considering Nigeria's dominant population in the SSA economic region, mobile operators from near and far have increasingly sought to get a share of its mobile-hungry market. The four MNOs with active operations in the country as of the time of this study include Airtel, Etisalat, GLO, and MTN. Airtel, having 20% of the market share in 2015, made entry into the country in 2010 as part of its spectacular mass-market entry into SSA through the acquisition of the operations of Zain Nigeria. Etisalat, with a 15% share of the market as of 2015, commenced operations in 2008, while GLO (the second market leader with a 21% share in 2015) was launched as an indigenous operator in 2003. The market leader, MTN, which had a 44% market share in 2015, made an entry into the Nigerian mobile market in 2001, whereas Smile, the latest entrant and smallest operator, launched operations in 2013.

The South African mobile telecom industry had historically had a highly-concentrated structure, with the domination of the duopoly of Vodacom (Vodafone has a 65% stake in Vodacom) and MTN – both launched in 1994, until the emergence of Cell C in 2001 and Telekom Mobile in 2010. (Note that 8ta: the mobile arm of Telkom and South Africa's smallest MNO with just 2% market share in 2011). The market leader (Vodacom) and the runner-up leader (MTN) have persistently accounted for a combined 90% share of the market right from inception.

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[4] Airtel acquired YuMobile in 2014

### Data collection

The data collected for our study pertain to the competitive interactions of the MNOs embedded in Kenya, Nigeria, and South Africa, spanning from the time the first rivalrous competitive move was made in each. As the companies vied vigorously for larger market shares to enhance their competitive positions, the intensity of competition peaked in 2015, hence; we limited our search to the year. Accordingly, our data spanned 2010-2015 for Kenya, 2003-2015 for Nigeria, and 2012 to 2015 for South Africa. We chose the different time spans depending on the year a major competitive attack was launched in the focal market.

With most SSA countries having been already saturated with MNOs at the time of this study, it can be argued that the mobile firms in the region no longer compete based on cross-border diversification. Besides, market entry is commonly perceived as a one-off process, with an MNO most likely to enter a country but once. The likelihood of re-entering a certain market is also very low. For instance, no MNO has ever re-entered any market in SSA. For the study, therefore, we ruled out the possibility of MNOs adopting cross-border entry as a weapon of competitive attack.

We sourced the data, relating to the competitive interactions – actions and responses – of the MNOs in the three selected countries, from online articles including newspapers, magazines, and industry journals, as well as from the websites of the various firms. A total of 74 such articles were found to be relevant, based on the suitability of their contents to the topic under investigation, and thus included in the study. Of this number of articles, 28 relate to the Kenyan mobile telecom market, 22 to Nigeria, and 24 to South Africa. It is important to note that there were multiple duplicated reports on the same issue in each country, owing to the availability of many media outlets. To avoid multiplication of evidence, therefore, we scrutinized the different versions of each report and selected the one that most elaborately and convincingly described the situation.

### Data analysis

We employed the conventional content analytic approach; whereby coding categories are derived directly from the textual data, consistent with Gaur and Kumar (2018). We gained immersion and got the whole picture by first perusing all the articles (data), highlighting the words in the text that appear to capture the key thoughts and concepts relating to the study (Drisko and Maschi, 2016). Then, we sorted the emerging codes into categories, paying attention to their relationships and linkages. In the first category, we grouped related excerpts from all the documents into mutually exclusive groups, consistent with Bowen (2008). Similarly, the second category comprises the emergent themes from grouping related excerpts formulated in the first category (Drisko and Maschi, 2016). Eventually, we produced four themes: initiators of competitive attacks and their motives, nature and intensity of competitive responses, adopted weapons of competition, and winners and losers of aggressive competitive rivalries. These themes are discussed in the next section.

## RESULTS

### Competitive dynamics in the Kenyan market

The first major competitive attack in the Kenyan mobile telecom market occurred in 2010, when Bharti Airtel, on

entry, launched its competitive "minute factory" package (Wahome, 2010). (Note that Airtel acquired Zain in October 2010.) Based on the parent company's low-tariff, mass-market strategy for generating economies of scale, Airtel Kenya made a 75 per cent cut on all voice calls on both local and international networks. Per minute on- and off-net charges were slashed to KES3.00 (100 Kenyan Shilling exchange for 1USD) from the previous KES8.00 and KES12.00 rates while mobile termination rate (MTR, referring to the per minute fee MNOs charge for carrying calls onto each other's networks) was halved to KES2.21 per minute.

With the view that Airtel's and Yu's competitive actions, if unchecked, would jeopardize their own performances, rival Safaricom and Telkom Kenya were compelled to retaliate (Kemibaro, 2010; Childress, 2011; McLeod, 2011). Safaricom promptly lowered its service charges, bringing the charge for on-net calls between customers to KES3.00 and that for off-net calls to KES4.00. The resulting sharp falls in mobile tariffs due to the price wars, which heightened the affordability of services but reduced the monthly average revenue per unit (ARPU[5]) to KES349 in 2011 from the previous KES389 in 2009, benefitted the end-users (Rice, 2010; 2010, Nyabiage, 2011a) but threatened the survival of the operators and industry (Nwambura-Mwaura, 2010; Miriri, 2011; Nyabiage, 2011b). Feeling challenged by Safaricom's reaction, the undeterred Airtel launched more attacks that aggravated the already tense competitive atmosphere, leading to more aggressive competition.

Safaricom took the competitive rivalry beyond mobile voice calls and text messaging by slashing its Internet access charges (Wafula, 2010), a move Airtel responded to by cutting the prices of modems for its customers (Mutegi, 2012). As TeleGeography (2008) noted, Safaricom's first launch of the 3G network in Kenya in 2008 did not immediately trigger a competitive rivalry, since it took Orange until 2011 (TeleGeography, 2011) and Airtel until 2012 (IT News Africa, 2012), respectively, to launch theirs. Safaricom further proved its technological supremacy with its roll-out of the first-ever 4G network in the market in 2014, with both Airtel and Telkom Kenya only launching theirs in January 2017 (CapitalFM, 2017; TechMoran, 2017). Table 1 summarizes the competitive dynamics in the Kenyan mobile market.

**Competitive dynamics in the Nigerian market**

The first major shakeup to the status quo of competition in the Nigerian mobile market occurred in 2003 when GLO[6] launched its low-cost "Pay-per-Second" and "Text-

to-Email" packages (Nweke, 2003). The mobile operator also introduced a SIM pack offer that included ₦1,998 (₦319 exchange for 1USD) airtime credit and a ₦1.00 SIM card. International call rates were slashed by 50%, with free SMS messages to GLO network subscribers and a free GLO MMS (multimedia messaging service) and GLO Mobile Internet (ITU, 2004). The MMS offers allowed subscribers on the GLO network to send pictures, texts and sounds freely in a single message while also providing opportunities for browsing popular websites like Yahoo, Google, and BBC on phones using the GLO Mobile Internet.

In an apparent response to GLO's move, MTN launched its own per-second billing and the "MTN Flexi", offering a flat tariff of 80K per second for on-net calls and a ₦750 recharge card halving the prepaid monthly tariff (Ajakaye, 2003). Etisalat followed suit and unveiled its repackaged and reloaded "Easy Starter" and "Easy Cliq" offers (NCW, 2009; Terry, 2011), with Airtel (then a new entrant) also announcing its own offer that crashed call rates to ₦9 per minute in the bid to boost its subscriber base (Uzor, 2010). The competitive rivalries further escalated with MTN rolling out its "Magic Number" package in 2011, in conjunction with the "MTN Talk-On" and "MTN Family and Friends" offers (Nweke, 2011), whereas Airtel launched its flexible "2Good Time" data and voice offer package in 2012 as a further response to GLO's initial attack (Oladipo, 2012).

GLO jolted the market further with the announcement of the new "GLO Infinito" package, allowing subscribers to pay only 25K per second for all calls made on all networks in the country (including those of its rivals), irrespective of the time of the day. As voice revenues declined, the competitive battlefield gradually shifted to data, as the MNOs strove to satisfy customer needs and maintain market share and competitive positions (Fakorede, 2016; Nwogbo, 2016). Following the rivalries, the price of SIM cards fell tremendously from the exorbitant ₦40 000 per SIM in 2001 to become a commodity obviously extended freely to customers. With the sharp falls in tariffs, ARPU also dropped significantly from as high as ₦1800 in 2000 to ₦1000 by the end of 2012.

Despite the strong countermoves from rivals, GLO went ahead with its aggressive competitive campaign to become the first MNO to launch the 3G network platform in Nigeria in December 2007 (Sun News Publishing, 2007), a move MTN promptly countered by launching its own 3G network in the same month (TeleGeography, 2007). Following these moves, Etisalat deployed its EasyBlaze 3G network in 2011 (Tekinuzu, 2011) while Airtel rolled out its 3.75G network technologies in 2012 (The Nigerian Voice, 2012). The near-simultaneous launch of the 4G LTE (Long Term Evolution) network in the Nigerian market is rather interesting: MTN rolled out the new network platform on 05 October 2016 (Okafor, 2016), with GLO launching its version of the same technology on 06 October 2016 (Business Journal,

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[5] ARPU is derived by dividing the total revenue of the MNO by the number of subscribers. Its importance is that it provides a breakdown of what drives revenue and gives some indications of what drives margins.

[6] GLO Mobile, being an indigenous Nigerian firm exploits government's protection and customer patronage at the expense of its non-indigenous rivals.

**Table 1.** The competitive situation in Kenya.

| Rival MNOs | Initial attack | Rivals' responses | Further attacks and responses | Market share % (2010) | Market share % (2015) | Pre-attack market position | Market position (2015) | Remarks |
|---|---|---|---|---|---|---|---|---|
| Airtel | 2010: All voice calls tariffs cut by 75%; 50% cut on MTR | | 2012: Price of 21 Megabyte per second (MBs) modem reduced to KES1999 from KES4500; that of 7.2 MBs modem halved to KES999<br><br>2012: Launched 3G network<br><br>2017: 4G rolled out | 10 | 19 | 2nd | 2nd | Gained market share, but the market position remained unchanged |
| Orange | | | 2011: 3G rolled out<br><br>2017: 4G launched | 4 | 12 | 4th | 3rd | Gained both market share and position |
| Safaricom | | 2010: First to react— tariffs for on-net calls between customers lowered to KES3; off-net calls to KES4<br><br>2010: Internet tariff per MB cut from KES3.3 to KES1.42 | 2008: 3G launched<br><br>2014: Introduced 4G network | 80 | 66 | 1st | 1st | Still leads in the market but significant amount of market shares |
| Yu Mobile* | | | 2013: Effort to bypass 3G to launch 4G | 6 | 8 | 3rd | - | Acquired by Airtel in 2014 |

*YuMobile was acquired by Airtel in 2014.
Source: Authors.

2016). It is important to note that it took until April and May 2017 for Airtel and Etisalat to deploy their own 4G technologies (Daily Trust, 2017; News Agency of Nigeria, 2017). Table 2 shows the summary of the competitive dynamics in the Nigerian mobile telecom market.

**Competitive dynamics in the South African market**

The South African mobile telecom industry had historically had a highly-concentrated structure, with the domination of the duopoly of Vodacom (Vodafone has a 65% stake in Vodacom) and MTN – both launched in 1994, until the emergence of Cell C in 2001 and Telekom Mobile in 2010 (Mohamed et al., 2012). (Note that 8ta: the mobile arm of Telkom and South Africa's smallest MNO with just 2% market share in 2011).

**Table 2.** The competitive situation in Nigeria.

| Rival MNOs | Initial attack | Rivals' responses | Further attacks and responses | Market share % (2003) | Market share % (2015) | Pre-attack market position | Market position (2015) | Remarks |
|---|---|---|---|---|---|---|---|---|
| Airtel* | | 2010: Slashed call rates to ₦9/min | 2012: "2 Good" package launched; 20K/m whole day rate after a 60K/min call<br><br>2012: 3.75G Network launched<br><br>2017: 4G LTE launched | 25 | 20 | 2nd | 3nd | Dropped in both market share and position |
| Etisalat* | | 2009: "Easy Starter" and "Easy Cliq"; free 15 MB data to ₦200 or more per week recharge; 25K/s rate to other Easy Cliq subscribers at a daily access fee of ₦5. | 2011: Launch of 3G network<br><br>2017: 4G/LTE launched | — | 15 | — | 4th | Last to enter market, given that Econet later became a part of Airtel, but competing hard |
| GLO | 2003: "Pay per Second" and "Text to Email" packages launched; SIM card price slashed to as low as ₦1.00; free SMS messages to GLO network subscribers; free GLO MMS (multimedia messaging service); launch of GLO Mobile Internet | | 2008: 3G network rolled out<br><br>2011: "GLO Infinito" launched; 25K/sec for all calls on all network in Nigeria; 2K/sec rate on a chosen special number etc.;<br>10, 15 and 20% discounts on ₦500, ₦1,000, and ₦5,000 recharges respectively<br><br>2016: 4G/LTE launched<br><br>2015: Launch of 1GB for ₦500 cheap data package | 25 | 21 | 3rd | 2nd | Lost a reasonable amount of its market share but managed to rise in market position, having displaced Airtel to the 3rd position |
| MTN | | 2004: Launch of "MTN Flexi"; a flat 80K/s tariff for subscribers, ₦750 half monthly recharge card | 2011: "MTN Real Value"—MTN- Magic Number, -Talk On, -Family and Friends, -Happy Hour—launched<br><br>2008: 3G network rolled out<br><br>2016: 4G/LTE rolled out | 52 | 44 | 1st | 1st | Maintained position as the market leader, albeit losing a significant amount of market share |

Source: Authors.

The market leader (Vodacom) and the runner-up leader (MTN) have persistently accounted for a combined 90% share of the market right from inception. Having found itself in an underdog position right from inception, Cell C started implementing stringent competitive policies for survival, making it the initial major market disruptor in South Africa (Mohamed et al., 2012).

This was not to be easy for the fledging newcomer, as the two market leaders have already been well-established brands with stronger networks and much larger subscriber bases. Essentially, the two incumbent giant operators had over the years exploited first-mover advantages and "the network effect", referring to the situation whereby a product becomes more valuable with increasing adoption, to strengthen their market competitive positions. The prevalent high MTRs further meant an artificial barrier to Cell C in terms of price competition with its obviously better-placed and bigger rivals. Thus, the company had to forge a comprehensive growth strategy that aimed at capturing the much-needed 25% market share to break even and become sustainable. Muller (2012) reports that as part of this strategy, Cell C first had to circumvent the challenge of poor network quality by entering a roaming agreement that would allow it to piggyback on the more efficient Vodacom network while making an effort to establish its own infrastructure.

With the aim of levelling the playing field to allow competition via low tariffs, Cell C jolted the market by launching an aggressive campaign on 16 May 2012, which comprised an offer package that slashed call tariffs to a flat rate of 90c per minute for mobile calls and 50c per minute for fixed calls and cut the price of prepaid mobile data package from R1.99/MB to 99c/MB (note that R13.50 exchange for 1USD) (Business Tech, 2012; McLeod, 2012). Cell C disrupted the market further by launching its "99 Cents for Real" prepaid promo package that substantially slashed prepaid international tariffs to five countries by 91% to 99c per second – a largesse the operator later extended to postpaid contracts (Fripp, 2012). These moves by Cell C distorted the status quo of competition, enthroning a price war that eventually changed the competitive landscape of the South African mobile telecom market (De Villiers, 2012; McLeod, 2012).

It is worth noting that Vodacom was actually the first to make an initial competitive move in South Africa with the launch of its 3G network in 2005 (Vodacom, 2005), which MTN promptly reacted to by launching its own 3G network (Shapshak, 2005). Cell C launched the 3G network in 2010 (TechCentral, 2010). Vodacom was also the first to roll out 4G LTE services in October 2012 (Vodacom Community, 2012), with MTN promptly responding in November (TechCentral, 2012), and Cell C much later in November 2015 (McLeod, 2015).

Consequent to the competitive deals offered by Cell C, prepaid off-net call rates dropped below what customers on rival networks paid for on-net calls. Network customers also had the privilege to call whomever and whenever they wanted without having to worry about peak or off-peak times or the network of the caller and receiver, making them happy with the new developments (Rondganger, 2012). By exploiting the asymmetry in termination rates, Cell C was able to achieve the required scalability to compete even more fiercely against its much bigger market rivals; to whom it had to pay twice what it would pay it in return for on-net calls (Tubbs, 2014).

Vodacom moved very swiftly to launch its "Freedom 99" offer package later the same day (16 May 2012) that Cell C made the initial offers (Fin24, 2012; McLeod, 2012). MTN and 8ta adopted a seemingly "wait and see" approach, despite losing subscribers, probably expecting to see how destructive the disruptor's actions would be on their performances before reacting. This strategic option by the two operators appears to be underpinned by their belief that competitive responses would be more effective after carefully weighing the (negative) impact of an attack.

To further prove its supremacy, Vodacom switched on its 3G network, the first in Africa, in January 2005. In reaction, MTN rolled out its own 3G network technologies six months later; it however took until 2010 for Cell C to launch its own 3G network technology. Furthermore, Vodacom was the first to launch 4G LTE services in October 2012, with MTN promptly responding in November, and Cell C much later in November 2015. Table 3 summarizes the competitive dynamics in South Africa.

## DISCUSSION

Based on the analysis of the textual data, which formed the empirical basis of the study, we identified four emergent themes initiators of competitive attacks and their motives, nature and intensity of competitive responses, adopted weapons of competition, and winners and losers of aggressive competitive rivalries presented as follows and summarized in Figure 1.

### Initiators of competitive actions and their motives

As evident from the three examined country markets, aggressive competitive rivalries were mainly initiated by Airtel in Kenya (2010), GLO in Nigeria (2003), and Cell C in South Africa (2012). Each of these firms was a late-entrant and relatively much smaller than the more established brands and dominant market leaders: Safaricom in Kenya, MTN in Nigeria, and Globacom in South Africa. The launch of the attack that sparked off aggressive competitive rivalries was aimed at the initiator's subscriber base, as well as to strengthen its competitive position. This development is in conformity with Kilduff et al. (2016) finding that the smaller, late-

**Table 3.** The competitive situation in South Africa.

| Rival MNOs | Initial Attack | Rivals' Responses | Further Attacks and Responses | Market Share (2012) | Market Share (2015) | Pre-attack Market position | Market Position (2015) | Remarks |
|---|---|---|---|---|---|---|---|---|
| Cell C | 2012: April—a flat rate of 90c/min (mobile) and 50c/min (fixed) launched; prepaid mobile data package price cut down from R1.99/MB to 99c/MB; May/August—"99 Cents For Real" prepaid promo launched; international call tariffs slashed to 99c/sec; R0.15/MB data offer launched; September—3G roaming agreement with Vodacom; November—Internet access charge slashed to R9 from R30 "Cell C Direct", "Easy-to-Follow" also launched | | 2014: Launch of R999/month SIM-only Infiniti Select plan; including smartphones available for R1,399/month<br><br>2015: August—3G roaming agreement with Vodacom extended<br><br>2015: September—4G/LTE Network launched<br><br>2016: Launch of 100GB and 200GB packages for R999 and R1 499 | 15 | 28 | 3rd | 3rd | Growth in market share and position, but the market position remained unchanged |
| MTN | | 2012: 4G/LTE Network launched; 3G launched in 2005 | 2014: Pay-per second tariff slashed from R1.20/min to 79c/min<br><br>2016: Fiber Broadband Data prices slashed by 50% | 35 | 36 | 2nd | 2nd | Slight gain in market share, but the market position is unchanged |
| Telkom (8ta or Telcom Mobile) | | 2013: 4G/LTE Network launched<br>2013: "FreeMe" offer launched—99c/GB of data and 999c for unlimited deal; free phone calls | 2016: Prices of all-networks bundles slashed between 34 and 47% - 25 min R25 bundle to R17; 100 min R90 to R67; 500-min R400 to R299 | 3 | 21 | — | 4th | Massive grab of market share, but still the market underdog |
| Vodacom | | 2012: "Freedom 99" launched as a temporary prepaid package against Cell's permanent offers<br><br>2012: 4G/LTE Network launched; 3G launched in 2005 | 2014: 50c/sec bundle promotion launched<br><br>2015: "Just for You" Low-cost data package launched | 47 | 38 | 1st | 1st | Lost a significant amount of market share, but remains the dominant market leader |

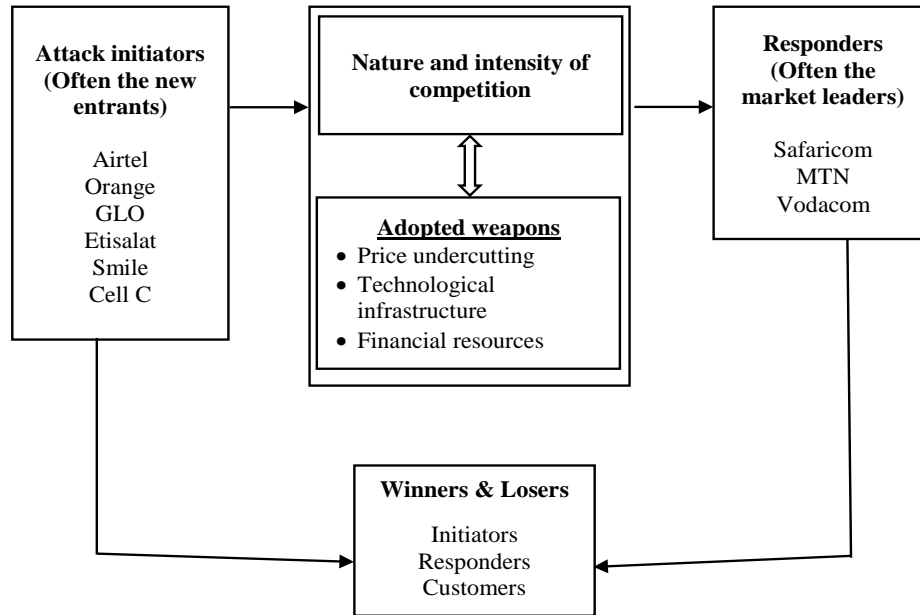*Vodacom's 3G launch did not spark off a major competitive race.

**Figure 1.** Response-action framework of mobile network operators.
Source: Authors.

entrants seeking to expand their customer bases and enhance their competitive positions against the more established, early-mover, market leaders.

The initial launch of competitive attacks was found to be further underscored by varying context-specific factors relating to the firm or the country of operation. For instance, Airtel's unprecedented attacks in Kenya were notably driven by the Indian parent company's underlying growth strategy driven by the quest for generating economies of scale through the mass market or high-volume subscriptions. GLO took advantage of its position as an indigenous firm to enjoy government protection in Nigeria. There have been several reported cases of GLO Mobile lowering prices and other service charges at will at the expense of its predominantly non-indigenous competitors, which the Nigerian authorities simply failed to act upon. The actions of Cell C in South Africa appeared to be inevitable, considering that it would be very difficult for the new company to achieve reasonable growth under the dominance of the duopoly of Vodacom and MTN. Besides, the business models of the aggressor firms tended to give more priority to enlarging their market shares and subscriber bases through offering relatively lower prices than their mainly market-leader rivals that paid more emphasis on achieving customer satisfaction through high-value delivery.

**Nature and intensity of competitive responses**

Apparently, market rivals, especially the incumbent market leaders, did not relent in their effort to defend their competitive positions, responding firmly and often vigorously to the attacks. Being more established brands with more resources and in better competitive positions, in most cases, the defending MNOs often introduced their own competitive packages at prices much lower than those of the attack initiators. As the initial attackers seemed unperturbed by rivals' defensive responses and continued with their aggressive postures, some market defenders went beyond the adoption of competitive price packages to introduce the launch of new network technologies as the new competitive weapon. In doing this, the defending market leaders took advantage of their strong resource bases, knowing fully well that the initial attackers lacked the financial resource base needed to acquire the new technologies. As a result, the responders concluded that the long response would generate a long-term strong competitive advantage for them, at the expense of the weaker aggressors. In the case of South Africa, for instance, until 2010 (five years) for Cell C to respond to Vodacom's launch of a 3G network in 2005, owing to the former's relatively smaller resource base.

The intensity of competitive responses appeared to be influenced by the pervasiveness of the initial attack, with respect to how potentially damaging the initial attack would be to the mainly market-leader rivals. Essentially, it would be unwise for a firm to spend a massive amount of its hard-earned resources on responding to a rival's competitive move that is inconsequential to its market share or competitive position. Firms are more incentivized to counter a competitive attack that clearly constituted a competitive threat, such as by arrogating undue competitive advantages to the rival perpetrator(s).

The speed of response apparently varied from prompt through delayed to nonresponse, depending on the firms involved and their strategies. For instance, Safaricom did not hesitate to respond to Airtel's initial moves in Kenya, just as MTN did to GLO's attacks in Nigeria and Vodacom to Cell C's in South Africa. Nonetheless, MTN and Telkom's 8ta clearly applied the 'wait and see' strategy in South Africa, indicating that the companies needed not to respond if Cell C's move did not constitute a major competitive threat.

Through their prompt responses, market defenders clearly signalled their awareness of the aggressors' intentions and their readiness to hit back in the event of further attacks. Noteworthy is that a firm that is totally unaware of a competitive move cannot possibly deploy resources to mount a prompt and effective counterattack. For example, Safaricom would not have moved so fast against Airtel in Kenya nor would neither MTN against GLO in Nigeria nor Vodacom against Cell C in South Africa if they lacked knowledge of the imminence of the initial attacks. Thus, the ability to pre-empt rivals' potential moves can be considered a major factor determining a firm's capability to engage in competitive rivalries. Firms having adequate knowledge of their rivals are more likely to understand how the rivals operate and be more prepared to counter them.

**Adopted weapons of competition**

In the case of the MNOs in SSA, both the attack initiators and market defenders, mainly adopted undercut pricing as their competitive strategy. Evidently, all the initial attacks in the three examined markets were based on this strategy, with Airtel in Kenya, GLO Mobile in Nigeria, and Cell C in South Africa all jolting their respective market bases with the introduction of their lowly-priced, new packages to woo new network subscribers. The launch of new network technologies, essentially the 3G and 4G platforms, was another major competitive weapon adopted by the rival telecom firms, especially the bigger and more resource-endowed ones that could dole out the huge financial capital to acquire such costly infrastructure. The deployment of 4G network capabilities by Safaricom and MTN in Kenya and Nigeria, respectively, as well as the switchover to 3G and later launch of 4G networks by Vodacom in South Africa provides clear evidence of this strategic option.

**Winners and losers of aggressive competitive rivalries**

It is rather very difficult to ascertain if there is actually an overall winner or loser under the aggressive competitive rivalry created by the MNOs: putting the attack initiators, responders, and mobile network users or customers into consideration. Despite that the introduction of lowered

tariffs generated volume subscriptions that clearly boosted the market shares of the initial attackers (aggressors), the expanded subscriber bases also ushered in new challenges. The aggressors' revenues grew through the low-cost offers that enlarged their subscriber bases, but the firms' profit margins also narrowed, in some cases, seriously, owing to the resultant increased operational costs.

Competing on new network infrastructure also warranted the aggressors to bear the huge costs of acquiring the necessary hi-tech equipment for effective competition with the much bigger, more established, and more financially endowed market-leader rivals. With the likelihood that an aggressor would rush into launching an attack without adequate prior assessment of the potential impact of such action, including on its own performance and others, the MNO could set mobile service prices unrealistically low, in a way that would not break even. As a result of their improper pre-evaluation of the situation, it is not uncommon for initiators of competitive attacks to find themselves registering negative gross margins and lower shareholder dividends than the market defenders.

Evidently, in none of the three investigated country markets did the initial attacker succeed in displacing the pre-rivalry incumbent market leader; instead, the aggressors had to bear the additional operational costs for meeting the demands of their newly added subscribers and acquiring new network equipment. This implied lowered profitability and, in some cases, huge losses for the companies, which, in turn, resulted in their delivery of inefficient service qualities that compelled many subscribers to switch to other networks. Accordingly, the aggressors failed to realize their set goals for sparking off aggressive competitive rivalries, which was to change the status quo of competition and become the new market leaders. For example, Airtel failed to dislodge Safaricom in Kenya, the same way GLO and Cell C could not displace MTN and Vodacom as the market leaders in Nigeria and South Africa, respectively. The competitive dynamics of telecom companies in the selected market is shown in Table 1, 2, and 3.

As noticed from the three respective SSA countries that we investigated, each market leader lost a large chunk of its market share as a result of the aggressive rivalries: Safaricom's market share in Kenya fell from 80% in 2010 to 66% in 2015, MTN lost 8% of the Nigerian market between 2003 and 2015, and Vodacom's share of the South African market dropped by 9% in 2001-2015. These shortfalls notwithstanding, the three companies still maintained their positions as market leaders in their respective countries of operation, albeit it cannot be said that they benefited outrightly from the aggressive rivalries.

Customers (subscribers) would be expected to benefit most; given the slashed tariffs, longer talk times and data usage, and the numerous competitive deals and

innovative products they enjoyed as the MNOs tried to outdo each other in the cause of their aggressive rivalries. Essentially, mobile users enjoyed the various mobile money service platforms launched by the rival MNOs. For instance, Safaricom launched the M-Pesa service in Kenya in 2007, allowing instant money transfers to circumvent the challenges of inadequate availability of banks and other financial institutions, especially in remote and rural areas. Several other mobile operators have borrowed the M-Pesa model to launch more mobile money services that have continued to aid money transfers to and across the SSA region. Figure 1 presents the conceptualization of the action-response of MNO in SSA.

This study has important theoretical and managerial contributions. From a theoretical perspective, this study adds to the current understanding of the competitive interactions of firms in the same market or industry competitively interacts, with respect to how they initiate and respond to competitive moves. Kilduff et al. (2016) demonstrate that smaller, late-entrants often spark competitive rivalries, a view that appears to be bolstered by this study, considering that the actions of Bharti Airtel in Kenya, GLO in Nigeria, and Cell C in South Africa – all three being smaller late-entrants in their respective bases. Previous research has also shown that the essence of initiating a rivalrous campaign is to gain an enhanced competitive position in the market or industry. This study has however proved this assumption not to be absolutely true, as the MNOs that initiated competitive rivalries in each of the explored markets ended up not reaching this objective. This study specifically shows different results from that mostly portrayed by many studies conducted outside SSA, showing that context matters.

At the managerial level, the study contends that cross-border diversification, the offer of innovative products, competitive price undercutting, and investment in technological infrastructure constitute the major competitive weapons generally employed by rival firms. The study is also consistent with the argument of previous ones that firms sparking off aggressive rivalries often end up not reaching their original intention of gaining market or industry dominance. Essentially, none of Airtel, GLO, and Cell C to date has emerged as the market leader in the markets of Kenya, Nigeria, or South Africa, respectively, where they are based. The above results not only aid us in better understanding the outcome of the intensity of competition in terms of resources and market position but also provide essential managerial guidelines on the adoption of weapons of competition based on the company's resource base.

## CONCLUSION

With the extant studies focusing predominantly on the mature industries in developed markets, the current

knowledge about how firms in commonly shared markets and industries undertake competitive actions (moves) and responses (countermoves) appears to be skewed. This study explored the competitive interactions of mobile network operators (MNOs) in Sub-Saharan Africa (SSA). Our findings reveal that the small, late-entrant MNOs were the ones to change the competitive equilibrium by offering their services at undercut prices, with the underlying aim of boosting their subscriber bases and strengthening their competitive positions. Mainly larger market leaders were the ones to react first in their bid to maintain their dominance in their respective bases of operation. In doing so, these bigger firms introduced their own competitive packages at more lowered charges and launched new innovative network infrastructure, presuming that the smaller competitive aggressors could not easily afford to respond to the well-calculated moves due to their relatively smaller resource Bases. The pervasiveness of each attack, considering especially how much it constituted a threat to rivals and the adopted strategy of the focal firm determined the speed and magnitude of defenders' responses.

Nonetheless, this study is limited first by its reliance on only online-sourced secondary empirical evidence. Besides, despite providing deep insights into the studied phenomenon through direct interpretation of textual data, the conventional content analytic methodological approach is both time-consuming and prone to subjectivity. We specifically recommend future researchers employ multiple methods, such as the mixed-method approach, in future works. We strongly believe that by addressing these identified issues, subsequent studies would add more value by creating a deeper understanding of the competitive rivalries of market and industry firms, thereby advancing the competitive dynamics literature. Second, the articles were selected from year 2003, 2010, and 2012 based on the time the major competitive attack was launched in Nigeria, Kenya, and South Africa respectively. Future research should conduct another review study from 2015 to date and include more countries in Africa to accommodate changes in the market and contextual factors in other countries. Finally, this study context includes developing countries from SSA. Future research could conduct a comparative study to assess the nature of dynamic competitiveness between developed and developing countries.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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# Survival of Uganda's small and medium businesses in a cox model

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**The government of Uganda came up with the micro, small and medium enterprise policy in 2015 in an effort to support SMEs for sustainable wealth creation and social economic transformation. However, the SMEs sector has grappled with wide ranging challenges and these challenges therefore threaten the survival of SMEs. This study thus investigated factors responsible for the survival of Uganda's small and medium businesses and was based on the records of the businesses from the survey done by the Uganda Bureau of Statistics. Business survival was measured from the year when the business started operations to the survey year, 2010. A time-to-event approach in a Cox Proportional Hazard Model was adopted in the analysis. There is a minimum of 1 enterprise and a maximum of 23 enterprises that can survive which were considered to exit operation with business survival was 4.85 years. It indicates a low survival rate of Uganda's businesses. The rate of exit of businesses was significantly higher for businesses located in the central region, those employing a larger number of employees, those owned by non-Ugandans, those not operating as sole proprietorship and those considered not to be innovative. The findings point to a recommendation of scaling up measures aimed at ensuring that the survival levels of businesses in the country improve.**

**Key words:** Survival of SMEs, Uganda, business, Cox hazard model.

## INTRODUCTION

According to the World Bank (2016), a healthy and enabling business sector contributes to the economic development of any country mainly through creating employment opportunities, triggering higher production volumes and thus increasing exports, as well as developing the country's entrepreneurial skills. Recent studies have elucidated that "the small, micro and medium businesses are increasingly becoming more important since they dominant the force impacting the growth of national economies..." by Kira (2013).

Due to the contribution played by the business sector to a vibrant and growing of industrial sector, it takes a noticeable position in development programs of many countries and thus most countries create institutions which recognizes SMEs to enjoy the benefits associated with them among of which include employment creation, poverty alleviation in addition to facilitating economic growth. Previous studies argue that the business sector on average contributes 60% of manufacturing sector's formal employment globally and around three in every

four jobs created in Africa is attributed to business enterprises (Ayyagari et al., 2007).

With the creation of the East African Community, the volume of business transactions have increased resulting into massive expenditure on research and development and innovation aimed at meeting the high demand for goods and services across the Countries in the East African region (Mungiru and Njeru, 2015). This in turn has not only led to the increase in trade volumes but as well the national GDP of the East African Community., A case in point, "…it is estimated that t 20% of the labor force in Tanzania are employed in small businesses" (Kira, 2013).

In Kenya, the business sector employs 74% of the total employment and its 88% of job creation is attributed to businesses which results to the contribution of about 24.5% to the "Gross Domestic Product (GDP)" and in Rwanda over 90% of its workforce is employed in private sector businesses while in Uganda the private sector represents a significant part of the economy in stimulating the economic growth of the Country (Kira, 2013). Thus small, micro and medium enterprises development has been identified as a key strategy for generating industrialization which is coupled with generation of employment thus leading to eradication of poverty (Atieno, 2009).

More still in Uganda, about 75% of GDP is contributed by the (Small and Medium Enterprises (SMEs)" in addition to employing approximately about 2.5 million people as alluded by African Development Bank, 2011. The actions of SMEs are thus seen as vital for economic growth promotion and their importance is recognized by many researchers (Cant et al., 2014; Smit and Watkins, 2012; among others).

In relation to SMEs survival, a number of studies have been carried out in Uganda mainly on business growth and development with Turyahikayo (2013) carrying out a study to identify the challenges faced by SMEs in raising finances, Uwonda et al. (2013) did investigate Cash flow management utilization by SMEs in Northern Uganda while Eton et al (2017) did study Cash flow management and survival of SMEs. All these have revealed that SMEs are a key important factor for the growth and development of the economy.

Despite the substantial significance of the SMEs, many of the businesses that are started fail within their first year of operation (Uwonda et al., 2013). This could be attributed to barriers and challenges that exist for SMEs in Africa. A number of factors have advanced to explain the survival of firms categorized as owner's characteristics, business characteristics and type of business (Lussier, 1995). Individual firm characteristics that have been suggested as influencing firm survival are their origin and ownership. Firms from abroad are likely to live longer, as they may benefit from local policies designed to encourage foreign investor, have better access to advanced technology and financial resources Asrat and Shirefaw, 2009) Business characteristics have

been revealed by many researchers (Lopez-Garcia and Puente, 2006) to be key determinants in the survival of firms and such factors may include competitiveness, capital requirement, innovation activity and barriers to entry. To capture this, Lopez-Garcia and Puente (2006) used concentration measures.

Survival is found to be positively related to size and age (Spaliara and Tsoukas, 2013). Harding et al. (2004) and Frazer (2005) found out that larger firms are less vulnerable to failure than smaller firms. In contrast, others, such as McPherson (1995) were using surveys for Swaziland, Botswana, Malawi and Zimbabwe in the early 1990s. Nkurunziza (2012) using surveys for Kenya, found firm size to be insignificant and considered the effect of credit on firm survival in Kenya and found a significant positive impact. Frazer (2005) reported significant but weak age effects while Soderbom et al. (2006) found no significant age effect.

In the context of this study, the government of Uganda came up with the micro, small and medium enterprise policy in 2015 in an effort to support SMEs for sustainable wealth creation and social economic transformation (MTIC, 2015). However the SMEs sector has grappled with wide ranging challenges some legal, institutional and others attitudinal and these challenges therefore threaten the survival of SMEs (Uwonda et al., 2013). This study thus investigated factors responsible for the survival of Uganda's small and medium businesses.

## LITERATURE REVIEW

From the theoretical perspective, Business Survival is defined as the longer a business can survive and prevent and prevent involuntary exit (Praag, 2003). Business survival is thus defined in a sense that it remains in operation and continues to exist mainly during tough times like recessions and this explains why it is known that starting a business in itself is a challenge while having it survive and grow is problematic. Economically, the survival of a business is defined as its ability to continue in operation over a certain period of time in a market of competition. In this study, business survival is looked at from the time (year) when the business started to when the survey was done by "Uganda Bureau of Statistics (UBOS, 2003)" in 2010.

The study was based on Wernerfelt's Resource-Based Theory which was introduced in 1984 (Wernerfelt, 1984). In accordance with this theory, business enterprises with good skills and diverse capacities are able to compete favorably and increasing its survival. It was thus believed that a business starting with well-trained directors having distinct capacities will adapt to the environmental competitiveness and thus improve its stay in operation. In this study, it was hypothesized that male operated/owned businesses survive longer than those

operated by their female counterparts on assumption that males have more time to devote to the businesses. This assumption was in agreement with Fairlie and Robb (2009) who revealed that business which are owned by females have lower survival rate that those owned by males and the study seeks to find out whether the case is similar in the Ugandan case.

Empirically, a review of literature shows that many businesses don't live even for a year (Rooks et al., 2009) and that the probability of survival of businesses is associated with the socioeconomic environments in which they operate. Rooks et al. (2009) revelation seem to be in agreement with Cook et al. (2012), who in their study to examine the survival patterns of new firms that were created during difficult economic times, revealed that the odds of a firm surviving from first year of operation to the second year appear to be no better than the odds of them surviving from inception to year one (Ron, 2014).

It is shown that "… different locations seem to provide better conditions and higher life expectancy, mainly due to positive network effects occurring at a local level" (Cabras et al., 2017). Recent studies, (Strotmann, 2007) argue that business enterprises operating in rural areas have lower risks of failure compared to their counterparts and De Silva and McComb (2012) revealed that business enterprises of the same industry concentrated in a given area stressing within a mile, tend increase their survival rates.

It is believed that Firms originating from abroad tend to survive longer since they benefit from local policies designed to encourage and promote foreign investors as reported by Helmers and Rogers (2010) and Coleman et al. (2013).

Esteve-Perez et al. (2004) and Gorg and Strobl (2003) however argued that there is a high exit risk for business enterprises whose capital originates from foreign sources.

In relation to experience, it was concluded that firms whose owners are experienced and have high education levels survive longer compared to their counterpart (Coleman et al., 2013). This augment agreed with Kangasharju (2000) who found out that educated self-employed have lower failure rates and thus the argument that for any organization to thrive, staff are considered a valuable asset in an organization (Harting, 2008) is supported. This reasoning supports the resource based view which forecasts an increased firm survival probability.

Firm size of the business is an important factor that affects its survival. Survival is found to be positively related to size and age (Spaliara and Tsoukas, 2013). Harding et al. (2004) and Frazer (2005) found out that larger firms are less vulnerable to failure than smaller firms. Contrary to this, McPherson (1995) using surveys for Swaziland, Botswana, Malawi and Zimbabwe and Nkurunziza (2012) using surveys for Kenya found out that firm size is insignificant to their survival. It is however reported by Nkurunziza (2012) and Frazer (2005) that there is significant but weak age effects to survival which disagreed with Soderbom et al (2006) who found no significant age effect to firm's survival.

Based on these studies, it was hypothesized and believed that firms incrementally introduce product innovations increases its survival. It was revealed that innovation increases the survival of business enterprises (Cefis and Marsili, 2005) and this was attributed to gaining a larger market share (Coleman et al., 2013).

## DATA AND METHODS

The study was carried out among the businesses from the survey done by Uganda Bureau of Statistics. Data were obtained on business characteristics like region, country of origin of owners, number of employees, firm size in terms of turnover, ownership type and whether the business was innovative or not (own and use computer and use of internet). The data/information was got on businesses that operated Uganda as per the survey (2010) but those started before 1987 were excluded from the study due to the fact that their exit could have been influenced by political instabilities of early 1980s. Businesses with a turnover of 5 million and above were taken as censored observations.

The independent variables as used in the study were based on the survey done by the Uganda Bureau of Statistics are explained as follows; the variable location as studied by Cabras et al. (2017); De Silva and McComb (2012) was considered very important in the survival of the business; the researcher believed that firms operating in the same locality tend to survival longer than those in far different locations mainly because of economies scales resulting from common use of resources which may be less expensive compared to when they are located in far different areas.

Secondly, it is believed that the Country of origin of owners/directors was vital for the business to survive in that most foreign tend to survive mainly because they invest with more funds and/or have access to finance which enables them to beat off competitors (Gorg and Strobl, 2003). This was however not agreement with Helmers and Rogers (2010). Praag (2003) noted that an educated business owner will study the business very well in addition to making projections and investment portfolios and thus the education level is taken to be more important to the survival of the business which agrees with Kangasharju (2000) who argues that "… more educated self-employed tend to have lower failure rates recessions and thus the better business ideas should be able to survive longer". As regards to competitiveness and innovativeness, Carroll and Hannan (2018) stresses that innovative businesses are less likely to fail when compared to their counterparts. This was supported by Cader and Leatherman (2011) and thus the researcher seeks to find out if it is the same case for Uganda. In regard to firm size, firms' survival is found to be positively related to size by Harding et al. (2004) and Frazer (2005) as was supported by Spaliara and Tsoukas (2013). It was though reported otherwise by Nkurunziza (2012) and Frazer (2005) that there are significant but weak age effects to survival and the thus the researcher seeks to find out why there was a disagreement using the Ugandan case. The dependent variable was taken as duration of stay in business by the businesses up to the time when the survey of businesses was done. This variable was measured from the year when the business started operating up to when the survey of businesses was done. Observations for businesses with a turnover of 5 million and above were taken as censored observations.

**Table 1.** Specification errors of link function.

| Log hazard function | Coefficient | Std. error | P-value |
|---|---|---|---|
| _hat | 1.0126 | 0.0152 | 0.000 |
| _hatsq | -0.0053 | 0.0057 | 0.352 |

Exponential form of the dependence of the hazard function on the predictors
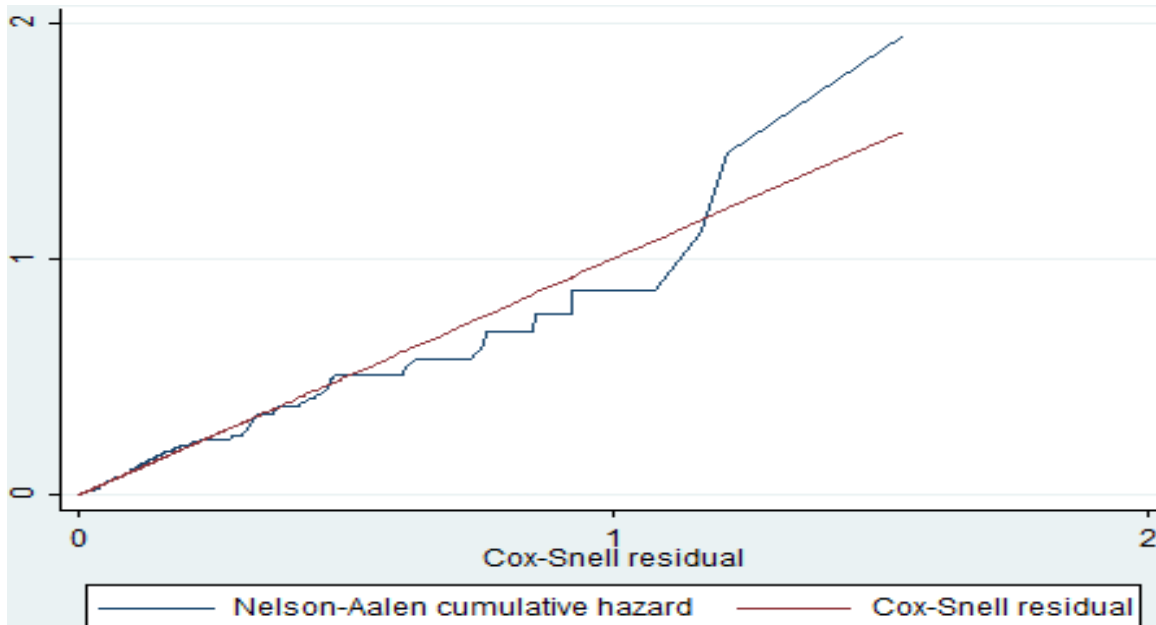Source: Specification Errors of Cox model in Table 4



**Figure 1.** Goodness of fit of the final model.
Source" The cumulative hazard function based on the Cox Model in Table 4.

Data analysis was done in three stages: first, each variable in the data set was explored separately. Frequency tables and summary statistics were obtained to show the distribution of each potential predictor of survival of business. Duration of stay in business was subjected to the Shapiro-Wilk test for non-normality (Shapiro and Wilk, 1965). At the second stage, the log-rank was used to test for equality across different categories of potential predictor's duration of stay in operation by a business enterprise. A probability value of 0.25 or less was used as a criterion for inclusion of the variable in the final model. Finally, at the third stage since the duration of stay in business was not normally distributed and some observations were censored, the Cox Proportional Hazards Regression Model was employed to study the rate of exit of businesses (Cleves et al, 2008) as used by (Muhwezi et al., 2017; Pereira, 2014; Lee, 2014). The indicator of censoring, δ was defined as below;

$$\delta = \begin{cases} 1 \text{ if Business has ceased operation} \\ 0 \text{ } otherwise \end{cases}$$

The model employed in studying the rate of exit of businesses in Uganda was written as;

$$h(t) = h_0(t) \exp(\beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_p x_p) \quad (1)$$

Where; $x_{i \text{ for }}$ $i$=1, 2, ……, p are covariates and their coefficients are $\beta_i'$ s, $h_0(t)$ baseline hazard depending on time the business enterprises stays in operation only and $h(t)$ is defined as hazard function.

Three diagnostic tests were done. First, the proportionality tests of the hazards using the Schoenfeld and Scaled Schoenfeld residuals and log-log plots were satisfied; the parallel line of the log-log plots suggested that the variables did not violate the proportionality assumption of the Cox model. Second, the specification errors of the link function indicate that the log hazard function was well specified which is predicted by the Hat-statistic (_hat: $p < 0.05$) and the Hat-square statistic (_hatsq) reveals that no additional variables were significant ($p > 0.05$) as shown in Table 1; Third, the goodness of fit was evaluated using the Cox-Snell residuals. The cumulative hazard function followed the 45 degrees line as seen from Figure 1 which indicates that the final model fitted the data very well.

## RESULTS

Survival of business, estimated from survey records of businesses, was estimated from the time when a business started operating to the time when the survey was conducted (2010) and the characteristics of

**Table 2.** Summary statistics on business survival (years).

| N | Min | Max | Median |
|---|---|---|---|
| 212.511 | 1 | 23 | 4.850996 |

Summary statistics related to business that were considered to exit operation by the survey time (2010).

**Table 3.** Pattern of business survival.

| Interval (years) | | Total[a] | Exiting[b] | Censored[c] | Survival function | Std. error |
|---|---|---|---|---|---|---|
| 0 | 1 | 317.850 | 46.703 | 15.790 | 0.8493 | 0.0006 |
| 1 | 2 | 255.357 | 38.910 | 15.905 | 0.7157 | 0.0008 |
| 2 | 3 | 200.542 | 27.356 | 27.356 | 0.6149 | 0.0009 |
| 3 | 4 | 160.344 | 18.612 | 9.320 | 0.5414 | 0.0009 |
| 4 | 5 | 132.412 | 17.486 | 9.461 | 0.4672 | 0.0010 |
| 5 | 6 | 105.465 | 9.180 | 5.518 | 0.4255 | 0.0010 |
| 6 | 7 | 90.767 | 7.217 | 4.690 | 0.3907 | 0.0010 |
| 7 | 8 | 78.860 | 5.966 | 4.020 | 0.3604 | 0.0010 |
| 8 | 9 | 68.874 | 5.172 | 2.937 | 0.3328 | 0.0010 |
| 9 | 10 | 60.765 | 17.137 | 10.093 | 0.2304 | 0.0009 |
| 10 | 11 | 33.535 | 2.181 | 1.775 | 0.2150 | 0.0009 |
| 11 | 12 | 29.579 | 2.800 | 2.332 | 0.1938 | 0.0009 |
| 12 | 13 | 24.447 | 1.536 | 1.315 | 0.1813 | 0.0009 |
| 13 | 14 | 21.596 | 1.758 | 1.268 | 0.1661 | 0.0009 |
| 14 | 15 | 18.570 | 2.868 | 2.230 | 0.1388 | 0.0009 |
| 15 | 16 | 13.472 | 924 | 883 | 0.1290 | 0.0009 |
| 16 | 17 | 11.665 | 781 | 654 | 0.1201 | 0.0009 |
| 17 | 18 | 10.230 | 990 | 793 | 0.1080 | 0.0009 |
| 18 | 19 | 8.447 | 654 | 451 | 0.0994 | 0.0009 |
| 19 | 20 | 7.342 | 3.206 | 2.130 | 0.0486 | 0.0oo8 |
| 20 | 21 | 2.006 | 444 | 378 | 0.0368 | 0.0008 |
| 21 | 22 | 1.184 | 256 | 244 | 0.0279 | 0.0007 |
| 22 | 23 | 684 | 374 | 310 | 0. 0082 | 0.0006 |

[a]Donates all the number of businesses; [b]donates the number of business considered to exit operation and [c] donates the number of business not considered to exit operation.

businesses in Uganda employed in the study can be summarised as follows: mainly of Ugandans (98.65%) with sole proprietorship (93.40%) from Central region (59.44%), employing one staff (56.68%) and are predominantly not innovative (97.86%).

Survival of business was subjected to the Shapiro-Wilk test for non-normality (Shapiro and Wilk, 1965). Test results excluding those lost to follow up provided evidence for the existence of non-normality (N = 212,511; p < 0.01). A similar test on the entire dataset also supported the test (N = 317,850; p < 0.01). The median rather than mean was thus adopted as the measure of central tendency. Table 2 presents a descriptive summary of business survival.

Based on the business enterprises which were considered to exit operation by the survey time (N=212,511), the median business survival was 4.85 years (range, 1 – 23). This figure certainly indicates a high turnover rate among businesses in the Uganda. Further analysis on the survival of businesses was done by grouping them in the intervals of one year. Table 3 presents this pattern and the summary of the findings is made thereafter.

Of the 317,850 businesses started during the period of 1987–2010, a total of 212, 511 were considered to exit operation by the survey time, representing a 66.86% survival rate. According to Table 2, the business exiting rate in the first one year, two years, five years and ten years of starting is 14.69%, 26.94%, 46.9% and 60.95%, respectively. Details about the rates of other years can be got from Table 2 however, as Rao and Schoenfeld (2007) revealed, the median exiting rate can only be estimated ifthe survival curve drops to or below 0.5 and thus the median survival of businesses lies between 4 and 5 that

is, 4.85 as indicated from Table 1. Survival of businesses was investigated by characteristics of businesses to ascertain whether they were differentials by the variables included in the model and the next section presents an assessment of the same.

The rate of business survival was evaluated using a Cox Model. Table 4 presents cox regression estimates of the rate of business survival in Uganda. In this study, the hazard ratio (HR) is defined as the measure of how often a business exits operation in one group compared to how often a business exits operation in another group over time.

According to the results in Table 3, the model fitted the data well since the Chi-square probability of the log likelihood (p < 0.001) was significant. Hazard Ratio is interpreted as follow; a hazard ratio of one compared to the reference category of a variable means no difference in levels of survival between the two categories. A hazard ratio of more than one means a high survival rate compared to the reference category while hazard ratio of less than one means a lower survival rate compared to the reference category.

## DISCUSSION

In this study as seen, business survival was observed to be right skewed thus, the normality assumption to fit the regression model in ordinary least squares was violated which supported the time-to-event approach in a Cox-regression that was employed in the study. The normality assumption could certainly distort relationships and significance tests, resulting in questionable results (Osborne and Elaine, 2002).

The exiting rate of (60.95%) as indicated from Table 4 points to low survival of businesses in Uganda and it is in agreement with other recent research carried out (Rooks et al., 2009; Cook et al., 2012). Looking at the businesses considered to have exited, a similar conclusion is reached with a median survival of 4.85 years (range, 1 – 23) and this value reveals that more than 60% of the businesses in Uganda do not see their 5th birth day.

Looking at the multivariate assessment shown from Table 4, the rate of exit of businesses was significantly higher for businesses located in the Central, those employing more number of employees, owned by non-Ugandans, not of sole proprietorship and those considered not to be innovative (owning a computer, using a computer and using internet). In light of the low survival rates of businesses (4.85 years) estimated, it is a clear indication that more of existing business enterprises are mainly those considered not to be innovative.

For this study, innovativeness was defined as owning a computer, using a computer and using internet. Being innovative is found to be having a significant (p < 0.05) relationship which its survival and the findings are in line with recent studies (Cefis and Marsili, 2005). The increased survival of businesses due innovation was attributed to gaining a larger market share (Buddelmeyer et al., 2010). This however disagrees with Cader and Leatherman (2011) who revealed that business enterprises operating within a highly innovative business environment tend to damage their chances of survival.

Relating to region, the results of this study revealed a significant variation by the rate of exit of businesses in the Country. The results agree with recent studies (Cabras et al., 2017) though the revelation by this study that businesses located in other regions other than central had a lower rate of survival. In a similar relation, the study results reveal that an industry in which the business enterprise operates has an influence over its survival.

Prior to the study, the researcher believed that firms owned by foreigners were more likely to survive since they benefit from local policies which are mainly designed to encourage foreign investors. The findings of the study revealed otherwise; businesses owned and operated by non-Ugandans had a lower rate of survival. This revelation was in agreement with (Esteve-Perez et al., 2004; Gorg and Strobl, 2003) who argued that there is a high exit risk for business enterprises whose capital originates from foreign sources. This disagrees with Helmers and Rogers (2010) who found out that business enterprise which are foreign owned have reduced rates of exit as compared to their counter parts.

Related to this, the study found out that sole proprietorship businesses have a high survival rates compared to others.

Pertaining to number of employees a business employed, Harting (2008) noted that for any organization to thrive, staff is considered a valuable asset. The study however revealed that the increase in the number of employees by any business enterprises does not increase its survival chances but however declines which indicates that staff number should not just be increased but skilled or experienced staff should be employed as recent studies (Coleman et al., 2013) have argued. This greatly improves the output and resulting into a longer survival time.

All in all, study findings point to a need to scale up measures aimed at ensuring the business enterprise's survival like encouraging the use ICT and reduce ICT related costs, creation and gazzetting of areas mainly for businesses like creation of industrial parks and organizing similar businesses in the same locality for easy movement of factors of production; training the citizens mainly in skills development which are business oriented other than theoretical academic programmes. This will result into generation of employment to the citizens and improving the tax base of the country. In other words an increased number of the business enterprises surviving, and eventually growing lead to economic growth and subsequently development.

In summary, the rate of business survival varied significantly by region, number of employees, country of origin, business industry, type of ownership and

**Table 4.** Rate of business survival.

| Variable | Coefficient | HR | Std. error | P-Value |
|---|---|---|---|---|
| **Region** | | | | |
| Central[+] | . | 1 | . | . |
| Western | -0.0444 | 0.9566 | 0.0055 | 0.000 |
| Eastern | -0.1285 | 0.8794 | 0.0056 | 0.000 |
| Northern | -0.0529 | 0.9485 | 0.0074 | 0.000 |
| **Number of employees** | | | | |
| Employs one[+] | . | 1 | . | . |
| Employs 2- 10 | -0.5042 | 0.6040 | 0.0030 | 0.000 |
| Employs above 10 | -2.284 | 0.1019 | 0.0037 | 0.000 |
| **Country of origin** | | | | |
| Uganda[+] | . | 1 | . | . |
| Others | -0.4520 | 0.6364 | 0.0231 | 0.000 |
| **Business industry** | | | | |
| Trading Services | . | 1 | . | . |
| Manufacturing | -0.0955 | 0.9089 | 0.0079 | 0.000 |
| Other Services | 0.2927 | 1.3401 | 0.0066 | 0.000 |
| **Type of ownership** | | | | |
| Sole proprietorship[+] | . | 1 | . | . |
| Partnership | -0.2035 | 0.8159 | 0.0146 | 0.000 |
| Others | -0.9794 | 0.3755 | 0.0086 | 0.000 |
| **Being innovative** | | | | |
| Innovative[+] | . | 1 | . | . |
| Not Innovative | 1.7566 | 5.7928 | 0.3116 | 0.000 |

Likelihood Ratio Chi-square (14) = 36646.24; $p < 0.001$; n = 317,748 and [+] is Reference category.

innovativeness ($p < 0.05$). Particularly, businesses located in the central region were less likely to survive compared to those in the regions of western, eastern and northern, businesses with more number of employees were less likely to stay in operation, businesses owned by Ugandans had a higher rate of survival compared to the ones owned by non-Ugandans, businesses dealing in trading services were less likely to survive compared to others that is, manufacturing among others, businesses in the category of sole proprietorship were found to stay longer in operation compared to others and finally businesses owning a computer, using a computer and using internet that is, innovativeness for purposes of this study were more likely to survive as compared to their counterparts. In other words, business survival did vary significantly by all the variables considered in the study.

The study thus identifies the factors responsible for business survival in Uganda to be region, number of employees, country of origin, business industry, type of ownership and innovativeness. Thus, the hypotheses supported were: Country of origin of directors has a significant effect on duration of stay in business, location of the business has a significant effect on its duration of stay in business, being innovative has a significant effect on duration of stay in business, type of business has a significant effect on duration of stay in business. And also number of employees and type of ownership significantly affect business survival.

The results of the study point to a need to scale up measures aimed to ensure the survival of businesses in the Country. The following should be done in the country; significantly encourage the use ICT and reduce ICT related costs, creation and gazzetting of areas mainly for businesses like creation of industrial parks and organizing similar businesses in the same locality for easy movement of factors of production; training the citizens mainly in skills development which are business oriented other than theoretical programmes among others. This is mainly due to the fact that survival of businesses in the country means more employment to the citizens and improving the tax base of the country and hence growth and development of the economy.

**CONFLICT OF INTERESTS**

The authors have not declared any conflict of interests.

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