Gender effect of entrepreneurial orientation on dairy farming career resilience in Kenya

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Abstract: This study sought to examine gender effect of entrepreneurial orientation on dairy farming career resilience in Kenya. Specifically, the study examined the moderating role of gender on the relationship between future orientation (FO), market orientation (MO), risk-taking orientation (RO), social orientation (SO) and entrepreneurial resilience of dairy agripreneurs in Kenya. We surveyed 682 respondents; 480 males and 202 female dairy agripreneurs in Murang'a County, Kenya using a cross-sectional study design. Data was collected using semi-structured questionnaire using personal interview. Data were analysed using partial least square-structural equation modelling PLS-SEM and multi-group analysis (MGA). Results show significant gender differences across the agripreneurial orientations. The direct effects relationships indicate that future, market and risk-taking orientation of female agripreneurs had a positive and significant impact on agripreneurial resilience (AR). While, for male agripreneurs, future and market orientation had a positive and significant impact on AR; but social orientation had a negative impact on AR. Gender moderates the entrepreneurial orientation-agripreneurial career resilience relationship whereby female agripreneurs had statistically significant higher risk-taking propensity of ($\beta = 0.189, p = 0.06$) compared to their male counterparts ($\beta = 0.054, p = 0.06$).

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PUBLIC INTEREST STATEMENT
This paper examines the extent to which gender influences entrepreneurial behaviour (EB) on dairy farming career resilience of smallholder farmers in Kenya. Despite the key role women play in the dairy sector, there is a missing link on how gender provides different perspectives of EB practices on dairy farming career resilience. The results show that EB positively influences dairy farming career resilience especially for female agripreneurs. The main implication of this study presents the unique contribution of women entrepreneurial behaviour in Kenya dairy sector. It was found that future, market and risk-taking orientation of female agripreneurs enhanced their dairy farming career resilience. In addition, female agripreneurs had higher risk-taking propensity compared to their male counterparts. While, for male agripreneurs, future and market orientation improved their dairy farming career resilience; but social orientation had a negative impact on dairy farming career resilience. This paper would help to strengthen the body of knowledge on Entrepreneurship in agriculture.
1. Introduction

Women agripreneurs play a crucial role in dairy farming career, where they are involved in production, processing and marketing of milk (Njuki et al., 2016). Despite their contribution, their access to financial, human, physical and informational resources have always been low compared to men (Ageya & Omondi, 2016; Njuki & Sanginga, 2013). However, in the past decade, several interventions have been initiated to empower women. Some of these initiatives include increasing access to education for women, increasing property rights of women and including women in decision making (Basu et al., 2019). Other interventions have been geared towards economic empowerment through access to agribusiness support services such credit-linked inputs, group marketing, business plan trainings and access to subsidized animal health services (Karim et al., 2018; Srivastava & Misra, 2017). The intention is to make them more entrepreneurial. This entrepreneurial behaviour is popular known as entrepreneurial orientation (EO) (Cho & Lee, 2018).

Entrepreneurial orientations are linked to exploitation of opportunities presented in the business environment (Radipere, 2013). Shadbolt and Olubode-Awosola (2013) emphasizes dairy agripreneurs should have the best processes and practices that can enable them to maximize on business opportunities. Most studies have acknowledged that entrepreneurial orientations have positive effect on profitability and sustainability of small-medium enterprises (Cho & Lee, 2018; Covin & Miller, 2014; Cui et al., 2018; Dayan et al., 2016; Fatoki, 2014). Higher entrepreneurial orientations could increase competitive advantage and resilience of entrepreneurs during tough economic times (Linnenluecke, 2017; Radipere, 2013). Dairy agripreneurs that have high entrepreneurial orientations are viewed as risk-takers, market-oriented and highly futuristic in thinking which enables them to exploit untapped opportunities in the agribusiness environment (Ho et al., 2017).

There is an increasing trend in the number of female entrepreneurs and studies show that they are competing well with the male counterparts (Chatterjee et al., 2019; Van Der Merwe, 2015). Quaye et al. (2015), acknowledge that female and men entrepreneurs use different strategies in managing their enterprises. This is due to different entrepreneurial abilities and attributes which influences their orientations (Shinnar et al., 2012). Adom and Anambane (2019), argue that gender stereotypes, limit many women from venturing into entrepreneurship in developing countries. Hence, the gender of entrepreneur is key in influencing the performance of small-medium enterprises and continuity of the business (Ayub et al., 2013; Fellnhofer et al., 2016). The necessity of entrepreneurial orientation (EO) is still overlooked by the many developing countries like Kenya, even though EO is important for agripreneurs especially in dairy farming career progression. Hence, this study aims to explore the relationship between entrepreneurial orientation EO and dairy agripreneurs’ resilience (AR) in Kenya and further examine the role of gender on the relationship between EO and AR.

2. Literature review

2.1. Gender and entrepreneurship

Gender difference has been a center point of discussion by many researchers in relation to entrepreneurship (Vishnu et al., 2018). Gender has been viewed different from sex in the sense that it refers to beliefs about what traits are appropriate for male or female which distinguish them from one another. Whereby, men are socialized to be aggressive, task-oriented and assertive whereas women are socialized to be emotional, tender and communal (Leonidas et al., 2017). In entrepreneurship male and female entrepreneurs differ in both business structure and in individual goals (Palalic et al., 2017). Entrepreneurs identify opportunities, evaluate and turn them into viable businesses. To be an entrepreneur individual must have certain traits that will make him/her successful
which maybe similar or different for male and female entrepreneurs (Lim and Envick). Entrepreneurs both men and women mostly have common traits but may differ in the level or extent as they have different goals, decision-making strategies and perception about businesses (Zeb & Ihsan, 2020).

Most women entrepreneurs look for independence whereas male for profits and both for personal satisfaction (Srivastava & Misra, 2017). Gender has influence on behavior of men and women entrepreneurs (Zeb & Ihsan, 2020). Traditional thinking (stereotype effect) implies that men are always more successful than women (Zeffane, 2015). Women entrepreneurs were found to perform poorly than men in their small sized businesses (Vishnu et al., 2018), it happens especially in rural agribusiness sector due to difficulties they face in access to resources, and business assetsinfluencebehaviours, as well as gendered specific behaviors which influences their decision power and control as a result men, end up having higher performance (Quaye et al., 2015). However, there is an emerging trend from developed countries suggesting that female entrepreneurs tend to outperform their male counterparts especially due to women empowerment (Nasrolahi & Reza, 2014).

In recent studies, women have been seen to have stronger motives for entrepreneurship than men which could be as a result of women empowerment and inclusion in the labour market (Adom & Anambane, 2019). Fellnhofer et al. (2016) found that women perform better than men because they were motivated to survive, they have more desire for entrepreneurial knowledge and better financial control than men. Chatterjee et al. (2019) found access to resources positively influences women participation in entrepreneurship. However, there is no consistency on the gender difference and performance between men and women as the entrepreneur behaviour keeps on changing. This calls for a study on gender analysis in relation to entrepreneurial orientation and resilience of dairy agripreneurs where majority of women are involved in different activities.

2.2. Gender and entrepreneurial orientation

Most studies have been conducted to find effect of entrepreneurial orientation on firm performances and the results indicated a positive significant effect on performance (Cho & Lee, 2018; Covin & Miller, 2014; Cui et al., 2018; Dayan et al., 2016; Fatoki, 2014). Entrepreneur orientation has also been found to be important in shaping entrepreneurs’ way of thinking, behaviors, and ideas making them more competitive (Ho et al., 2017). Most of this studies have not considered the role of gender in influencing the performance and resilience of small-medium enterprises especially dairy agripreneurs in Kenya. Positive change of entrepreneurs’ traits, behaviors, and their thinking as a result of entrepreneurial orientation is different between men and women entrepreneurs (Hughes & Yang, 2020). Entrepreneurial orientation has several dimensions (risk orientation, market orientation, social orientation and future orientation) of which each may be embraced differently by men and women leading to difference in performance and resilience levels by gender. Therefore, there is need to evaluate the impact of each dimension separately (Zeebaree & Siron, 2017).

Risk orientation affects the risk-taking behaviours of entrepreneurs, in terms of ability to take bold steps in venturing into new markets and investing resources having uncertain outcomes (Cui et al., 2018; Zeffane, 2015). Successes of entrepreneurs depend on their risk-taking abilities which may differ based on gender. It has been documented that higher risk orientation results in higher risk-taking behavior hence increase in entrepreneurs’ performance (Fatoki, 2014). Earlier studies concluded that women were more risk averse (Camelo-Ordaz et al., 2016) while their male counterpart were high-risk takers (Ayub et al., 2013; Lim & Envick, 2013; Pérez-Quintana, 2013). However, Leonidas et al. (2017) argue that most women are more willing to take risks compared to men due to their past background experience in life and the need to be independent. The inconsistency in findings warrant a study on multi-group analysis of entrepreneurial orientation between male and female agripreneurs which this study seeks to address. Therefore, this study will empirically demonstrate the moderating role of gender on enhancing the entrepreneurial orientations and resilience of dairy agripreneurs.

Market orientation is another dimension of entrepreneurial orientation that may equip dairy entrepreneurs with market knowledge relating to current and future customer needs. Marketing is
important in the survival and development of dairy agripreneurs therefore possession of good marketing skills is beneficial (Ho et al., 2017). Market orientation, therefore, is very significant in imparting marketing skills needed by dairy entrepreneurs in gaining competitive advantage. It may also enable entrepreneurs to pursue new market opportunities and innovatively produce new products (Bamfo & Kraa, 2019).

Rashid et al. (2020) found that women are more market-oriented than men which influences their business success. Whereby women are considered to emphasize more on developing relationship with customers than men (Rezaei-Moghaddam et al., 2019). In contrary, Ayub et al. (2013) argue that men are more market-oriented than women based on their ability to create innovative business ideas. Dairy farming in Kenya is managed by both men and women and their orientations may influence the performance and dairy farming career resilience. However, there is dearth of empirical study on gendered differences on entrepreneurial orientation among dairy agripreneurs, despite the documented evidence of gender differences in running dairy business (Njuki et al., 2016).

Social orientation involves building on social capital and networking which is important for an entrepreneur success (Nasrolahi & Reza, 2014). Having social capital and networks helps in accessing beneficial information and resources which contribute indirectly to performance of the business (Salisu et al., 2019). Social orientation facilitates local networks of interconnected stakeholders which promotes collective learning (Hughes & Yang, 2020). Based on gender differences, women generally have less access to important networks which affect their access to inputs, information and reaching out to potential customers compared to men (Adom & Anambane, 2019). Through social orientation female entrepreneurs have greater potential to grow when connected to the right social capital than male counterparts as women are considered to be more social than men (Basu et al., 2019). This study sought to establish differences in social orientation on resilience of male and female dairy agripreneurs.

Future orientation is also very important dimension of entrepreneurial orientation as it may help dairy entrepreneurs to think of continuity and survival of the business in the long-run (Shadbolt et al., 2013). Strategic planning is key element in future orientation since orients entrepreneurs to focus on the future by planning on how to accomplish goals as well as avoid emotional, financial, physical or social hardship that may occur as a result of crisis hence attaining resilience (Andre et al., 2018). Men and women employ different strategies to ensure survival and continuity of business (Chatterjee et al., 2019). Men are considered to adopt offensive and innovative strategies whereby they venture into new investments, innovation of new products or services, research for new markets and new customers, while women adopt defensive strategies which involve reorganizing and resizing the business structures. However, during crisis strategies adopted by men and women entrepreneurs presents no significant difference as they are both resilient (Buratti et al., 2018).

The findings of gender difference on entrepreneurial orientation dimensions are not consistent; it keeps on changing depending on entrepreneur perception on entrepreneurial orientation as well as other factors. The inconsistencies can be attributed to the gender roles changes in the modern society where women are actively engaged in entrepreneurship (Zeb & Ihsan, 2020). Again, with gender equality and women empowerment policies which are advocating for equal and fair ground for both men and women participation in entrepreneurship, women are more inspired to start their own enterprises (Batjargal et al., 2019; Rashid et al., 2020).

The literature presented shows that entrepreneurial orientation positively or negatively impacts on performance which tends to be different on gender basis. However, the documented literature shows inconsistent results regarding the relationship between gender and EO, therefore, examining possible differences in EO and resilience in the dairy sector where male and female actively participates could make a useful contribution. In addition, the resilience of most dairy agripreneurs with regard to gender and EO has not been clearly established in developing countries like Kenya especially in the agribusiness sector. Therefore, there is a need to find out the effect of gender difference on entrepreneurial orientation and resilience of dairy agripreneurs.
2.3. Entrepreneurial resilience
Evans and Wall (2019) defined resilience as the capacity of entrepreneur to bounce back from business challenges and maintain his/her profitability. Shadbolt and Olubode-Awosola (2013) define agripreneurial resilience as the ability of dairy agripreneurs to adopt and adapt to changes in agribusiness environment; while taking advantage of opportunities presented by the changes. Agripreneurs are faced with so many obstacles and uncertain outcomes which they need to overcome in order to have a profitable venture. Hence, resiliency is an important attribute for entrepreneurs.

Agripreneurial resilience has three elements, buffer, adaptive and transformability capacity (Evans & Wall, 2019). Buffer capacity is the ability of an agripreneur to maintain constant production while faced with shocks and disturbances in the business. Adaptive capacity is the capability of agripreneur to respond to change through change in the structure of the agrienterprise such as membership to groups without affecting the function of the farm. Finally, transformability capacity is the ability of dairy agripreneurs to engage in intra-chain upgrading such as diversification into new enterprises. (Shadbolt & Olubode-Awosola, 2013)

Dairy agripreneurs operate in a highly risky and uncertain business environment. They ought to build a resilient farming system. Agripreneurial orientation could enhance agripreneurial resilience especially if they are market and future-oriented (Shadbolt et al., 2013). According to Evans and Wall (2019), entrepreneurs are currently operating in a dynamic business environment and no entrepreneur is self-sustainable. Hence, there is no entrepreneur who can manage to survive disruption and retain their advantage without resilient agripreneurial orientation.

2.4. Conceptual framework
Four dimensions of entrepreneurial orientations construct (future orientation, market orientation, risk-taking orientation and social orientation) were used as the exogenous variables in the proposed model. Agripreneurial resilience was the endogenous variable while gender of the dairy agripreneurs was the moderating variable as depicted in Figure 1.

From the literature review, the following are the hypothesis that were formulated to be tested in the study;

H1. Future orientation is positively related to entrepreneurial resilience

Figure 1. Proposed model for moderating role of gender on the relationship between entrepreneurial orientations and agripreneurial resilience.
H2. Market orientation is positively related to entrepreneurial resilience

H3. Risk-taking orientation is positively related to entrepreneurial resilience

H4. Social orientation is positively related to entrepreneurial resilience

H5. Gender positively moderates the relationship between entrepreneurial orientation and entrepreneurial resilience

3. Data, variables and methods

3.1. Data
Data was collected through a cross-sectional survey on a sample of 682 dairy agripreneurs in Murang’a County, Kenya. Multistage sampling procedure was employed to get the sample of dairy agripreneurs. Within the county four sub-counties, that is Gatanga, Maragwa, Kiharu and Kandara were selected. The four Sub-Counties were purposively selected, based on the existence of dairy cooperatives initiated both by the county government, the dairy agripreneurs and non-governmental promoters. In addition, these sub-counties have high number of dairy agripreneurs who depend on production and marketing of milk as their source of livelihood. This enabled the researchers to get random female and male agripreneurs. Within the four Sub-Counties, three wards were randomly selected to give a total of twelve wards. Lastly, proportionate to size sampling was used to select 682 respondents. Among the 682 respondents 480 were males and 202 female dairy agripreneurs.

This study used a semi-structured questionnaire, as the main instrument for data collection. The questionnaire consisted of information on socio-economic and institutional characteristics of the respondents, dairy production, marketing parameters, entrepreneurial orientation and resilience constructs. Before the survey was conducted the researcher secured research permit from the National Commission for Science Technology and Innovation (NACOSTI), which is the legal body responsible for regulating and approving research activities in Kenya. Approval was also sought from Ministry of Agriculture, Livestock and Fisheries in Murang’a county government. Once the approvals were made, the researcher with the help of Sub-County agricultural officers and village heads identified the dairy agripreneurs who took part in the survey. The respondents were informed about the objective of the study and were requested for informed consent. Upon the consent of the dairy agripreneurs, data was collected using personal interview by 12 trained enumerators. The interview took an average of 90 minutes per household.

3.2. Variables

3.2.1. Dependent variable
Agripreneurial resilience which was dependent variable which was measured using the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003), consisting of 10 items. A 5-likert scale was used to measure this construct and it composed of: 0 = not true at all, 1 = rarely true, 2 = sometimes true, 3 = often true and 4 = true nearly all of the time.

3.2.2. Independent variables
The independent variables were entrepreneurial orientation constructs which were measured using the likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly agree). These included social orientation (6 items), market orientation (14 items), future orientation (7 items) and risk-taking orientation (6 items). The entrepreneurial orientation items were adopted and updated to fit the context of the study from the works of Hajong (2014) for social orientation, Ho et al. (2017) for market orientation, López-Mosquera et al. (2014) for future orientation and Lai et al. (2017) for risk-taking orientation.
3.2.3. Mediating variable
Gender was used as the mediating variable which was coded as a binary variable: 1 for male and 0 for female respondents.

3.3. Methods
Considering the main features of the dependent, independent and mediating variable, whereby there are multiple outcome variables both observed and unobserved, this study used Partial Least Square- Structural Equation Modelling (PLS-SEM) to test the hypotheses. This model was appropriate since it enabled the researchers to analyze both the measurement and structural models, while it allowed the incorporation of both unobserved (construct/latent factors) and observed variables in the same model (Statsoft, 2013). This analytical method also handles errors of measurement within exogenous variables having multiple indicators by the usage of confirmatory factor analysis (CFA). SEM permits simultaneous analysis of multiple linear regression between the independent variables, multiple path analysis, assess the direct and indirect effect, and fitness of overall model which is not feasible in a traditional regression analysis method. SEM can also provide measures of fit to assess the entire model (Hair et al., 2017). The general model is represented by the following equations consisting of measurement and structural models:

\[ Y = \nu + \Lambda \eta + \epsilon \]  
\[ \eta = \alpha + B \eta + \xi \]

where \( Y \) is the vector of \( p \) observed variables in a considered study (\( p > 1 \)), \( \nu \) the \( p \times 1 \) vector of observed variable mean intercepts, \( \Lambda \) is the \( p \times q \) matrix of factor loadings, \( \eta \) is \( q \times 1 \) latent factors assumed in it (\( q > 0 \)), \( \epsilon \) the vector of \( p \) pertinent residuals (error terms), \( \alpha \) is the \( q \times 1 \) vector of latent variable intercepts, \( B \) is a \( q \times q \) matrix of latent regression coefficients and \( \xi \) is the \( q \times 1 \) vector of corresponding latent disturbance terms.

Based on the general Equations (1) and (2), the following structural equation model for the four factors namely; social-capital/linkages (\( \xi_1 \)), market orientation (\( \xi_2 \)), future orientation (\( \xi_3 \)) and risk-taking orientation (\( \xi_4 \)) with manifest endogenous variable agripreneurial resilience (\( Y_1 \)) was given in the following structural equation models:

\[ Y_1 = \alpha_1 + \beta_{11} \xi_1 + \beta_{12} \xi_2 + \beta_{13} \xi_3 + \beta_{14} \xi_4 + \epsilon_1 \]  

The general matrix expression is given in the following equation:

\[ Y_1 = \alpha_1 + \Gamma_1 \xi_1 + \epsilon_1 \]

where;

\[ \Gamma_1 = (\beta_{11}, \beta_{12}, \beta_{13}, \beta_{14}) \], and \( \xi_1 = (\xi_1, \xi_2, \xi_3, \xi_4) \)

In the above Equation (4) \( Y_1 \) manifest endogenous variables (AR), \( \alpha_1 \) is the latent intercepts, \( \Gamma_1 \) are the coefficient vectors for the linear effects of \( n \) latent predictors, \( \xi_1 \) are the latent factors and finally \( \epsilon_1 \) is the latent disturbance. PLS-MGA (multi-group analysis) was used test the differences in agripreneurial orientations between male and female dairy agripreneurs. The product of coefficients approach was used to test for mediation effects, as fronted by Fairchild and MacKinnon (2009). The equations that were used to analyze the products of coefficients are as presented in Equations 5 and 6:

\[ Y = \beta_0 + C^T X + bM + \epsilon_i \]  
\[ EC = \beta_0 + aX + \epsilon_i \]

Fairchild and MacKinnon (2009) indicate that the above equations are then used to test for mediation effects by application of the product of coefficients strategy as depicted in the formula below:
\[
S_{ab} = \sqrt{S_{a}^2 \sigma _{b}^2 + S_{b}^2 \sigma _{a}^2}
\]  
(7)

Where \(S_{a}^2\) is the variance of \(\hat{a}\) coefficient, and \(S_{b}^2\) is the variance of \(\hat{b}\) coefficient.

Therefore, in order to illustrate the agripreneurial resiliency in terms of the four independent variables (IV) of social capital orientation, market orientation, future orientation and risk-taking orientation, while considering the mediating effect of gender on this relationship, regression analysis was used as presented in Equation 8;

\[
AR = (\beta_0 + \beta_1 SO + \beta_2 MO + \beta_3 FO + \beta_4 RO + \beta_{5, gender} \times SO + \beta_{6, gender} \times MO + \\
\beta_{7, gender} \times FO + \beta_{8, gender} \times RO) + \varepsilon
\]

(8)

where: \(AR =\) Agripreneurial Resilience; \(\beta_0 =\) constant which is the value of \(Y\) when \(X\) is zero; \(\beta_i =\) correlation coefficient, Pearson’s correlation; \(SO =\) Social Orientation, \(MO =\) Market Orientation, \(FO =\) Future Orientation, \(RO =\) Risk-taking Orientation, \(gender =\) male or female; \(gender \times SO; gender \times MO; gender \times FO\) and \(gender \times RO\) = mediating effect of gender on relationship between social, market, risk-taking and future orientation, respectively. \(\varepsilon =\) error term indicating proportion of \(AR\) that is not to be explained by constructs \(SO, MO, FO, RO, gender \times SO, gender \times MO, gender \times FO\) and \(gender \times RO\).

4. Results and discussions

4.1. Descriptive statistics of female and male dairy agripreneurs

As presented in Table 1 there was statistically and significant difference between female and male dairy agripreneurs in connection to eleven variables. In relation to household demographic attributes, female agripreneurs have higher mean age (57.43 years), experience in dairy farming (21.73 years) and access to land with title deed (66%). While male had higher mean education level (3.71) and number of adult members (3.64). In connection to milk production parameters, male agripreneurs have higher number of milk yield (15.36 litres/day), milk productivity (69.44 liters/annum), total milk income (KES 136,095.73 per annum) and gross margin (KES106,678.48 per annum). In addition, the mean access to production support services was significantly higher among male agripreneurs (96%).

Finally, female agripreneurs received significantly high remittance (47%) from family members than male counterparts. These results indicate that male agripreneurs are still benefiting more in comparison to female agripreneurs. However, it is important to note that women agripreneurs are on the right track considering the fact, that entrepreneurship has always been considered as a men affairs. Critical analysis of the differences, indicate that men had slightly higher productivity and profitability compared to women. For example, the mean productivity for female was 58.15 litres/per annum and for male was 69.44 litres/per annum; while the gross margin for female and male was KES 76,713.69 and KES 106,678.48, respectively. These figures indicate that female agripreneurs are showing a positive trend in managing their agrienterprises.

4.2. Disintegrated gender roles in dairy farming career in Kenya

The results on gendered household roles in dairy farming career in Murang’a County are presented in Table 2. The findings show that majority of the household members are involved in different activities in dairy farming with men and women having the biggest contribution. This implies that dairy farming career is a labour-intensive investment. More women were involved in morning milking, evening milking and cleaning the barn with 52.3%, 53.5% and 47.4%, respectively. Men contributed more proportion of labour in grass cutting, feeding of animals and fetching feeds with 52.2%, 48.7% and 51.2%, respectively. There was almost equal contribution to labour in relation to watering with men and women contributing 46.3% and 45.7%, respectively. These findings indicate that women agripreneurs are involved on a daily basis management of cattle (Njuki & Sanginga, 2013). The implication being that they are crucial actors in dairy value chain career resilience. Another implication of the findings is that
Table 1. Demographic profile of female and male dairy agripreneurs

| Variables                              | Female | SD  | Male  | SD  | Pooled | SD  | f-value |
|----------------------------------------|--------|-----|-------|-----|--------|-----|---------|
| Age (years)                            | 57.43  | 13.49 | 54.76 | 13.70 | 55.55  | 13.68 | 5.45**  |
| Education level (years)                | 3.32   | 1.03 | 3.71  | 0.97 | 3.60   | 1.01 | 22.91*** |
| Household labour (number of adults)    | 2.93   | 1.23 | 3.64  | 1.31 | 3.43   | 1.32 | 43.5*** |
| Experience (years)                     | 21.73  | 13.51 | 17.59 | 12.56 | 18.82  | 12.97 | 14.72*** |
| Land tenure (1 = with title deed)      | 0.66   | 0.48 | 0.59  | 0.49 | 0.61   | 0.49 | 3.01*   |
| Land size (acres)                      | 1.33   | 1.29 | 1.28  | 1.18 | 1.29   | 1.21 | 0.23    |
| Livestock type (1 = exotic/improved)   | 0.94   | 0.24 | 0.96  | 0.20 | 0.95   | 0.21 | 1.29    |
| Number of cows                         | 2.42   | 1.57 | 2.54  | 1.90 | 2.50   | 1.81 | 0.59    |
| Milk yield (liters)                    | 11.75  | 8.64 | 15.36 | 17.57 | 14.29  | 15.56 | 7.73*** |
| Productivity (Annual Litres/cow)       | 58.15  | 38.59 | 69.44 | 48.79 | 66.10  | 46.27 | 8.56*** |
| Milk price (KES)                       | 32.79  | 6.24 | 33.36 | 6.66 | 33.19  | 6.54 | 1.09    |
| Total milk income                      | 103,583.17 | 157,959.53 | 136,095.73 | 215,046.45 | 126,465.91 | 200,281.82 | 3.76** |
| Total variable cost                    | 26,869.48 | 64,071.56 | 29,417.25 | 92,966.75 | 28,662.63 | 85,394.22 | 0.13    |
| Gross margin                           | 76,713.69 | 155,906.92 | 106,678.48 | 189,459.76 | 97,801.28 | 180,580.96 | 3.93**  |
| Distance output market (Km)            | 1.43   | 1.98 | 2.41  | 23.04 | 2.12   | 19.36 | 0.36    |
| Trust buyers of milk (1 = high)        | 0.66   | 0.48 | 0.64  | 0.48 | 0.65   | 0.48 | 0.13    |
| Access to contracts (1 = yes)          | 0.67   | 0.47 | 0.66  | 0.48 | 0.66   | 0.47 | 0.18    |
| Access Production services(1 = yes)    | 0.93   | 0.26 | 0.96  | 0.19 | 0.95   | 0.21 | 4.19**  |
| Receive Business plan training(1 = yes)| 0.38   | 0.49 | 0.40  | 0.49 | 0.40   | 0.49 | 0.46    |
| Access to credit(1 = yes)              | 0.53   | 0.50 | 0.57  | 0.50 | 0.56   | 0.50 | 0.75    |
| Cooperative membership                 | 0.48   | 0.50 | 0.47  | 0.50 | 0.47   | 0.50 | 0.01    |
| Received remittance                    | 0.47   | 0.50 | 0.38  | 0.49 | 0.40   | 0.49 | 4.4**   |

*** = statistically significant at 1% probability level, ** = statistically significant at 5% probability level, * = statistically significant at 10% probability level
female agripreneurs are mainly involved in domestic dairy cattle management (Katothya, 2017). There was low participation of boys and girls in the different activities which was less than 5% of total labour for most of the activities except for cleaning the barn which was about 5.4%. These results are similar to Kimaro et al. (2013) and Nyongesa et al. (2016) who found that gender roles in dairy farming is jointly done by men and women.

4.3. Validity and reliability tests of entrepreneurship orientation and resilience constructs
According to Hair et al. (2017) convergent validity is achieved when a set of indicators of a construct converge or represents a single underlying construct. This validity was measured using Cronbach’s alpha (CA), rho_A, Composite Reliability (CR) and Average Variance Extracted (AVE). As presented in Table 3, Cronbach’s alpha (CA) ranged from 0.778 to 0.895, rho_A ranged between 0.831 and 0.9 and composite reliability (CR) ranged between 0.766 and 0.908. These thresholds exceed the minimum standard level of 0.70, hence internal consistency reliability is achieved. Convergent validity was also assessed by assessing average variance extracted (AVE) and the values exceed the threshold of 0.4 (Hair et al., 2017).

Using the AVE-SV technique in Table 4, the constructs passed discriminant validity test as the diagonal values were greater than the horizontal and vertical values (Hair et al., 2017; Henseler et al., 2015).

According to Hair et al. (2017), HTMT ratio values should be below 0.85. The values in Table 5 were less than 0.85 thus indicating there was discriminant validity in the constructs. In summary, based on the results of convergent and discriminant validity, it can be concluded that the data used in the study are reliable and valid to prove the hypotheses with SmartPLS-SEM.

4.4. Gendered impact of agripreneurial orientations on agripreneurial resilience
Table 6 shows the differences between female and male, in relation to the path coefficients and p-values. It is clear that the direct impact of entrepreneurial orientation constructs on agripreneurial

| Table 2. Gender roles in dairy farming career |
|---------------------------------------------|
| **Activities** | **Percentage (%)** |
| **Who is involved (%)** | Milking Morning | Milking Evening | Cleaning Barn | Grass Cutting | Feeding | Watering | Fetching feeds |
| Men | 43.7 | 42.2 | 43.8 | 52.2 | 48.7 | 46.3 | 51.2 |
| Women | 52.3 | 53.5 | 47.4 | 39.1 | 43.8 | 45.7 | 40.6 |
| Boys | 2.6 | 2.5 | 5.0 | 4.0 | 3.5 | 3.8 | 4.1 |
| Girls | 0.1 | 0.1 | 0.4 | 0.0 | 0.0 | 0.0 | 0.1 |
| Men and boys | 1.0 | 1.0 | 2.6 | 3.8 | 3.4 | 3.8 | 3.2 |
| Women and girls | 0.1 | 0.4 | 0.7 | 0.9 | 0.6 | 0.6 | 0.7 |

| Table 3. Reliability and validity tests |
|----------------------------------------|
| **Constructs** | **Items** | **CA** | **rho_A** | **CR** | **AVE** | **VIF** |
| Agripreneurial Resilience | 9 | 0.861 | 0.867 | 0.89 | 0.475 |
| Future orientation | 6 | 0.895 | 0.897 | 0.92 | 0.66 | 1.041 |
| Market orientation | 13 | 0.891 | 0.9 | 0.908 | 0.436 | 1.299 |
| Social orientation | 6 | 0.778 | 0.827 | 0.766 | 0.502 | 1.323 |
| Risk-taking orientation | 5 | 0.814 | 0.831 | 0.869 | 0.573 | 1.01 |

Okello, Cogent Food & Agriculture (2020), 6: 1863565
https://doi.org/10.1080/23311932.2020.1863565
Page 10 of 16
resilience displayed significant differences for men and women agripreneurs. The results show positive and significant impact of future orientation (FO) on agripreneurial resilience (AR) among females ($\beta = 0.381$, $p = 0.01$) and males ($\beta = 0.398$, $p = 0.01$). Moreover, the results show positive and significant influence of market orientation (MO) on agripreneurial resilience (AR) on females ($\beta = 0.193$, $p = 0.01$) and male agripreneurs ($\beta = 0.150$, $p = 0.01$).

The results on impact of FO and MO on AR imply that if female and male agripreneurs are put on the same social and economic status, these entrepreneurial orientation constructs would have the same impact on resilience for both groups. A plausible explanation could be futuristic thinking and being market-oriented are key ingredients for building a resilient business for any business, whether it is operated by male or female. Dairy agripreneurs need these behavioural characteristics to help them tolerate ambiguous situations and exploit opportunities that will provide them income in future (Andre et al., 2018; Lens, 2015). Further, marketing orientation enables dairy agripreneurs to understand the needs of current and future customer. For example, it will give them knowledge on milk quality and safety measures, costumers’ preferences, and market system to adopt to reap benefits. This result is in conformity with Ho et al. (2017) who found market orientation improves the resilience dairy agripreneurs since it enables to supply what is demanded in the market.

### Table 4. Fornell-Larcker criterion test

| Constructs              | Agripreneurial Resilience | Future Orientation | Market Orientation | Risk-taking Orientation | Social Orientation |
|-------------------------|---------------------------|--------------------|--------------------|-------------------------|--------------------|
| Agripreneurial Resilience | 0.689                     |                    |                    |                         |                    |
| Future Orientation      | 0.447                     | 0.812              |                    |                         |                    |
| Market Orientation      | 0.274                     | 0.147              | 0.66               |                         |                    |
| Risk-taking Orientation | 0.115                     | 0.025              | 0.064              | 0.757                   |                    |
| Social Orientation      | -0.308                    | -0.186             | -0.476             | -0.096                  | 0.708              |

### Table 5. Heterotrait-Monotrait (HTMT) ratio

| Constructs              | Future Orientation | Market Orientation | Risk-taking Orientation | Social Orientation |
|-------------------------|--------------------|--------------------|-------------------------|--------------------|
| Future Orientation      | 0.497              |                    |                         |                    |
| Market Orientation      | 0.288              | 0.158              |                         |                    |
| Risk-taking Orientation | 0.13               | 0.05               | 0.098                   |                    |
| Social Orientation      | 0.296              | 0.173              | 0.574                  | 0.103              |

### Table 6. Direct effects path models for female vs male agripreneurs

| Hypotheses    | Female | Male |
|---------------|--------|------|
| FO -> AR      | 0.381  | 0.398| 11.371*** | 0.01 |
| MO -> AR      | 0.193  | 0.150| 3.285***  | 0.01 |
| RO -> AR      | 0.189  | 0.054| 1.096     | 0.27 |
| SO -> AR      | -0.028 | -0.164| 3.672*** | 0.01 |
In relation to impact of risk-taking orientation (RO) on agripreneurial resilience (AR), the relationship was significant for women (β = 0.189, p = 0.01) but for men it was not significant (β = 0.0.054, p = 0.273). Risk-taking ability is a significant factor that makes women agripreneurs more resilient than male counterparts in managing their dairy farm career. The plausible reason could be due to the empowerment of women which has awoken their spirit of financial independence and need for success. In addition, women tend to be the higher attendees on most social empowerment programmes where they acquire new knowledge on how to venture into new economic activities unlike men who rarely create time to attend such forums (Hughes & Yang, 2020). This imply that most women can access more informational resources which are likely to influence their risk-taking capability thereby their dairy career resilience. This makes women agripreneurs not to be afraid to pursue their career goals hence becoming more risk-takers which positively impacts on their agripreneurial resilience. Further, the general orientation of women agripreneurs is that they are more susceptible to learn and retry previously failed ventures unlike men who easily gives up. This finding is in contrary to Ayub et al. (2013) who found men having higher risk-taking propensity than female.

Finally, we note negative and significant influence of social orientation (SO) on agripreneurial resilience (AR) among male agripreneurs (β = −0.164, p = 0.01) but for women it was non-significant (β = −0.028, p = 0.400). This result shows that social orientation reduces the resilience of male agripreneurs. This is intuitive because compared to females, men are less socially oriented in Murang’a county, Kenya. The society has portrayed men in this county as independent and they have to struggle alone to make end meet. Therefore, the result indicates that if men perceive themselves as more social-oriented, the agripreneurial resilience decreases. This finding is contrary to Vishnu et al. (2018) who indicated that smallholder agripreneurs rely on their social connection to provide them with reliable and trusted information. The finding is also not consistent with Batjargol et al. (2019) who found that social network contributes to growth of male-owned enterprises.

### 4.5. Mean comparison between female and male entrepreneurial orientations

Table 7 shows the mean for each of the entrepreneurship orientation variables by gender, as well as the results obtained from t-test analysis. The results on the influence of risk-taking orientation on agripreneurial resilience show that female agripreneurs had statistically significant higher risk-taking propensity of (β = 0.189, p = 0.06) compared to their male counterparts (β = 0.054, p = 0.06). While the remaining path relationships between entrepreneurial orientation constructs and agripreneurial resilience were found to be similar across the two groups. It may be concluded that women have significantly higher risk-taking propensity which increases their AR, when compared with male agripreneurs. This implies that women would pursue agripreneurship due to their risk-taking propensity which is slightly stronger than males. A plausible explanation for this is due to the empowerment of women through access to and control of resources which has increased their desire for financial independence and need for achievement.

This could be attributed to women empowerment initiatives driven by both Government and Non-governmental agencies, women-driven social groupings such as merry-go-round which support them to empower their families. In addition, the inherent women performance-driven personalities and nature of women spending more time with the family and at the homestead and their nature of being self-organized in all they do which have given them access to productive resources. Finally, access to productive resources such as land and ownership of livestock has always been biased towards men, which has always restricted women in any investment in agriculture. However, in the past decade, women in Kenya have been given the right to own and inherit productive assets which have triggered them to have internal locus of control and need for achievement which triggers their risk-taking capability. This result is in contrary to most studies (Ayub et al., 2013; Lim & Envick, 2013; Pérez-Quintana, 2013) that have found higher scores in risk-taking propensity among men. However, it contributes to the body of knowledge in the case that dairy women agripreneurs are more risk taking if they have access to productive resources which may propel their resilience. Hence, dispelling the stereotypes that women are risk averse. This is similar to Hundera et al. (2019), who found access to resources...
accelerate the risk-taking and resilience of women entrepreneurs. Another explanation can be attributed to the fact that, dairy industry needs good organization, management and time as compared to crop farming. Women being more precise in nature and present at home as compared to men, will play significant role in dairy enterprises hence take high risk in such investments (Njuki et al., 2016).

### 5. Conclusions

This study sought to determine whether impact of agripreneurial orientation on agripreneurial career resilience differs between male and female agripreneurs in Kenya’s dairy sector. The results show significant gender differences across the agripreneurial orientations. Whereby, future, market and risk-taking orientation of female agripreneurs had a positive and significant impact on AR. While, for male agripreneurs, future and market orientation had a positive and significant impact on AR; but social orientation had a negative impact on AR. Our results on mediation analysis revealed that gender decisively influences dairy agripreneurs entrepreneurial resilience through risk-taking orientation. Female agripreneurs had a higher risk-taking propensity than their male counterparts. Therefore, it can be concluded that female agripreneurs in the Kenyan dairy sector are risk-takers which positively impacts on their dairy career resilience.

The implication of this study is that, future, market, risk-taking and social orientation may be considered as influential factors for entrepreneurship to grow among dairy agripreneurs. These factors, if enhanced, can help in entrepreneurial process of dairy farmers which may enhance their income and dairy career resiliency. The findings also reveal that women are very critical in the dairy career resilience, considering the fact that they are involved in majority of roles in dairy production, processing and marketing. In addition, this study adds credence to the role played by future orientation in mediating the relationship between entrepreneurial orientation and entrepreneurial career resilience which potentially encourages women agripreneurs to allocated more time and resources in dairy farming due to their high risk-taking orientation. Thus, to upgrade and improve performance of the dairy sector, there is need to increase and advocate for women control of activities and resources, whereby they became the chain co-owners through strategic partnership with male agripreneurs who seem to have control of resources but they have low risk-taking propensity. In addition, there is need for entrepreneurial training among female agripreneurs as a crucial factor in developing resiliency. This could be enhanced by linking female agripreneurs with role models who may have a positive influence on the entrepreneurial intention and resilience of female agripreneurs.

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| Hypotheses | Path female | Path male | Path (female-male) | t-value | p-value (female vs male) | p-value original (female vs male) | p-value new (female vs male) |
|------------|-------------|-----------|--------------------|---------|-------------------------|---------------------------------|-------------------------------|
| FO -> AR   | 0.381       | 0.398     | -0.008             | 0.117   | 0.91                    | 0.54                           | 0.92                          |
| MO -> AR   | 0.193       | 0.15      | 0.02              | 0.253   | 0.80                    | 0.40                           | 0.79                          |
| RO -> AR   | 0.189       | 0.054     | 0.133             | 1.806   | 0.07                    | 0.03                           | 0.06                          |
| SO -> AR   | -0.028      | -0.164    | -0.017            | 0.115   | 0.91                    | 0.63                           | 0.74                          |
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