Female entrepreneurship in Africa
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Published in:
Proceedings of the 42nd Annual Conference of the Institute for Small Business and Entrepreneurship

Published: 15/11/2019

Document Version
Peer reviewed version

Link to publication on the UWS Academic Portal

Citation for published version (APA):
Female entrepreneurship in Africa: exploring a new methodological frontier of strength of weak ties (SWT) in a principal-agent (P-A) paradigm

Introduction
This paper builds upon the conceptual work of Nziku and Struthers, (2018) which developed an innovative taxonomy for analysing the Strength of Weak Ties (SWT) concept, first developed by Granovetter, (1973) within a Principal-Agent (P-A) paradigm (Jensen and Meckling,1976). In developing countries, particularly in Africa, there is an emerging literature which highlights the unique obstacles faced by women entrepreneurs who start and develop their own businesses (De Vita, et al, 2014; Minniti and Naude, 2010; Jamali, 2009; and Naude and Havenga, 2005). The role of social networks in facilitating female entrepreneurial activities has gained attention in the literature as well as creating potential sources of social capital (Brixiova and Kangoye, 2016; Agholor et al, 2015; and Birley, 1985). The gender lens is an important element in this exploration of the SWT concept and the P-A paradigm due to its validity in explaining the contribution of entrepreneurial activities of women and network utilisation (Williams and Patterson, 2018; Rouse, Treanor, and Fleck, 2013; and Marlow and Martinez Dy, 2018). This will be highlighted in this paper by developing a new methodological approach which further develops the taxonomy with the ultimate aim to apply it empirically in selected African countries.

The aim of the paper is to take to the next stage the taxonomy of SWT developed in Nziku and Struthers (2018) as a tool for mitigating P-A conflicts as they are experienced by female entrepreneurs in Africa. The taxonomy highlights the mechanisms through which African women can overcome some of the obstacles they face when setting up and developing their entrepreneurial ventures. The authors provide further elaboration of the taxonomy in the context of female entrepreneurs across diverse economic sectors in Africa. Key objectives will be: firstly to explore how a P-A paradigm can elucidate the SWT using indicators from the paradigm; secondly to examine the challenges faced by female entrepreneurs in Africa; and thirdly to design a new methodological framework for integrating the SWT concept with the P-A paradigm.

The proposed taxonomy from the earlier paper (Nziku and Struthers, 2018) is set out in Table 1 below:

Keywords: Female entrepreneurship; SWT; P-A paradigm; behavioural/experimental design; Africa.
### Table 1: Principal-Agent Taxonomy (Nziku and Struthers, 2018)

<table>
<thead>
<tr>
<th>Principal Agent Parameters</th>
<th>Men</th>
<th>Women</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Assumptions: (personal interest, rationality, risk aversion)</td>
<td>High-personal interest, (Tagg and Wilson, 2012)</td>
<td>Low-personal interest (Kamal et al., 2009; Gibb, 1993)</td>
<td>Men – Low risk aversion (+)</td>
</tr>
<tr>
<td></td>
<td>Rationality</td>
<td>Rationality</td>
<td>Women – High risk aversion (-)</td>
</tr>
<tr>
<td></td>
<td>Risk aversion-Low</td>
<td>High-risk aversion (Fielden et al., 2003; Nziku, 2012; Coleman, 2002; Nchimbi, 2002)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Gender balance and performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Contracts: behavioural based v outcomes based</td>
<td>Aversion to behaviour based contracts .</td>
<td>Prefer behaviour based contracts(Essers and Benschop, 2009; Carter, et al., 2003)</td>
<td>Based on different use of networks:</td>
</tr>
<tr>
<td></td>
<td>Prefer outcomes based contracts .</td>
<td>Aversion to outcomes based contracts .</td>
<td>- Women tend to use weak-tie networks (behaviour based) (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Men tend to use strong-ties networks (outcomes based)(+)</td>
</tr>
<tr>
<td>Incentives-misalignment (Asymmetric Information), moral hazard, adverse selection</td>
<td>For men, moral hazard and adverse selection may be higher due to their greater use of outcomes based contracts (and also strong ties) which tend to thrive on more competition and less on cooperation between agents .</td>
<td>For women, moral hazard and adverse selection may be lower due to social objectives, impact of trust and the role of symbolic networks which are centred on weak ties .</td>
<td>- Women tend to have social impact in their businesses (eg: Grameen Bank model) (+)</td>
</tr>
<tr>
<td></td>
<td>Influence and motive</td>
<td></td>
<td>- Men are more motivated by high achieving or maintaining status quo (-)</td>
</tr>
<tr>
<td>4) Risk-sharing:</td>
<td>For men, networks tend to be formal, structured, and interconnected (i.e., strong ties).</td>
<td>For women, networks are looser, more informal and based on a social construct (i.e., “weak ties”).</td>
<td>Differences in use of networks:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>➢ Women tend to use their own social and informal networks to minimise risk (risk-sharing and risk pooling as in Grameen Bank Model)(+)</td>
</tr>
<tr>
<td></td>
<td>Use of networks</td>
<td></td>
<td>➢ Men tend to use mostly formalised networks to minimise risks(-)</td>
</tr>
<tr>
<td>5) Transaction costs: (eg search costs; brokers fees etc)</td>
<td>Men have advantages in maximising economies of scale, and especially economies of scope through combining loans across different projects, thereby minimising transaction costs; (relates also to scaleability issue)(Panzar and Willig1977; 1981)</td>
<td>Women have higher transaction costs compared with males.</td>
<td>Unequal transaction costs:</td>
</tr>
<tr>
<td>This relates to economies of scale and scope (joint/multiple products, bundling, product diversification etc.)</td>
<td></td>
<td></td>
<td>➢ Women tend to lack high value assets to be used as collateral (leading to high transaction costs) (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>➢ Men have high value assets (leading to lower transaction costs) (+)</td>
</tr>
<tr>
<td></td>
<td>(This outcome may also be a function of the size and frequency of the loans entrepreneurs require to borrow)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6) Verification and monitoring costs: (This relates to contracts:(type, formality vs informality, length of contract, renewal terms etc)</td>
<td>Men, because they already have track records, will benefit from lower verification and monitoring costs compared with women.</td>
<td>Women will tend to have higher verification and monitoring costs due to their lack of track records as well as their preferred contract types (This disadvantage may also be increased by their reliance on “weak ties”).</td>
<td>This again links to the issue of whether the contract is outcomes based or behaviour based (from P-A theory)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>➢ Since women tend to be more involved in behaviour based contracts, this leads to higher verification and monitoring costs for the Principal (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>➢ Since men tend to prefer outcomes based contracts, this leads to lower verification and monitoring costs for the Principal (+)</td>
</tr>
</tbody>
</table>
Underpinning this study is a positivistic approach derived from a behavioural/experimental economics perspective. Using a deductive approach, the 6 key P-A indicators developed in the Nziku and Struthers paper are analysed namely: attitude towards risk; behaviour-based versus target based contracts; asymmetric information; risk-sharing; transaction costs; verification and monitoring costs. A future empirical study will be developed using an experimental design strategy with a quantitative approach (based on questionnaire), which has antecedents in the behavioural/experimental economics literature, especially the seminal works by Kahnemann and Tversky, (1979) and Smith, (1998), will be related to the SWT concept (Granovetter, 1973).

A specific issue is to challenge the accepted wisdom based on an ‘expected utility’ approach which has at its core an implicit assumption that: a) agents are risk-averse and; b) female entrepreneurs are likely to be more risk averse than male entrepreneurs (see Niederle and Vesterlund, 2007). Much of the extant entrepreneurship literature has taken this as a sine qua non (see Ackah et al, 2019). To this end, empirical constructs will be adopted such as the need to replace the assumption of risk aversion with that of loss aversion. This approach assumes more realistically an asymmetric information construct in relation to the issue of how agents (especially female entrepreneurs) approach the ‘more versus less risk’ decision in their business decisions. The paper now goes on to discuss some of the key concepts from that literature which will then be applied to our new methodological approach.

**Relevant literature**

*Reasonable gain and affordable loss*

Within the entrepreneurship literature it has been assumed that women are more risk averse than men when undertaking business and investment decisions. In this paper we firstly try to explore whether this is in fact a sine qua non of research, or whether it is an assumption that should be challenged and tested. Secondly, we develop a new empirical methodology based on several concepts from behavioural/experimental economics that will allow us to test such assumptions in field work within a number of African countries.

Our starting point is to combine concepts such as kinship, social structure, and if appropriate, the existence of extreme poverty, within an African context, and especially in relation to women who decide to establish a business out of necessity rather than through choice. George et al (2015) in a study of entrepreneurship in Kenya suggest that obtaining a reasonable gain from such endeavours, especially at subsistence or extreme poverty levels, is the key determinant of entrepreneurial activity. Based on a prospect theory framework this argues that a decision to be risk-taking within a business or investment context is not based solely on an expected utility approach. Rather such decisions are framed within a context of reasonable gain based on a given reference point that is determined in advance but is also bounded by another reference point namely; what they would regard as an affordable loss (Kahneman and Tversky, 1979).
From an empirical perspective this gives researchers a foundation to be able to assess the different motivations of women compared with male entrepreneurs. For example, if we ask people, male and female, what for them is the spectrum or gap between these two extreme reference points, we can test whether the gap (in monetary terms) is greater for men compared with women. This will be done within an experimental economics approach which provides respondents with a range of different monetary returns relevant to their own contexts and circumstances. We highlight this approach in the Appendix. Depending on the empirical outcomes, this will allow us to conclude, at least within the context of our study, whether women can be considered to be more risk-averse than men.

We argue that such a methodological approach will enhance our understanding of the extent to which women entrepreneurs can always be assumed to be more risk-averse than men which is the case in much of the extant literature on this topic. Empirical studies by Ackah et al (2019) and Humbert and Brindley (2013) have certainly tried to challenge the assumption of higher levels of risk-aversion among women entrepreneurs. In Ackah et al (2019) this is based on potential differences in self-reported perceptions of risk in Ghana and Uganda. Using a non-linear decomposition approach they conclude that women entrepreneurs in both countries are more risk averse than their male counterparts, though this is more pronounced in Ghana than in Uganda. Empirically, the study concluded that differences in risk perceptions are due to unexplained components, and therefore might be regarded as a residual elements, though in Ghana such differences were attributed to prior educational levels as well as experience of running a business before.

In the Humbert and Brindley (2013) paper, gender differences in attitudes towards risk are explained in the context of the socio-economic context in which women entrepreneurs have to operate. This is highlighted in their empirical study of Irish women business owners in which the crucial (and universal) role of motherhood and women’s caring roles can be expected to heavily influence their attitudes towards risk-taking. Although based on a limited sample of women entrepreneurs (10), this paper is insightful because it separates out three sub-components of risk namely: risk perception, risk propensity, and risk preparedness. These are related systematically to a range of socio-economic contingent factors (eg family responsibilities, lack of collateral, family background, choice of sector, etc) which will have an influence- individually and collectively- on these three different components of risk. The authors suggest that one possible outcome of such factors will be a higher level of self-screening of potential entrepreneurial investments

Dew et al (2009) extend the discussion of these key concepts further by differentiating the decision on the amount individuals can afford to lose and the amount they are willing to lose in order to plunge into entrepreneurship. They say…”the fundamental asymmetry between the calculability of losses and the unpredictability of gains fuels the creative process… (which is at the heart of entrepreneurship)…and is an outcome of it”… (p108). This implies that the mechanistic way in which economists usually calculate risk/return trade-offs has to be modified to take full account of such factors as: identity; values and preferences; emotions (including fear of failure and/or suspicion of success); rationality (eg to distinguish as Simon (1976) does
between procedural and substantive rationality; over-confidence and over-optimism. It also begs the question whether affordable loss (and potential gain) are exogenous or endogenous elements; for example sector specific. In essence as Dew et al (2009, p 112) state…”Thus consistent with bounded rationality, affordable loss involves using a smaller information set than is required in (normative) expected returns reasoning”...

The above discussion points to the possibility that there may be inherent differences between males and females not just in their willingness to “take the plunge” as this may be viewed simply as throwing “good money after bad”, but also in their ability to do so. Of course, as Dew et al (2009) also argue, such gender differences may also appear in terms of the “depth” of the entrepreneurial plunge as well as the extent to which it is reversible, which again may have gender implications. A yet further factor to consider is the extent to which females may have motives other than personal profit maximisation eg positive community outcomes. The role of kinship, which itself is a key component of the SWT concept can be expected to play a part here too. We now turn to this aspect in the paper.

Role of kinship (aka SWT) in entrepreneur networks in Africa

Do female entrepreneurs (eg in Africa) benefit from kinship systems in their business decisions? Do these kinship systems contribute to the SWT effect highlighted by Granovetter (1973)? Khayesi et al (2014), based on an empirical study of small firms in Uganda suggest that although kinship or family ties assist entrepreneurs in raising capital for their businesses, they also come at the cost of increasing the costs of such networks. This effect of course depends on the size of the network or the reach of the ties, especially family. Inevitably the larger and more complex is the network-whilst this can augment the potential sources of resources for the business-it can also add disproportionately to the costs of operating the network. Extended family commitments in particular can increase agency costs and such commitments are very common in Africa (Gomez-Mejia et al 2001; Schulze et al, 2001; Khavul et al 2009). A commonly held view is that such shared identities from extended family ties can lead to opportunism and free-riding. The question in this paper is whether females, within an entrepreneurship context, are more prone to this outcome than males

Tournament effects: possible gender differences

Another possible conceptual and/or methodological difference between women and men in the context of entrepreneurship is the so-called tournament effect from experimental economics. In essence this relates to the potential differences in the manner in which the two genders respond to incentives. In our P-A taxonomy we suggest that males may differ from females in how they deal with potential incentives mismatching (Indicator 3 in Table 1). Tournament effects may play a role here. Tournament effects are derived from game theory, and refer to an approach to competitive behaviour often used in labour markets in which individuals are offered a choice between a fixed payment (eg a fixed salary) or a variable payment based on a competitive outcome, hence the name tournament. For example, this could be a salary based on a combination of a guaranteed salary which is augmented by a bonus or commission). Indeed in some circumstances the bonus or commission can amount to a significant percentage of the
base salary (even more than 100% in extreme cases). In terms of the six indicators in our taxonomy this factor also relates to the potential difference between the so-called *behaviour based contract* and the *outcome (or target) based contract* (Indicator 2 in Table 1). The latter is similar to the concept of *tournament effect*.

Masclet et al (2015) conducted experiments across a range of scenarios to assess whether there are gender differences in relation to choosing between a flat-rate wage scheme and a payment scheme based on a tournament principle and they find such differences do exist. Interestingly, the authors find no significant difference in performance across the two reward systems. The difference only appears when individuals switch (where this is possible) from a flat wage system to a tournament based system: though women appear to have less scope to add to their performance because they tend to exert so much effort under the flat rate scheme, leaving little margin beyond that. However, the outcomes and responses may be different when feedback is available on their previous experience under a different reward system. Other authors (Nierderle and Vesterlund, 2007) have explained these different preferences between males and females in terms of *risk aversion* and possibly *inequality aversion*. This leads women to choose what in the literature is called “*safe choices*” (Holt and Laury, 2002) or “*satisficing*” behaviour.

Based on the early work of Lazear and Rosen (1981) a key feature of a tournament is the so-called *prize spread*. This is the difference between the ex-ante and ex-post outcome (e.g. between post and pre-promotion wages within labour markets; or the difference between the odds (bet and outcome) in a lottery, or some other betting context). An optimal prize spread is needed to incentivise the participants, as too low a spread will tend to dis-incentivise participants from competing; while prize spreads that are too high might encourage too many participants which can be expected to require contestants to be more broadly compensated than may be optimal and this can lead to reduced tournament efficiency. Obviously in a tournament context the prize (or return outcomes) will depend on: the participants’ willingness as well as ability to compete but also the tournament size (itself determined by its depth (the number of individual competitors) along with the tournament’s width. This is, in turn, related to the range of possible levels to the tournament, although random and serendipitous factors can also play a part here.

**Which of the P-A indicators might be used in an empirical study?**

In order to advance some of the P-A concepts used in Nziku and Struthers (2018) the authors now ask: is it possible to construct an empirical methodology that uses some (or all) of the indicators in Table 1 in order to test whether the motivations of female entrepreneurs, especially in the context of selected African countries, can be differentiated from those of men?

Specifically:

1. Do women have higher levels of *risk aversion* (Indicator 1 in Table 1) compared with men? Or is this an empirical question guided (as suggested above) by notions of *loss aversion* rather than risk aversion. In soliciting responses in the field, how should the questions asked be framed? For example, would the concepts of *reasonable gain* and *affordable loss* feature here? If so, how?

2. Are women entrepreneurs guided more by *behaviour based contracts* compared with their male counterparts who will respond more to *targets or output based contracts* (Indicator 2 in Table 1). In addition, are they more prone to *incentives mismatch* compared with men? (Indicator 3 in Table 1). Once again, in framing questions in any
empirical field work, the key will be to elicit responses that detect tournament effect differences between men and women entrepreneurs. Practically this might be achieved by setting out different types of contracts for each which gauge the extent to which women are likely to adopt a “satisficing” approach (eg, one with a fixed return rather than a variable return). In a similar vein, in terms of the so-called prize spread, is this narrower for women compared with men?

3. What role might “kinship”, in its broadest sense, play in these decisions? The role of kinship, which resonates strongly with Granovetter’s concept of SWT, can be expected to feature in relation to Indicator 4 in Table 1. This is concerned with a possibly greater tendency on the part of women entrepreneurs to engage in risk-sharing types of investments (eg Grameen type loans at village or community level). In framing the appropriate questions here we might ask respondents to consider different forms of loans, varying in terms of: rates of interest; repayment schedules; size of loans etc. This will also relate strongly to Indicators 5 and 6 in Table 1 which suggest that women, for the variety of reasons highlighted in the table, may otherwise incur higher transaction and monitoring and evaluation costs compared with men. Thus risk-sharing types of investments might be viewed by them as a means of obviating such higher costs.

In order to elicit responses to the three issues discussed in the previous section we tentatively suggest some examples of the types of questions to be asked in any future empirical work based on our taxonomy. These appear in the Appendix and will be subject to further development in the next stage of the research.

**Contribution**

The main contribution of the paper is to apply this innovative methodology to highlight new insights on the SWT concept for mitigating P-A trade-offs within the context of female entrepreneurs in developing countries, Africa specifically. From such an approach it is expected that new theoretical perspectives might emerge, eg: that female entrepreneurs in such contexts may have different approaches to ‘income smoothing’ trade-offs within their decision making compared with their male counterparts (see Dercon, 2002). Another insight which can also be traced to an extant economics literature, is the ‘willingness to pay’ principle. Essentially this principle asks what individual agents (or groups) might be willing to pay to avoid a risky outcome, eg: business failure or loss of trust among their networks/groups or ties. This paper makes a potentially significant contribution to the literature from a methodological perspective with the ultimate aim to test the conceptual taxonomy of the P-A paradigm in the context of SWT among female entrepreneurs in selected African countries. Embedding the SWT concept within a P-A framework achieves a clearer understanding of how African women entrepreneurs’ respond to risk and uncertainty. This will also enable better understanding of the role of networks and the incentives attached to business initiatives operated by women in Africa.

**Policy implications**

Possible policy implications include: whether respondents would be willing to take out ‘insurance’ to obviate some of the risks that they may face in their day to day businesses. And, on the question of obtaining access to finance to set up and/or expand their businesses: are females more likely to engage in group borrowing rather than individual borrowing which
characterises many developing countries and in which female entrepreneurs feature significantly, such as in Africa. This element, and others, can be expected to influence public policies to encourage female entrepreneurs, which may include public-private partnerships (PPPs), and Grameen type borrowing schemes etc.

Implications for practice

This research, will provide new conceptual insights which may challenge the acceptable wisdom with respect to female entrepreneurs in developing countries and specifically that they are more risk averse than men. It will also have implications for practice in the context of lessons that may be learned and the transferring of good practice to countries and contexts different from the selected countries in our future empirical study. Of course in the process, due consideration will have to be made for varied cultures, contexts and history.

References

Appendix

Questionnaire (male and female respondents)

Section A

A1 Attitudes towards risk:

In your business decisions, on the following scale, how would you rank your attitude towards risk (1: lowest aversion to risk; 5: highest aversion to risk)

1(...) 2(...) 3(...) 4(...) 5 (...)

A2 Behavioural versus Targets (output) based contracts:

In agreeing a business contract do you prefer behaviour based contracts to targets based contracts (1: targets based; 5: behaviour based)

1(...) 2(...) 3(...) 4(...) 5 (...)

A3 Potential for goal conflict:

In your business how far do you try to minimise goal conflict? (eg between you and your customer/supplier; between you and your lender); (1: low priority towards minimising goal conflict; 5: high priority towards minimising goal conflict)

1(...) 2(...) 3(...) 4(...) 5 (...)

A4 Importance of risk sharing through networks:

To what extent do you engage in risk-sharing (pooling) via your networks (1: not very much; 5: very much).

1(...) 2(...) 3(...) 4(...) 5 (...)

A5 Role of transaction costs

If you have to borrow to finance your business to what extent can you benefit from low transaction costs (eg due to previous loans; economies of scale/scope etc; (1: benefit very much; 5: benefit not very much)

1(...) 2(...) 3(...) 4(...) 5 (...)

A6 Verification and monitoring costs

If your contracts are behaviour based rather than targets based you are likely to incur higher verification and monitoring costs. How far is this true for your business? (1: not true; 5: very true).

1(...) 2(...) 3(...) 4(...) 5 (...)

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Section B
(Additional questions to reflect a loss aversion approach rather than risk-aversion approach (male and female respondents)

B1 Reasonable gain and affordable loss
In your business what gain (or loss) would you consider acceptable (affordable) as a percentage of the original investment in your business. Your answer should be based on what you expect to gain (or lose) in the first 2 years from setting up your business:

Gain: 10% (…); 15 %(...) 20% (...) 30% (...) >30% (...)
Loss: 10% (…); 15 %(...) 20% (...) 30% (...) >30% (...)

B2 Contract types (male and female respondents)
In any contracts that you enter into in relation to your business you may choose one that has a fixed and guaranteed return (or profit); or one that is not guaranteed but has a potentially higher ie variable return (or profit).

Which contract type do you prefer? Please tick the appropriate response.
Fixed Return (…)
Variable Return (…)

Does your choice between these two alternatives depend on the probability associated with gaining a higher return?
Yes (…)
No (…)

If your answer to this question is Yes what level of probability of achieving a higher return would be required for you to make that choice?
0.1 (…); 0.15(...) 0.2 (...) 0.3 (...) >.3 (...)

What is the basis for you making your choice here? Please elaborate below:

B3 Possible risk-sharing (eg based on kinship aka SWT)
Do you borrow in order to invest in your business?
Yes (…)
No (…)

When borrowing do you combine with other investors in order to share the possible risks of the investment?
Yes (…)
No (…)
If Yes, Why?

………………………………………………………………………………………………..

If you answered Yes to this question how do you engage in such types of combined borrowing?

**Village or community level borrowing (…)**

**Network based (eg women’s association) (…)**

**Combination of both (…)**

What are the perceived benefits to you personally from engaging in these types of borrowing?

1) Lower set-up (brokers) fees (…)
2) Lower interest rates (…)
3) Better repayment periods (…)
4) Able to borrow greater sums (…)
5) A combination of the above (…)